

**LATINFARMA CALI 2019**  
XXII CONGRESO LATINOAMERICANO DE FARMACOLOGIA  
XVII CONGRESO COLOMBIANO DE FARMACOLOGIA Y TERAPEUTICA  
CENTRO DE CONVENCIONES, UNIVERSIDAD LIBRE "VALLE DEL LILI"  
Santiago de Cali, Colombia. 26-29 de septiembre, 2019  
Sitio web: <http://latinfarma2019.com> / [www.asocolfarma.com](http://www.asocolfarma.com)

**DE LA BIODIVERSIDAD A  
LA FARMACOLOGÍA:  
DIÁLOGO DE SABERES**



**PROGRAMA CIENTÍFICO  
SCIENTIFIC PROGRAM**



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Centro de Convenciones, Universidad Libre, Valle del Lili  
Santiago de Cali, Colombia. 26 al 29 de septiembre, 2019

**ASOCIACION COLOMBIANA DE FARMACOLOGIA  
ASOCIACION LATINOAMERICANA DE FARMACOLOGIA**

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### ASOCIACION COLOMBIANA DE FARMACOLOGIA / UNIVERSIDAD DEL VALLE CURSO PRECONGRESO CPC01 / Auditorio 401

**INVESTIGACION-DESARROLLO DE PRODUCTOS NATURALES HERBARIOS, DE LA ETNOFARMACOLOGIA A LA PRACTICA CLINICA. EXPLORANDO LA BIODIVERSIDAD HERBOLARIA DE NUESTROS PAISES.**

Coordinador (es):

**Dr. René DELGADO HERNÁNDEZ / Dr. Giovanni GARAVITO CARDENAS**

**Cuando?: Jueves 26 de Septiembre de: 7:30 AM - 6 PM (Jornada completa)**

**Donde?: Universidad Libre. Sede Valle del Lili. Centro de Convenciones**

Hora	TEMA Y CONFERENCISTA
7.30 am	Inscripciones
8:00 am	Introducción al curso. Presentación de profesores y alumnos. / Todos los conferencistas.
8:15 am	Etnofarmacología: del conocimiento tradicional al científico y del científico a la sociedad. / Dr. Giovanni GARAVITO QF, MSc, PhD.
9:15 am	Estudios farmacológicos preclínicos. Bases generales. Enfoque holístico integrador. Estudios de actividad anti-inflamatoria. / Dr. René DELGADO HERNÁNDEZ, Lic. Bioq, PhD.
10:15 am	Estudios de estrés oxidativo. Búsqueda de nuevos antioxidantes. Mitos y realidades. / Dra. Lizette GIL DEL VALLE. Lic. Bioq, PhD.
11:15 am	Café / Refrigerio
11:30 am	Estudios de actividad analgésica. / Dra. Bárbara Beatriz GARRIDO SUAREZ. MD, PhD.
12:30 pm	Almuerzo.
13:30 pm	Estudios a nivel mitocondrial; la mitocondria como blanco farmacológico en ethnomedicina. / Dr. Gilberto L. PARDO ANDREU. LCF, PhD.
14:30 pm	Estudios toxicológicos y farmacología de la seguridad. El mito de la inocuidad de los productos herbarios. / Dra. Idania RODEIRO GUERRA. Lic. Bioq, PhD.
15:30 pm	Estudios clínicos controlados en productos naturales. Regla de oro para introducir nuevos fitomedicamentos. / Dra. María Acelia MARRERO MIRAGAYA. MD, MSc, PhD.
16:30 pm	Aspectos regulatorios. Registros de nuevos productos. Realidades y perspectivas. / Dra. Diadelis REMIREZ FIGUEREDO. Lic. Bioq., MSc, PhD.
17:00 pm	Conclusiones. Discusión General. Ejercicios comprobatorios integradores. Panel abierto con ejemplos prácticos. / Todos los conferencistas.
17:30 pm	Cierre del Curso.

### ASOCIACION COLOMBIANA DE FARMACOLOGIA / UNIVERSIDAD DEL VALLE CURSO PRECONGRESO CPC02 / Auditorio 402

#### ACTUALIZACION EN FARMACOLOGÍA VETERINARIA

Coordinadores: **Dr. Juan Gonzalo Restrepo**, MD Vet, MSc, PhD Farmacología / **Dr. Ricardo Malaver**, MD Vet, MSc

**Cuando?: Jueves 26 de Septiembre de: 7:30 AM - 6 PM (Jornada completa)**

**Donde?: Universidad Libre. Sede Valle del Lili. Centro de Convenciones**

Hora	TEMA Y CONFERENCISTA
7.30 am	Inscripciones
8:00 am	Fármacos y Disruptores endocrinos / <b>Ricardo Malaver</b> , MD Vet, MSc
8:30 am	Medicación Veterinaria y Producción Agropecuaria / <b>Jainer Cañas</b> , Zoot, MSc Farmacología - INVIMA
9:00 am	Farmacología en Pequeños Animales / <b>Angélica Castellanos</b> . MD Vet. MSc y Phd. Ciencias Biomédicas – Farmacología.
10:00 -10:15 am	Café / Refrigerio
10:15 - 11:00 am	Farmacología de Grandes Animales / <b>Alexander Martínez</b> MD Vet. MSc Ciencias Biomédicas Farmacología
11:am -12:00 am	Tratamiento racional del dolor inflamatorio crónico en perros de edad avanzada. <b>Dr. Ángel Céspedes Rubio</b> , MVZ, MSc, PhD. Neurodegenerative Diseases Research Group. Toxicology and Pharmacology Laboratory. Animal Health Department . University of Tolima.
12:00 a 1:00 pm	Disminución en el uso de animales para Entrenamiento Médico Quirúrgico por medio de alternativas en un Hospital Público / <b>Marcelo Asprea</b> , MDV, PhD. Argentina
1:00 a 2:00 pm	Almuerzo

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2:00 a 3:00 pm	Presentación del Centro de Información y Estudio de Medicamentos y Tóxicos en Veterinaria (CIEMTO – VET U de A). <b>Juan Gonzalo Restrepo</b> , MD Vet, MSc, PhD Farmacología
3:00 a 4:00 pm	Prescripción médica (conferencia – taller) <b>Juan Gonzalo Restrepo</b> , MD Vet, MSc, PhD Farmacología
3:00 a 6:00 pm	Aprendizaje con base en problemas (conferencia - taller) <b>Juan Gonzalo Restrepo</b> , MD Vet, MSc, PhD Farmacología
6:00 am	Cierre. Entrega de Certificados

### ASOCIACION COLOMBIANA DE FARMACOLOGIA / UNIVERSIDAD DEL VALLE CURSO PRECONGRESO CPC03 / Auditorio 403

#### ACTUALIZACIÓN EN FARMACOLOGÍA ODONTOLÓGICA

Coordinadores: **Dr. Rodolfo Molano**, Odontólogo, MD, MSc/Dr. **Alfonsina Martínez**, Enf., MSc Farmacología.

Cuando?: Jueves 26 de Septiembre de: 7:30 AM - 6 PM (Jornada completa)

Donde?: Universidad Libre. Sede Valle del Lili. Centro de Convenciones

Hora	TEMA Y CONFERENCISTA
7.30 am	Inscripciones
8:00 am	PK/PD y formas Farmacéuticas en medicación Odontológica. / <b>Claudia Viviana Arce</b> , QF, MSc Farmacología. Invima
9:00 am	Anestesia y Anestésicos de uso en Odontología, local y regional / <b>Rodolfo Molano</b> , Odontólogo, MD, MSc.
10:00 am 10:15	Café
10:15 11:00 am	Analgesia, Analgésicos y Antiinflamatorios en Odontología / <b>Bárbara Beatriz Garrido Suarez</b> , MD, Anestesióloga, Especialista en Dolor. PhD en Ciencias, Cuba.
12:00 a 1:00 pm	Antimicrobianos Utilizados en Odontología / <b>Alfonsina Martínez</b> , Enf., MSc Farmacología.
1:00 a 2:00 pm	Almuerzo
2:00 pm	Antivirales y Antimicóticos Utilizados en Odontología / <b>Claudia Viviana Arce</b> , QF, MSc Farmacología. Invima
3:00 pm	Medicación sistémica Odontológica / <b>Mauricio Palacios</b> , MD, MSc, PhD Ciencias Biomédicas – Farmacología.
4:00 pm	Café
5:00 pm	Precauciones Farmacológicas en Odontología en Paciente Poli medicados o con enfermedades crónicas. / <b>Andrés Quintero</b> , MD, MSc, PhD.
6:00 pm	Cierre. Entrega de certificados.

### ASOCIACION COLOMBIANA DE FARMACOLOGIA / UNIVERSIDAD DEL VALLE CURSO PRECONGRESO CPC04 / Paraninfo 1

#### "CANNABIS MEDICINAL. USOS TERAPÉUTICOS. MBE MEDICINA BASADA EN LA EVIDENCIA"

Coordinador (es):

**Dr. Luis Alfonso Laverde Gaona**, MD, MSc Farmacología, **Dr. Rafael Campo Misas**, QF, MSc

Cuando?: Jueves 26 de Septiembre de: 7:30 AM - 6 PM (Jornada completa)

Donde?: Universidad Libre. Sede Valle del Lili. Centro de Convenciones

Hora	TEMA Y CONFERENCISTA
7.30 AM	Inscripciones
8:00 AM	Historia del cannabis medicinal / <b>Luis Alfonso Laverde</b> , MD, MSc.
9:00 AM	Aspectos regulatorios del cannabis medicinal / <b>Guillermo Lara</b> QF
10:00 AM	Café / Refrigerio
10:15 11:00 AM	Producción industrial con calidad / <b>Rafael Ocampo</b> , QF, MSc
11:00 AM	MBE usos del cannabis en diversas patologías. / <b>Octavio Piñeros</b> , MD, MSc Epi, MSc Farm.
12:00m	Cannabis medicinal PK PD Receptores/ <b>Luis Alfonso Laverde</b> , MD, MSc.
1:00 PM	Almuerzo
USOS Y PRESCRIPCION DEL CANNABIS MEDICINAL	
2:00 PM	Cannabis Uso Dolor / <b>Alex Mosquera</b> , MD, Anestesiólogo, Especialista en Dolor
3:00 PM	Medicina Veterinaria y Cannabis Medicinal / <b>Luis Alfonso Laverde G.</b>

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4:00 PM	Café / Refrigerio
4:15 PM	Prescripción del cannabis medicinal / <b>Luis Alfonso Laverde</b> , MD, MSc.
5:00 PM	Taller: farmacovigilancia en el cannabis medicinal / <b>Luis Alfonso Laverde</b> , MD, MSc.
6:00 PM	Cierre. Entrega de certificados.

**ASOCIACION COLOMBIANA DE FARMACOLOGIA / UNIVERSIDAD DEL VALLE**  
**CURSO PRECONGRESO CPC05 / Paraninfo 2**

**DERMATOLÓGICOS, DERMATOCOSMÉTICOS, COSMECÉUTICOS Y COSMÉTICOS: EVALUACIÓN PRÁCTICA DE EFICACIA Y SEGURIDAD**

Coordinadores: **Dra. Celine Blanche** (Francia) , BSc Ciencia, MSc I&R Productos Cosméticos, **Dra. María Eugenia Echeverry Morales**, MD. Especialista en Dermatología

**Cuando?: Jueves 26 de Septiembre de: 7:30 AM - 6 PM (Jornada completa)**

**Donde?: Universidad Libre. Sede Valle del Lili. Centro de Convenciones**

<b>Hora</b>	<b>TEMA Y CONFERENCISTA</b>
7.30 am	Inscripciones
8:00 am	Fisiopatología Dermatológica: signos y síntomas / <b>María Eugenia Echeverry Morales</b> , MD. Especialista en Dermatología
9:00 am	Legislación y Formulación Dermatológica / <b>Rafael Campo Misas</b> . QF, MSc, cPhD
10:00 am	Café / Refrigerio
10:30 am a 1:00 pm	Evaluación de Eficacia en productos de uso dermatológico y cosmético. Sustentación de proclamas cosméticas: proclamas y métodos disponibles para sustentos científicos / <b>Celine Blanche</b> (Francia) , BSc Ciencia, MSc I&R Productos Cosméticos
1:00 a 2:00 pm	Almuerzo
2:00 a 6:00 pm	Generalidades sobre objetivación de proclamas del sector cosmético y estudios clínicos / <b>Celine Blanche</b> (Francia) , BSc Ciencia, MSc I&R Productos Cosméticos
6:00 am	Cierre. Entrega de Certificados.

**ASOCIACION COLOMBIANA DE FARMACOLOGIA / UNIVERSIDAD DEL VALLE**  
**CURSO PRECONGRESO CPC 06 / Auditorio 404**

**"EL ESTRÉS OXIDATIVO COMO COFACTOR DE DIVERSAS ENFERMEDADES Y SU REGULACIÓN CON FARMACOTERAPIA BIOXIDATIVA O ANTIOXIDANTE"**

Coordinador (es):

**Dr. Lizette Gil del Valle**. Lic. en Bioquímica, Doctora en Ciencias Farmacéuticas (PhD) (Farmacología). Jefa del Departamento de Investigaciones Farmacológicas, Instituto de Medicina Tropical "Pedro Kouri", La Habana, Cuba

**Cuando?: Jueves 26 de Septiembre de: 7:30 AM - 6 PM (Jornada completa)**

**Donde?: Universidad Libre. Sede Valle del Lili. Centro de Convenciones**

<b>Hora</b>	<b>TEMA Y CONFERENCISTA</b>
7.30 AM	Inscripciones
8:00 AM	Introducción al curso. Presentación de la profesora. <b>Objetivo general:</b> Exponer los aspectos teóricos básicos actualizados relacionados con los elementos fundamentales del estado redox y el metabolismo oxidativo en la fisiología y la fisiopatología, la utilización de bioindicadores relacionados con este metabolismo en la práctica médica en el seguimiento de la evolución de algunas condiciones clínicas y la influencia en este metabolismo de intervenciones y tratamientos farmacológicos
8:15 AM	Especies reactivas del oxígeno. Principales especies pro-oxidantes. Reacciones y orgánulos implicados en su generación. Principales dianas de los mismos. Señalización redox en los mecanismos de adaptación celular en procesos fisiológicos y su modulación.
10:30 AM	Café / Refrigerio
10:35 AM	El estrés oxidativo en la señalización redox en la patogenia y fisiopatología de diversas enfermedades. Biomarcadores más utilizados para cuantificar el estado redox en muestras biológicas.
11:30 M	Evidencias actuales de la contribución de la cuantificación del estado redox en muestras biológicas a las investigaciones biomédicas y la práctica clínica.



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1:00 PM	Almuerzo.
2:30 PM	Fundamento biológico molecular de los efectos de productos naturales y fármacos empleados en diversas enfermedades. Análisis de la evaluación de indicadores del balance redox en la práctica clínica individualizada e investigaciones preclínicas y clínicas.
4:00 PM /5:30 PM	Debate general y Conclusiones. Entrega de Certificados.



**La Facultad de Salud de la Universidad del Valle, la Asociación Colombiana de Farmacología (ACF) y el Instituto Científico Pfizer Colombia (ICPC) invitan a participar en el:**

**Curso Pre-Congreso: Capacitación para Investigadores**  
**Entrenamiento y Certificación en Buenas Prácticas en Investigación Clínica**

**Cuándo?: Jueves 26 de Septiembre: 7:30 AM- 5:30 PM (jornada completa)**  
**Dónde?: Hotel NH Royal. Carrera 100B No. 11A - 99, Cali - Colombia**

Hora	Tema
8:00	1 Presentación. Introducción a la metodología del evento / Claudia Rojas. BSc Regional Clinical Site Lead (Pfizer - Colombia).
8:30	2 ¿Cómo se desarrolla la investigación de nuevos medicamentos? / Carlos Maldonado. MD MSc. Profesor Dpto de Farmacia. UN
9:30	3 ¿Cómo iniciar un estudio clínico? / Héctor Cacique. Regional Clinical Site Lead (Argentina).
10:30	4 El arte y la ciencia del consentimiento informado / Carlos Fiquitiva. Senior Project Manager.
11:30	Pausa / Café
11:45	5 ¿Cómo llevar a cabo un estudio clínico? / William José Otero Escalante MD. Director SERMIVED (Bucaramanga).
12:45	Almuerzo
13:45	6 ¿Cómo supervisar un estudio? / Claudia Rojas. BSc Regional Clinical Site Lead (Pfizer - Colombia).
14:30	7 Seguridad en los ensayos clínicos / Fredy Jimenez QF. Drug Safety Manager (Bogotá).
15:30	8 Regulación de los ensayos clínicos en Colombia / Eliana Pulido QF. Regulatory Affairs Manager (Bogotá).
16:30	9 Certificación ITP

\* Algunos conferencistas sujetos a confirmación.  
 Es indispensable asistir a la jornada completa y presentar una prueba para obtener la certificación.



**Programa de capacitación para el Investigador**  
Entrenamiento y Certificación en Buenas Prácticas en Investigación Clínica

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### VIERNES 27 DE SEPTIEMBRE / FRIDAY, SEPTEMBER 27

CÓDIGO / CODE	HORA / TIME	
	07:30-8:30	Café de bienvenida e inscripción de participantes / Welcome coffee and registration of participants.
<b>SALA / ROOM "PARANINFO"</b>		
<b>CONFERENCIAS PLENARIAS / PLENARY LECTURES</b>		
	08:30-9:15	<b>Ceremonia inaugural / Opening ceremony</b> Palabras de Apertura. Saludos. Personalidades Gubernamentales de Cali, INVIMA, Asociación Colombiana de Farmacología, Universidad del Valle, Universidad Libre-Valle del Lili, Cali y de la Asociación Latinoamericana de Farmacología (ALF).
<b>COORDINADORES / COORDINATORS</b>		<b>Octavio Piñeros.</b> MD, MSc. Presidente de la Asociación Colombiana de Farmacología y de la Asociación Latinoamericana de Farmacología (ALF). Universidad del valle, Cali. Colombia. <b>René Delgado Hernández</b> (PhD), Past President "Sociedad Cubana de Farmacología", Vicepresidente, Asociación Latinoamericana de farmacología. Instituto de Farmacia y Alimento (IFAL), Universidad de La Habana (UH), La Habana, Cuba.
CP-01	09:15-09:40	<b>Conferencia Inaugural 01:</b> "LEY DE ENFERMEDADES HUÉRFANAS. UNA ALIANZA ENTRE CIENCIA, COMUNIDAD Y POLÍTICA" <b>Dilian Francisca Toro.</b> MD, Reumatóloga, Gobernadora del Valle, Colombia.
CP-02	09:45-10:15	<b>Conferencia inaugural 02:</b> "A NUTRI-EPIGENETIC PERSPECTIVE ON HEALTH AND "INFLAMM-AGING" DISEASE: CAN WE ADD HEALTHY YEARS TO OUR LIFE?" <b>Wim Vanden Berghe.</b> BBS, PhD. Head Epigenetic Signalling lab (PPES), Department Biomedical Sciences, University Antwerp, Belgium.
	10:15-10:30	<b>RECESO / COFFEE BREAK</b>
	10:30-12:30	<b>SIMPOSIOS (S), COMUNICACIONES ORALES (CO) Y CARTELES (P) / SYMPOSIA (S), ORAL COMMUNICATIONS (CO) AND POSTERS (P)</b>
<b>SALA / ROOM "PARANINFO 1" VIERNES 27 DE SEPTIEMBRE / FRIDAY, SEPTEMBER 27</b>		
<b>SIMPOSIO 01: "ENFERMEDADES HUÉRFANAS Y RARAS"</b>		
<b>COORDINADORES / COORDINATORS</b>		<b>Hernán Rodríguez.</b> MD, MSc. Director Programa Enfermedades Huérfanas. Hospital Universitario del Valle (HUV). UniValle. Cali. Colombia. <b>Julián Ramírez.</b> MD, Genetista, PhD. HUV, UNIVALLE. Cali. Colombia
CO-01	10:30-10:50	"DE LA TEORÍA A LA PRÁCTICA: APLICACIÓN DE LA LEY PARA ENFERMEDADES HUÉRFANAS". <b>Hernán Rodríguez.</b> MD, MSc. Director Programa Enf Huérfanas HUV. Cali. Colombia.
CO-02	10:55- 11:15	"MEDICAMENTOS HUÉRFANOS Y ENFERMEDADES GENÉTICAS, TRATAMIENTO FARMACOLÓGICO: CÓMO AFRONTARLOS?". <b>Julian Ramirez.</b> MD, Genetista, PhD. HUV, UNIVALLE. Cali. Colombia
CO-03	11:20-11:40	"DIAGNÓSTICO Y TRATAMIENTO DE LAS MUCOPOLISACARIDOSIS MÁS FRECUENTES". <b>Lina Johana Moreno Giraldo.</b> MD. Pediatra Genetista. UNIVALLE. Cali. Colombia.
CO-04	11:45-12:05	"NUEVOS AVANCES EN TRATAMIENTO DE ENFERMEDADES METABOLICAS NEURODEGENERATIVAS".



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CENTRO DE CONVENCIONES, UNIVERSIDAD LIBRE "VALLE DEL LILI"

Santiago de Cali, Colombia. 26-29 de septiembre, 2019

Sitio web: <http://latinfarma2019.com> / [www.asocolfarma.com](http://www.asocolfarma.com)

		<u>Jose Maria Satizabal</u> . MD, MSc, PhD, Genetista UNIVALLE. Cali. Colombia.
CO-05	12:10-12:25	"ENFERMEDADES HUÉRFANAS. VISIÓN DE UNA PACIENTE". <u>Solanyi Mosquera</u> . Secretaria de Salud Pública Municipal. Cali. Colombia.
	12:30-13:30	<b>ALMUERZO / LUNCH</b>
CONFERENCIA PLENARIA CP-03	13:35-14:10	"BIOTECNOLÓGICOS MONOCLONALES: UN NUEVO ENFOQUE EN EL MANEJO PARA LA MALARIA". <u>Socrates Herrera</u> . MD Inmunólogo, Centro de Investigaciones Cauceseco. Cali. Colombia.
CO-06	14:15-14:35	"TAMIZAJE NEONATAL EVALUANDO EL METABOLISMO. REALIDAD O UTOPIA? EN PAÍSES EN DESARROLLO". <u>Miryam Arevalo</u> . Mic-Lab, MSc, PhD, Centro de Investigaciones Cauceseco. Cali. Colombia.
CO-07	14:40-15:00	"TREATMENT IN ENDOCRINE ORPHAN DISEASES IN PEDIATRICS: TURNER SYNDROME" <u>Audrey Mary Matallana</u> MD. Pediatra Endocrinóloga, Hospital Universitario del Valle. Departamento de Pediatría. Escuela de Medicina. Universidad del Valle, Cali, Colombia.
CO-08	15:05-15:25	"FARMACOGENÉTICA Y GLAUCOMA EN OFTALMOLOGÍA". <u>Claudia Valencia</u> . Oftalmóloga, Farmacología, UNIVALLE. Cali. Colombia.
	15:30-15:45	<b>RECESO / COFFEE BREAK</b>
CO-09	15:50-16:10	"EPIGENÓMICA Y FÁRMACOS EPIGENÉTICOS: UNA NUEVA ALTERNATIVA PARA ENFERMEDADES COMPLEJAS". <u>Felipe García</u> . Bio. MSc, PhD. Ex Director de Colciencias. UNIVALLE, Cali, Colombia.
CO-10	16:15-16:35	"EVIDENCE IN PHARMACOGENOMIC IN PERUVIAN POPULATION: POLYMORPHISMS RELATED TO METABOLISM, TRANSPORT AND TARGET OF DRUGS". <u>Alberto Alcibíades Salazar Granara</u> et al. MD, MSc. Director de la Unidad de Ciencias Básicas. CIMTFAR. CIMA. Universidad de San Martín de Porres, Lima, Perú.
CO-11	16:40-17:00	"THE IMPORTANCE OF TURNING RESEARCH INTO STORIES FOR NON-SPECIALIZED AUDIENCES" <u>Ximena Serrano Gil</u> . MSc. Comunicación Social de la Investigación Científica. Presidente Asociación Colombiana de Periodismo y Comunicación de la Ciencia – ACPC. Natura Visión. Bogotá. Colombia.
CONFERENCIA PLENARIA CP-04	17:05-17:30	"A MODEL OF DISCOVERY AND DEVELOPMENT OF PROBIOTICS PRODUCTS: ESTABLISHING A PARADIGM, EFFECTIVE BIOPROSPECTING, RELEVANT SCREENING AND SUCCESSFUL DEPLOYMENT". <u>David Johnston-Monje</u> . PhD. Principal Investigator and Max Planck Tandem Group Leader in Plant Microbial Ecology. Universidad del Valle, Cali, Colombia.
	17:35-17:50	<u>Comunicación Especial</u> . Agencia Presidencial de Colombia para la Colaboración Científica (APC).
	17:55-18:15	<b>INTERVENCION ESPECIAL</b> . OFICINA DE TURISMO. CALI. VALLE DEL CAUCA. <b>DIRECTORA DE LA SECRETARIA DE TURISMO</b> .
	18:20-20:00	<b>REUNIÓN DE BIENVENIDA. SOCIALIZACIÓN ENTRE PARTICIPANTES EN EL CONGRESO.</b>

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16:30-18:00: REUNIÓN ALF	SALÓN DE REUNIONES UNIVERSIDAD LIBRE:	REUNIÓN DEL COMITÉ EJECUTIVO DE LA ASOCIACIÓN LATINOAMERICANA DE FARMACOLOGÍA. SELECCIÓN DE PRÓXIMOS MANDATOS Y SEDES DEL XXIII Y XXIV CONGRESOS LATINOAMERICANOS DE FARMACOLOGÍA.
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### SALA 2 / ROOM "AUDITORIO 401" VIERNES 27 SEPTIEMBRE / FRIDAY, SEPTEMBER 27

#### SIMPOSIO 02: "DESARROLLO DE FITOMEDICAMENTOS"

COORDINADORES / COORDINATORS		<p><u><b>René Delgado Hernández</b></u> (PhD), Past President "Sociedad Cubana de Farmacología", Instituto de Farmacia y Alimento (IFAL), Universidad de La Habana (UH), La Habana, Cuba.</p> <p><u><b>Giovanny Garavito Cárdenas</b></u> (PhD), Investigador Principal Grupo de Investigación: FaMeTra - Farmacología de la Medicina Tradicional y Popular, Universidad Nacional de Colombia. Bogotá, Colombia.</p>
CO-12	10:30-10:50	<p>"RAPANONE, A NATURALLY OCCURRING BENZOQUINONE, INHIBITS MITOCHONDRIAL RESPIRATION AND INDUCES HEPG2 CELL DEATH". <u><b>Gilberto L. Pardo Andreu</b></u>, et al. PharmSc. PhD. Director CEIEB. Instituto de Farmacia y Alimentos (IFAL), Universidad de La Habana, Cuba.</p>
CO-13	10:55- 11:15	<p>"MANGIFERIN: PRECLINICAL ANTIANGIOGENIC AND ANTITUMORAL ACTIONS OF A NATURAL GLUCOXYLXANTHONE: PRESENT RESEARCH RESULTS AND FUTURE DRUGS DEVELOPMENT". <u><b>René Delgado Hernández</b></u> et al. Bioquímico.PhD. Investigador Titular, CEIEB. Instituto de Farmacia y Alimentos (IFAL), Universidad de La Habana, Cuba.</p>
CO-14	11:20-11:40	<p>"ANTIPARASITIC PROFILE OF ALSINOL, A PROMISING MOLECULE AGAINST PROTOZOAN HEMOPARASITES". <u><b>María Helena Arias Marciales</b></u>, Quiliano M, Berthier D, Minet C, Chantal I, Valentin A, Garavito G, Aldana I, Deharo E. Universidad Nacional de Colombia, Carrera 30 45-03, Bogotá DC, Colombia.</p>
CO-15	11:45-12:05	<p>"ANTIOXIDANT SUPPLEMENTATION EFFECTS IN AIDS PATIENTS WITH DELAYED DIAGNOSIS OF HIV: AN OPEN RANDOMIZED CONTROLLED TRIAL". <u><b>Lizette Gil del Valle et al</b></u> (PhD). Junta Directiva, "Sociedad Cubana de Farmacología", Instituto de Medicina Tropical "Pedro Kouri", (IPK), La Habana, Cuba.</p>
CO-16	12:10-12:30	<p>"INNOVACIÓN EN LA INVESTIGACIÓN Y PRODUCCIÓN DE FITOMEDICAMENTOS. INGREDIENTES DE ALIMENTOS FUNCIONALES". <u><b>Juan Sebastián Ramírez</b></u>, Ing Al. MSc, PhD. UNIVALLE. Cali. Colombia.</p>
	12:35-13:35	<b>ALMUERZO / LUNCH</b>
CONFERENCIA PLENARIA CP-05	13:40-14:10	<p>"ETNOFARMACOLOGÍA CON RESPONSABILIDAD SOCIAL". <u><b>Giovanny Garavito Cárdenas</b></u> (PhD), Investigador Principal Grupo de Investigación: FaMeTra - Farmacología de la Medicina Tradicional y Popular, UNAL, Bogotá, Colombia.</p>
CO-17	14:15-14:35	<p>"MEDICAL CANNABIS: THE PLANT THAT RELIEVES?". <u><b>Luis Alfonso Laverde</b></u>, MD, MSc Epi, MSc Farm. UNINAVARRA.</p>
CO-18	14:40-15:00	<p>ADVANCES IN BIOLOGICAL EFFECTS OF THE PERUVIAN "CHUCHUHUASI" MAYTENUS MACROCARPA (Ruiz &amp; Pav.) Briq: ANALGESIC DOSE-RESPONSE AND ANTIDEPRESSIVE/NEUROLEPTIC EFFECT".</p>

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		<b><u>Alberto Alcibiades Salazar Granara</u></b> et al. MD, MSc. Director de la Unidad de Ciencias Básicas. CIMTFAR. CIMA. Universidad de San Martín de Porres, Lima, Perú.
CO-19	15:05-15:25	"VASCULAR INTERACTIONS OF THE MAIN METABOLITES ISOLATED FROM <i>Croton schiedeianus</i> "ALMIZCLILLO". <b><u>Alejandra Paola Ortiz Sanchez</u></b> . QF. MSc. Farmacología, PHD Student. Departamento de Farmacia. UNAL, Bogota.
	15:30-15:45	<b>RECESO / COFFEE BREAK</b>
CO-20	15:50-16:05	"CLINICAL TRIAL IN NATURAL PRODUCTS. GOLDEN RULES ABOUT MEDICINAL PLANT". <b><u>Maria Acelia Marrero Miragaya</u></b> . MD, PhD. National Coordinating Centre of Clinical Trials (CENCEC), La Habana, Cuba.
CO-21	16:10-16:25	"REGULATORY FRAMEWORK OF TRADITIONAL, COMPLEMENTARY AND INTEGRATIVE MEDICINE IN CUBA". <b><u>Diadelis Ramirez Figueredo</u></b> . Bioquímica. PhD. National Centre of the State Quality Control of Drugs Equipment and Medical Devices. Cuban Regulatory Agency. (CECMED). La Habana, Cuba.
CO-22	16:30-16:45	"DEVELOPMENT OF A RESEARCH STRATEGY FOR THE USE OF FRUIT WASTES FROM ATACAMA DESERT AS A SOURCE OF OBTAINING EXTRACTS, WITH ANTIOXIDANT AND HYPOGLYCEMIC ACTIVITY, THROUGH NON-CONVENTIONAL EXTRACTION TECHNIQUES". <b><u>Gabino Garrido Garrido</u></b> et al. PhD. Laboratorio de Farmacognosia. Departamento de Ciencias Farmacéuticas, Facultad de Ciencias. Universidad Católica del Norte, Antofagasta, Chile.
CO-23	16:50-17:05	"EFFECT OF THE VEGETABLE OIL EXTRACTED FROM <i>Annona cherimola</i> SEEDS ON THE RELEASE OF MATRIX METALLOPROTEINASE-9 GRANULES IN HUMAN NEUTROPHILS". <b><u>Andres Ortiz Sotelo</u></b> , España, A., Hurtado A., Mena, J. University of Nariño, Department of Medicine, Torobajo University Citadel, Pasto, Nariño, Colombia.
CO-24	17:10-17:25	"NEUROPROTECTIVE ACTION OF <i>Mauritia flexuosa</i> OIL (AGUAJE) IN AN EXPERIMENTAL MODEL OF EPILEPSY". <b><u>Oscar Herrera Calderón</u></b> , Arroyo, J.L., Rojas, J.P., Chacaltana L., Pari, B. Faculty of Pharmacy and Biochemistry, Universidad Nacional Mayor de San Marcos, Jr Puno 1002, Lima, Perú.
CO-25	17:30-17:45	"POTENTIAL FRACTION OF PENTACYCLIC TRITERPENES OF SPECIES <i>C. ANGUSTIFOLIA</i> AND TELENITIDE AS INHIBITOR OF 11 BETA - HYDROXIESTEROID DEHYDROGENASE IN VITRO". <b><u>Laura M. Valencia Torres</u></b> , Montoya G. ICESI University, Cali, Valle, Colombia.
	17:50-18:00	<b>DISCUSIÓN GENERAL</b>

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COORDINADORES / COORDINATORS		<u><b>Gilberto L. Pardo Andreu</b></u> . PharmacSc. PhD. Director CEIEB. Instituto de Farmacia y Alimentos (IFAL), Universidad de La Habana, La Habana, Cuba. <u><b>Richard D'Vries (PhD)</b></u> , Profesor, Universidad Santiago de Cali, Colombia.
CO-26	10:30-10:50	"DEVELOPMENT AND SYNTHESIS OF NEW MOLECULES FOR THE TREATMENT OF DIABETES, METABOLIC SYNDROME AND INSULIN RESISTANCE". <u><b>Richard D'Vries</b></u> , Stephanny Villamizar Delgado, Laura Maria Porras, Octavio Piñeros, Javier Ellena.). Universidad Santiago de Cali (USC). Colombia.
CO-27	10:55- 11:15	"TARGETING NEUROINFLAMMATION WITH JM-20, A NOVEL SYNTHETIC NEUROPROTECTIVE COMPOUND. A NEW APPROACH TO DEVELOPMENT THERAPIES FOR NEUROPATHIC PAIN". <u><b>Bárbara Beatriz Garrido Suárez</b></u> . MD. PhD. Especialista en Anestesiología. Instituto de Ciencias del Mar (ICIMAR), La Habana, Cuba.
CO-28	11:20-11:40	"MULTI-TARGETING EFFECTS OF JM-20 AT MITOCHONDRIA LEVEL AS A PROMISING APPROACH TO PROTECT THE BRAIN FROM ISCHEMIC DAMAGE". <u><b>Gilberto L. Pardo Andreu</b></u> , et al. PharmacSc. PhD. Director CEIEB. Instituto de Farmacia y Alimentos (IFAL), Universidad de La Habana, Cuba.
CO-29	11:45-12:05	"VIGILANCIA TECNOLÓGICA Y COMPETITIVA EN FARMACOLOGÍA. POR QUÉ? PARA QUÉ?". <u><b>Felipe Ortiz</b></u> . Adm, MSc.UNIVALLE. Optopus. Cali. Colombia.
CO-30	12:10-12:30	"EVALUACIÓN ECONÓMICA DEL DESARROLLO DE UN NUEVO FÁRMACO". <u><b>Pedro Cruz</b></u> . Eco. MSc, PhD. Instituto de Prospectiva. Universidad Santiago de Cali (USC). Colombia.
	12:35-13:35	<b>ALMUERZO / LUNCH</b>

**SALA 3 / ROOM "AUDITORIO 402" VIERNES 27 SEPTIEMBRE / FRIDAY, SEPTEMBER 27****SIMPOSIO 04: "FARMACOLOGÍA Y TERAPÉUTICA EN GERIATRÍA"**

COORDINADORES / COORDINATORS		<u><b>Ximena Castro</b></u> . MD, Medicina familiar, UNIVALLE, Cali, Colombia. <u><b>Jose Mauricio Ocampo</b></u> . MD, Medicina familiar, Gerontólogo. UNIVALLE. Cali. Colombia.
CONFERENCIA PLENARIA CP-06	13:40-14:10	"RIESGO CARDIOVASCULAR. PREVENCIÓN FARMACOLÓGICA". <u><b>Gilberto Castillo</b></u> . MD Medicina Interna. HUV. UNIVALLE, Cali. Colombia.
CO-31	14:15-14:35	"ANTI-AGING MEDICINE: MYTHS AND REALITIES". <u><b>Ángela María Rojas Zapata</b></u> . MD. Universidad de Nariño. Especialista en Medicina Interna- Geriatria. Clínica de la Universidad de Caldas. Profesora auxiliar de la especialización de Geriatria Clínica- Universidad del Valle. Cali. Colombia.
CO-32	14:40-15:00	"A REQUIEM TO PANACEA". <u><b>Ximena Castro Flórez</b></u> . MD. Departamento de Medicina Familiar. Facultad de Salud, Escuela de Medicina Universidad del Valle, Cali. Colombia.
CO-33	15:05-15:25	"POLYPHARMACY AND GERIATRIC SYNDROMES". <u><b>Jose Mauricio Ocampo</b></u> . MD, Medicina familiar, Gerontólogo. UNIVALLE. Cali. Colombia.
	15:30-15:45	<b>RECESO / COFFEE BREAK</b>

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CO-34	15:50-16:05	"EVERYTHING IS SEEN IN THE MOUTH: ORAL MANIFESTATIONS OF ADVERSE DRUG REACTIONS" <b><u>María Teresa Calzada</u></b> . Odontóloga, MSc. UNIVALLE, Cali, Colombia.
CO-35	16:10-16:25	"RATIONAL USE OF ANTIBIOTICS IN THE ELDERLY". <b><u>Leidy Aristizabal Gómez</u></b> . MD, MSc Médico internista y Geriatra – Universidad de Caldas, Master en Cuidado Paliativo – Universidad de la Rioja, Cali, Colombia
CO-36	16:30-16:45	"SHOULD WE ALL TAKE MEDICATIONS TO PREVENT CARDIOVASCULAR EVENTS?". <b><u>Carlos Andrés Pineda</u></b> . MD, Md Fliar, MSc. UNIVALLE, Cali, Colombia.
CO-37	16:50-17:05	"ASSOCIATION BETWEEN THE USE OF BENZODIAZEPINES AND OPIOIDS WITH THE RISK OF FALLS AND HIP FRACTURES IN OLDER ADULTS". <b><u>Manuel Enrique Machado</u></b> . MD. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.
CO-38	17:10-17:25	"POLIFARMACIA EN EL ADULTO MAYOR: ROL DEL ENFERMERO" <b><u>Luz Adriana Meneses Urrea, Dolly Villegas Arenas</u></b> . Programa Académico de Enfermería, Facultad de Salud, Universidad Santiago de Cali. Cali, Valle del Cauca, Colombia.
CO-39	17:30-17:50	"PREVENTION OF USE OPIOID PRODUCTS FOR THE PURPOSE OF ABUSE: FDA CRITERIA". <b><u>Alba Rocío Castillo Pabón</u></b> QF, MSc. Mundipharma Colombia SAS. Regional Regulatory Affairs Manager. Colombia, Andean & South Cone. Bogotá. Colombia.

**SALA 4 / ROOM "PARANINFO 2. Parte superior"**  
**VIERNES 27 SEPTIEMBRE / FRIDAY, SEPTEMBER 27**

**SIMPOSIO 05: "FARMACOLOGÍA CLÍNICA Y OTROS"**

<b>COORDINADORES / COORDINATORS</b>		<b><u>María Acelia Marrero Miragaya</u></b> . MD, PhD. Centro Nacional Coordinador de Ensayos Clínicos (CENCEC), Presidenta, Sociedad Cubana de Farmacología. La Habana, Cuba. <b><u>Lizette Gil del Valle</u></b> (PhD). Junta Directiva, Sociedad Cubana de Farmacología, Jefa del Departamento de Investigaciones Farmacológicas. Instituto de Medicina Tropical "Pedro Kouri", (IPK), La Habana, Cuba
CO-40	10:30-10:50	"ANTIPSYCHOTICS DRUGS DISPENSATION TO CHILDREN UNDER 15 YEARS DURING THE PERIOD 2014–2019 IN A PEDIATRIC REFERENCE HOSPITAL, MONTEVIDEO, URUGUAY". <b><u>Juan Pablo García</u></b> , Nan L., Giachetto G. Unidad de Farmacología - Centro Hospitalario Pereira Rossell. Prof. Asociado de Farmacología, Facultad de Medicina - Universidad CLAEH, Montevideo. Uruguay.
CO-41	10:55- 11:15	"ANALYSIS OF SECONDARY PREVENTION MEASURES IMPLEMENTED IN PATIENTS WITH A HISTORY OF ACUTE CORONARY SYNDROME". <b><u>Jorge Enrique Machado Alba</u></b> . MD, PhD. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.
CO-42	11:20-11:40	"PRIOR USE OF MEDICATION FOR PRIMARY PREVENTION IN A GROUP OF COLOMBIAN PATIENTS WITH CORONARY SYNDROME". <b><u>Andrés Gaviria Mendoza</u></b> . Grupo Investigación Farmacoepidemiología y Farmacovigilancia, Universidad Tecnológica de Pereira-Audifarma S.A. and Biomedicina, Fundación Universitaria Autónoma de las Américas. Pereira, Colombia



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CO-43	11:45-12:05	<p>"TRANSMISSION BLOCKING STRATEGIES FOR VECTOR-BORNE DISEASES".</p> <p><b><u>Angélica Castellanos Sánchez</u></b>. VMD, PhD. Escuela de Bacteriología y Laboratorio Clínico de la Universidad del Valle/ Facultad de Ciencias Básicas USACA.</p>
CO-44	12:10-12:30	<p>"STATINS IN POLYMERIC NANOSUSPENSION ASSOCIATE TO SMALL PEPTIDES PROTECT NEURONAL CULTURES FROM OXYGEN-GLUCOSE DEPRIVATION (OGD) MODEL".</p> <p><b><u>Ángel Céspedes Rubio</u></b>. MVZ, MSc, PhD. Neurodegenerative Diseases Research Group. Toxicology and Pharmacology Laboratory. Animal Health Department. Universidad de Tolima. Colombia.</p>
	12:35-13:35	<b>ALMUERZO / LUNCH</b>
CONFERENCIA PLENARIA CP-07	13:40-14:10	<p>"RED CUBANA DE ENSAYOS CLÍNICOS. EXPERIENCIAS Y PERSPECTIVAS: SU CONTRIBUCIÓN AL DESARROLLO DE LA INDUSTRIA BIOFARMACÉUTICA CUBANA.</p> <p><b><u>María Acelia Marrero Miragaya</u></b>. MD, PhD. Centro Nacional Coordinador de Ensayos Clínicos" (CENCEC), Presidenta Sociedad Cubana de Farmacología. La Habana, Cuba.</p>
CO-45	14:15-14:35	<p>"SWITCHING OF BIOLOGICAL PRODUCTS IN THE TREATMENT OF PSORIASIS IN COLOMBIA".</p> <p><b><u>Luis Lezama-Rodríguez</u></b>, Roberto Torres-Guerrero, Pawell Ricardo, Deyci Angulo- Quisobony, Mauricio Palacios. Audifarma S.A. Cali, Colombia. Universidad del Valle. Cali, Colombia.</p>
CO-46	14:40-15:00	<p>"DOES METFORMIN POTENTIATE THE EFFECT OF SILDENAFIL IN THE TREATMENT OF EXPERIMENTAL PULMONARY HYPERTENSION?".</p> <p><b><u>Vicente Benavides Córdoba</u></b>; Silva M.; Castaño S.; Varela X.; Palacios M. Universidad del Valle. Cali. Valle del Cauca. Colombia</p>
CO-47	15:05-15:25	<p>"DRUG UTILIZATION STUDY IN THE EMERGENCY DEPARTMENT OF A HIGH COMPLEXITY HOSPITAL".</p> <p><b><u>Natalia P. Cárdenas</u></b>, López J, González A. National University of Colombia, Bogotá, Colombia.</p>
	15:30-15:45	<b>RECESO / COFFEE BREAK</b>
CO-48	15:30-15:45	<p>"DRUG REPURPOSING IN PULMONARY HYPERTENSION, A PROMISING THERAPEUTIC STRATEGY".</p> <p><b><u>Vicente Benavides Córdoba</u></b>. PT, PhD(c). Centro de Estudios Cerebrales, Facultad de Salud, Universidad del Valle, Cali, Colombia.</p>
CO-49	15:50-16:05	<p>"TABLET SPLITTING, RIGHT OR WRONG PRACTICE?".</p> <p><b><u>David Galvis Pareja</u></b>, QF, PhD. Universidad CES. Medellín. Colombia.</p>
CO-50	16:10-16:25	<p>"MYCOBACTERIUM TUBERCULOSIS AFTER IN VITRO EXPOSURE TO ISONIAZID".</p> <p><b><u>Luisa María Nieto</u></b>. PhD, USC. Docente de dedicación exclusiva. Gestora editorial. Facultad de Ciencias Básicas. Universidad Santiago de Cali. Colombia.</p>
CO-51	16:30-16:45	<p>"ANTIBIOTIC CONSUMPTION IN HEALTH CARE INSTITUTIONS IN CALI BETWEEN 2013 AND 2018".</p> <p><b><u>Jobany Castro Espinosa</u></b>, Saldarriaga E. Grupo de Investigación en Salud Pública (GISAP), Fundación Universitaria San Martín y Secretaría Departamental de Salud del Valle del Cauca. Santiago de Cali-Colombia.</p>
CO-52	16:50-17:05	<p>"LOS FACTORES GRE REGULAN LA EXPRESIÓN DEL BIOFILM EN SALMONELLA ENTERICA SEROVAR TYPHIMURIUM".</p>

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		<b><u>Tania Gaviria Cantín</u></b> . PhD, Universidad Santiago de Cali (USC). Cali, Colombia.
CO-53	17:10-25	"PROTOTYPING OF NATURAL INGREDIENTS". <b><u>José David Cárdenas-Nieto</u></b> <sup>1,2*</sup> , González JF <sup>1</sup> , Ramírez-Navas JS <sup>1,3,4</sup> . Grupo GBCP, Corporación Biotec. Nutrición y Dietética, Fac. Salud y Rehabilitación, Escuela Nacional del Deporte. 3 Grupo GIEMA, Facultad de Ciencias Básicas, Universidad Santiago de Cali. 4 Grupo GIPAB, Esc. Ing. Alim., Universidad del Valle. Cali, Colombia.
CO-54	17:30-17:45	"ANTIBIOTIC THERAPY IN ODONTOGENIC INFECTIONS". <b><u>Edison Castro Velasco</u></b> . DDS, Faculty of Health, Program of Dentistry, Santiago de Cali University, Cali, Colombia.
CO-55	17:50-18:10	"RESCRIPTION INDICATION ANALYSIS OF ANTHELMINTICS IN A SAMPLE OF COLOMBIAN PATIENTS". <b><u>María Camila Montes Montoya</u></b> . Grupo Investigación Farmacoepidemiología y Farmacovigilancia, Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia. <sup>2</sup> Biomedicina, Fundación Universitaria Autónoma de las Américas. Pereira, Colombia.

### SÁBADO 28 DE SEPTIEMBRE / SATURDAY , SEPTEMBER 28

	07:30-8:30	Café de bienvenida e inscripción de participantes / Welcome coffee and registration of participants.
SALA / ROOM "PARANINFO"		
CONFERENCIAS PLENARIAS / PLENARY LECTURES		
COORDINADORES / COORDINATORS		<b><u>Marian Hernández Colina</u></b> . PhD. Profesora Titular. Junta de Gobierno, Sociedad Cubana de Farmacología. Vice Rectora Docente. Universidad de La Habana. Cuba. <b><u>Jorge Enrique Machado Alba</u></b> . MD, PhD. Vicepresidente Asociación Colombiana de farmacología. Grupo Investigación Farmacoepidemiología y Farmacovigilancia, Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.
CP-08	08:30-09:00	"PHYTOMEDICINAL VERSUS PHARMACOLOGICAL TREATMENT OF CANCER: AN EPIGENETIC PERSPECTIVE". <b><u>Wim Vanden Berghe</u></b> . BBSc, PhD. Epigenetic Signaling lab (PPES), Department Biomedical Sciences, University Antwerp, Belgium.
CP-09	09:05-09:35	"NEW TRENDS IN THE QUALITY CONTROL OF VACCINES: ALTERNATIVE METHODS BASED ON 3RS AND BEYOND". <b><u>Mario Landys Chovel Cuervo</u></b> . PharmSc, MSc. Director de Control de la Calidad. Instituto Finlay de Vacunas, La Habana, Cuba.
CP-10	09:40-10:25	TERAPÉUTICA ONCOLÓGICA. NUEVOS ENFOQUES Y PARADIGMAS. <b><u>Conferencista. NOVARTIS</u></b> . Colombia.
	10:30-10:45	RECESO / COFFEE BREAK
	10:50-12:25	SIMPOSIOS (S), COMUNICACIONES ORALES (CO) Y CARTELES (P) / SYMPOSIA (S), ORAL COMMUNICATIONS (CO) AND POSTERS (P)

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<b>COORDINADORES / COORDINATORS</b>		<b><u>Wim Vanden Berghe</u></b> , BBSc, PhD. Head Epigenetic Signalling lab (PPES), Department Biomedical Sciences, University Antwerp, Belgium. <b><u>Idania Rodeiro Guerra</u></b> , Bioquim. PhD. Directora Científica. Instituto de Ciencias del Mar (ICIMAR), La Habana. Cuba.
<b>CONFERENCIA PLENARIA CP-11</b>	<b>10:50-11:20</b>	"VARIABLES DE DESENLAJE VALIDOS EN ESTUDIOS CLÍNICOS EN ONCOLOGÍA". <b><u>Abraham Hernández</u></b> , MD. Oncólogo. <b>ASTRAZENECA</b> , Colombia.
<b>CO-56</b>	<b>11:25-11:45</b>	"NUEVOS DESARROLLOS EN PATOLOGÍA FRECUENTES". <b><u>Henry Hidrobo Quintero</u></b> , MD, Oncólogo. HUV. UNIVALLE, Cali. Colombia.
<b>CO-57</b>	<b>11:50-12:10</b>	"NUEVA CLASIFICACIÓN EN ONCOLOGÍA. EPIDEMIOLOGIA DEL CANCER". <b><u>Luis Eduardo Bravo</u></b> , MD, Oncólogo, MSc. HUV. UNIVALLE, Cali. Colombia.
<b>CO-58</b>	<b>12:15-12:35</b>	"NUEVAS PROTEÍNAS, NUEVOS BLANCOS TERAPÉUTICOS". <b><u>Adalberto Sánchez</u></b> , Bio. MSc, PhD. HUV. UNIVALLE, Cali. Colombia.
	<b>12:35-13:30</b>	<b>ALMUERZO / LUNCH</b>
<b>CO-59</b>	<b>13:35-13:45</b>	"MARINE ORGANISMS: SOURCES FOR THE DEVELOPMENT OF NEW ANTITUMOR DRUGS IN THE POST-GENOMIC ERA". <b><u>Idania Rodeiro Guerra</u></b> et al. Bioquímica, PhD. Instituto de Investigaciones del Mar (ICIMAR), La Habana, Cuba.
<b>CO-60</b>	<b>13:50-14:05</b>	"LAS BUENAS PRÁCTICAS CLÍNICAS EN LA INVESTIGACIÓN EN CÁNCER". <b><u>Lyda Elena Osorio Amaya</u></b> , MD, MSc, PhD. HUV. UNIVALLE, Cali. Colombia.
<b>CO-61</b>	<b>14:10-14:25</b>	ADMINISTRACIÓN SEGURA DE MEDICAMENTOS ONCOLOGICOS. <b><u>Maria T Sardi</u></b> , Enf, MSc Oncología, PhD
<b>CO-62</b>	<b>14:30-14:45</b>	"FARMACOVIGILANCIA Y FARMACOEPIDEMIOLOGÍA DE LOS MEDICAMENTOS ONCOLÓGICOS". <b><u>Carlos Maldonado</u></b> , MD, MSc, PhD. Universidad Nacional de Colombia. Bogotá.
<b>CO-63</b>	<b>14:50-15:05</b>	"OBJECTIVE RESPONSE RATE IN MULTIPLE MYELOMA PATIENTS ACCORDING TO FIRST-LINE THERAPY REGIMEN". <b><u>Juan Esteban García-Robledo</u></b> , Lasso JF, Correa JD, Cortés N, Chaves S, Martínez V, Morales M, Herrera JM, Urrego M, Idrobo H Fundación Valle del Lili, Cali, Valle del Cauca, Colombia. Universidad Icesi, Cali, Valle del Cauca, Colombia ; and others institutions.
	<b>15:10-15:30</b>	<b>RECESO / COFFEE BREAK</b>
<b>CO-64</b>	<b>15:30-15:45</b>	"ORAL ADVERSE REACTIONS OF CHEMOTHERAPEUTIC DRUGS AT A CANCER INSTITUTION IN BARRANQUILLA-COLOMBIA 2019". <b><u>Ada Sofía Ramos Doval</u></b> <sup>1,2</sup> , Rebolledo M. <sup>1</sup> , Duran M. <sup>2</sup> <sup>1</sup> Metropolitana University, Barranquilla, Atlántico, Colombia. <sup>2</sup> Cartagena University, Cartagena, Bolívar, Colombia.
<b>CO-65</b>	<b>15:50-16:05</b>	"PREVALENCE OF PERIPHERAL NEUROPATHY ASSOCIATED WITH CANCER CHEMOTHERAPY IN FOUR ONCOLOGY CENTERS OF COLOMBIA, 2015-2016".

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		<b><u>Jorge Enrique Machado</u></b> . MD, PhD. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.
CO-66	16:10-16:25	"EVALUATION OF THE EXPRESSION OF KV10.1 AND P53 IN SIHA CELLS DURING THE GENERATION OF CISPLATIN RESISTANCE". <b><u>Yenny Yolanda Lozano Jiménez</u></b> , Rangel C., López C., Rodríguez J. Giraldo S. Universidad de La Salle, Bogotá, Colombia.
CONFERENCIA PLENARIA CP-12	16:30-17:00	"EFFECTS OF THE HUMAN MICROBIOMA ON THE ADMINISTRATION OF MEDICINES: IS ANOTHER BRANCH OF PHARMACOLOGY NECESSARY?" <b><u>Daniel Romero Urrea</u></b> . MD. Médico Cirujano – Universidad del Valle. Ciencias Biomédicas (Énfasis en Farmacología y Neurociencias). Universidad del Valle. Cali. Colombia. Gerente Médico, Dirección Médico Científica. Tecnoquímicas S.A.
	17:25-18:00	<b>DISCUSIÓN GENERAL</b>
	18:00-20:00	<b>AFILIADOS ACF. ASAMBLEA EXTRAORDINARIA ASOCIACIÓN COLOMBIANA DE FARMACOLOGÍA</b>

### SALA 2 / ROOM "AUDITORIO 401"

**SÁBADO 28 SEPTIEMBRE / SATURDAY , SEPTEMBER 28**

#### SIMPOSIO 07: "BIOTECNOLOGÍA e INMUNOFARMACOLOGIA. VACUNAS Y SUEROS".

COORDINADORES / COORDINATORS		<b><u>Mario Landys Chovel Cuervo</u></b> . Vice Presidente Sociedad Cubana de Farmacología. Director de Control de la Calidad, Instituto Finlay de Vacunas, La Habana, Cuba. <b><u>Reinaldo Acevedo Groques</u></b> , Directivo, Sociedad Cubana de Farmacología, Investigador. Coordinador de Proyectos. Instituto Finlay de Vacunas, La Habana, Cuba
CO-67	10:50-11:20	"OUTER MEMBRANE VESICLES: A PLATFORM FOR DEVELOPMENT OF ADJUVANT AND VACCINE FORMULATIONS". <b><u>Reinaldo Acevedo Groques</u></b> . PharmacSc, PhD, Post Doc. Instituto Finlay de Vacunas, La Habana, Cuba
CO-68	11:25-11:50	"RETOS TECNOLÓGICOS PARA LA CREACIÓN DE UNA PLATAFORMA PARA LA PRODUCCIÓN DE MEDICAMENTOS BIOSIMILARES EN COLOMBIA". <b><u>Jorge Alberto Vásquez</u></b> . BSc, MSc y PhD en Biotecnología
CO-69	11:55-12:20	"MODERNIZACIÓN DE LABORATORIOS PARA LA PRODUCCIÓN DE BIOFARMACÉUTICOS". <b><u>Johnatan Figueroa</u></b> . Ing Elec. Esp. MSc. SENA, Palmira.
	12:25-13:30	<b>ALMUERZO / LUNCH</b>
CO-70	13:35-14:00	"ADVERSE REACTIONS ASSOCIATED WITH THE USE OF BIOTECHNOLOGICAL DRUGS IN COLOMBIA". <b><u>Jorge Enrique Machado Alba</u></b> . MD, PhD. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.
CO-71	14:05-14:35	"PERTUSSIS CONTEXT AND THE NEED OF A NEW GENERATION OF VACCINES". <b><u>Mario Landys Chovel Cuervo</u></b> . PharmacSc, MSc. Instituto Finlay de Vacunas, La Habana, Cuba.
CO-72	14:40-15:05	ADVERSE REACTIONS TO SNAKE ANTIVENOM, AND THEIR DRUG SURVEILLANCE

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		<u>Lina María Peña</u> . MD Toxicóloga clínica. Universidad de Antioquia. Medellín. Colombia.
	15:10-15:30	<b>RECESO / COFFEE BREAK</b>
CO-73	15:35-16:00	"EL ACCIDENTE OFÍDICO EN COLOMBIA: DE LA FARMACOLOGÍA A LA TERAPÉUTICA". <u>Francisco Javier Ruiz</u> . Med Vet, Instituto Nacional de Salud. Colombia.
CO-74	16:05-16:30	"MOLECULAR EVOLUTION AND BIOINFORMATICS TOOLS FOR PRODUCING RECOMBINANT PROTEINS TO BE USED IN MEDICAL AND PHARMACEUTICAL APPLICATIONS". <u>Diego Fernando Mejía C.</u> , PhD. Profesor asistente, Departamento de Ciencias Básicas. Coordinador Oficina de Gestión Ambiental. Universidad Nacional de Colombia, Sede Palmira.
CO-75	16:35-17:00	"OUTER MEMBRANE VESICLES EXTRACTED FROM NEISSERIA MENINGITIDIS SEROGROUP X FOR PREVENTION OF MENINGOCOCCAL DISEASE IN AFRICA". <u>Reinaldo Acevedo Groques</u> , Zayas C, Gunnstein N <sup>2</sup> , Fernandez S, Cedre B, Aranguren Y, Gonzalez H, Hernandez M, Rosenqvist E <sup>2</sup> , Naess L <sup>2</sup> , Tunheim G <sup>2</sup> , Cardoso D, Garcia L. Instituto Finlay de Vacunas, La Habana, Cuba. <sup>2</sup> Norwegian Institute of Public Health, Oslo, Norway.
CO-76	17:05-17:30	"ADVERSE EFFECTS OF TETANUS TOXOID VACCINE IN NEIVA, COLOMBIA: A CASE REPORT". Sánchez, Camila, <u>Laverde, Luis</u> . Fundación universitaria Navarra - Uninavarra, Uninavarra, Neiva, Huila, Colombia.
CO-77	17:35-18:00	"ESTUDIO DE TOXINAS PARA EL DESARROLLO DE NUEVOS MEDICAMENTOS". <u>Santiago Castaño</u> . Universidad del Valle. Cali. Colombia.

### SALA 3 / ROOM "AUDITORIO 402"

**SÁBADO 28 SEPTIEMBRE / SATURDAY , SEPTEMBER 28**

### SIMPOSIO 08: "FARMACOLOGÍA Y TERAPÉUTICA DE TRASTORNOS ENDOCRINO METABÓLICOS Y OBESIDAD"

COORDINADORES / COORDINATORS		<u>Audrey Mary Matallana</u> . MD, Cirujano. Pediatra. Endocrinóloga. Hospital, Universitario del Valle. Expresidente de la ACEP y de la SLEP. Universidad del Valle. Cali. Colombia. <u>Helen Carolina Patiño</u> . MD. Pediatra. Endocrinóloga Pediátrica de la Universidad de Buenos Aires. Médico Universidad Santiago de Cali. Endocrinóloga Pediatra. Hospital Universitario del Valle. Cali. Colombia.
CO-78	10:50-11:15	"TREATMENT OF DIABETES MELLITUS IN PEDIATRICS" <u>Audrey Mary Matallana</u> MD. Pediatra Endocrinóloga , Hospital Universitario del Valle. Departamento de Pediatría. Escuela de Medicina. Universidad del Valle, Cali , Colombia.
CO-79	11:10-11:35	"METFORMINA EN SÍNDROME METABÓLICO". <u>Isaac Arbelaes</u> . Universidad Javeriana./ Tecnoquímicas. Cali. Colombia.
CO-80	11:40-12:05	"OSTEOGENESIS IMPERFECTA AND BIPHOSPHONATE THERAPY IN CHILDREN AND ADOLESCENTS". <u>Helen Carolina Patiño</u> . MD. Especialista en Pediatría. Especialista en Endocrinología Pediátrica de la Universidad de Buenos Aires. Médico, Universidad Santiago de Cali. Endocrinóloga Pediatra. Hospital Universitario del Valle. Cali. Colombia.



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CO-81	12:10-12:30	<p>"HYPOGLYCEMIC ACTIVITY OF A COORDINATION COMPOUND BASED ON METFORMINE AND COPPER(II) IN A DIABETES MELLITUS MOUSE MODEL".</p> <p><u>Rosa Elena Arroyo-Carmona</u>, <u>Albarado-Ibañez A.</u>, Limón-Cantú M., Bernabé-Sánchez D., Torres-Jácome Julián,*, Reyes-Ortega Y., Pérez-Benítez A.* Facultad de Ciencias Químicas, Benemérita Universidad Autónoma de Puebla, Puebla., México.</p>
	12:35-13:30	ALMUERZO / LUNCH
<p style="text-align: center;"><b>SALA 3 / ROOM "AUDITORIO 402"</b></p> <p style="text-align: center;"><b>SÁBADO 28 SEPTIEMBRE / SATURDAY , SEPTEMBER 28</b></p> <p style="text-align: center;"><b>SIMPOSIO 09: "ACCESO A MEDICAMENTOS.</b></p> <p style="text-align: center;"><b>UNA OPORTUNIDAD DE INNOVACIÓN EN SALUD".</b></p>		
COORDINADORES / COORDINATORS		<p><u>Adriana Núñez Cabrera.</u> MSc. Phoenixem Dynamics of Welfare. PhD</p> <p><u>Jhonatan Venegas.</u> QF, Farmacología. UNAL.</p>
CO-82	13:35-13:45	<p>"NURSING INTERVENTIONS AIMED AT IMPROVING SAFETY IN THE USE OF MEDICINES.</p> <p><u>Magda Vianneth Solano Roa.</u> Enf. Mg en Farmacología. Profesor Asistente. Fundación Universitaria CAFAM.</p>
CO-83	13:50-14:05	<p>"RESULTS OF THE TRAINING FOR GOOD USE OF MEDICINES IN THE PHARMACOLOGY CHAIR IN MEDICINE STUDENTS".</p> <p><u>Álvaro Vallejos</u>, Sanabria JD, Lamilla CA, Camargo DF, Navarrete A, Suárez L. Fundación Universitaria de Ciencias de la Salud – FUCS, Carrera 18 No. 10-13-56, Bogotá D.C, Colombia.</p>
CO-84	14:10-14:25	<p>"COLOMBIA AND THE PHARMACEUTICAL GEOGRAPHIES FROM THE SOUTH: GENERICS, PATENTS SYSTEM AND ACCESS TO HEALTH IN THE 1960S".</p> <p><u>Víctor Manuel García.</u> Historian, MasterEM "Dynamics of Health and welfare" and PhD Candidate (EHESS-Cermes3-France). Profesor Asistente. Departamento de Humanidades. Universidad El Bosque, Bogotá, Colombia.</p>
CO-85	14:30-14:45	<p>"DETERMINANTES DE LA INNOVACIÓN SOCIAL EN SALUD PÚBLICA PARA EL ACCESO A MEDICAMENTOS".</p> <p><u>Adriana Núñez Cabrera.</u> Mic Lab, MSc. Phoenixem Dynamics of Welfare/ PhD</p>
CO-86	14:50-15:05	<p>"CADENA DE SUMINISTRO COLABORATIVO PARA MEDICAMENTOS".</p> <p><u>Helena Cancelado C.</u> MD. Ingeniera Industrial. Universidad de ICESI. Cali. Colombia.</p>
	15:10-15:30	RECESO / COFFEE BREAK
CO-87	15:30-15:45	<p>"EL ROL DE LAS UNIVERSIDADES EN LATINOAMÉRICA EN EL ACCESO A MEDICAMENTOS".</p> <p><u>Jhonatan Venegas.</u> QF, Farmacología. UNAL. Bogota</p>
CO-88	15:50-16:05	<p>"PREVALENCE OF POLYPHARMACY IN COLOMBIA 2018".</p> <p><u>Alfredo Portilla Pinzón</u><sup>1</sup>, Torres D.<sup>2</sup> González N.<sup>3</sup>, Buitrago J.<sup>3</sup>, Herrera S.<sup>3</sup></p> <p><sup>1</sup>MsC. Farmacología, MsC epidemiología, FUCS Bogotá DC. Colombia</p> <p><sup>2</sup>Director de la gerencia de investigación farmacoepidemiológica de Audifarma S.A. 3 Semillero de investigación de Farmacología, FUCS Bogotá DC. Colombia.</p>
CO-89		<p>"USE OF ANTIBIOTICS ACCORDING AWARE CLASSIFICATION IN COLOMBIA 2018".</p>

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		<b><u>Alfredo Portilla Pinzón</u></b> , Torres D., González N., Buitrago J., Herrera S. FUCS Bogotá DC. Colombia. Director de la gerencia de investigación farmacoepidemiológica de Audifarma S.A. Semillero de investigación de Farmacología, FUCS Bogotá DC. Colombia.
CO-90	16:30-16:45	"PROFILE OF ANTICOAGULANT USE IN HOSPITALIZED PATIENTS, PHARMACOLOGICAL INTERACTIONS AND ADVERSE REACTIONS IDENTIFIED". <b><u>Álvaro Vallejos</u></b> , Bello A., Domínguez M. Álvaro Vallejos Narváez, Fundación Universitaria de Ciencias de la Salud – FUCS, Carrera 18 No. 10-13-56, Bogotá D.C, Colombia
CO-91	16:50-17:05	IMPORTANCE OF MOLECULAR STABILITY IN PHARMACEUTICS ESTABLISHMENTS AND THEIR THERAPEUTIC ACTION. <b><u>Javier Orozco</u></b> <sup>1</sup> . Bermeo M <sup>2</sup> <sup>1</sup> Especialista / Profesor, Universidad Santiago de Cali, Cali. Valle del Cauca, Colombia. <sup>2</sup> Magister / Profesor, Universidad Santiago de Cali, Cali, Valle del Cauca, Colombia
	17:10-17:50	<b>DISCUSION GENERAL</b>

**SALA 4 / ROOM "PARANINFO 2. Parte Superior"**  
**SÁBADO 28 SEPTIEMBRE / SATURDAY, SEPTEMBER 28**

**SALA 04 (PARANINFO 2): CARTELES / POSTERS**  
**PRESENTACIÓN ORAL CORTA (10 minutos cada presentación)**

<b>COORDINADORES / COORDINATORS</b>		<b><u>Ivanoba Pardo Herrera y Catalina Estrada González.</u></b> Profesoras. Universidad Santiago de Cali. Cali. Colombia.
PO-01	10:50-11:00	"PRESCRIPTION PATTERN OF ANTICHOLINERGIC DRUGS IN ALZHEIMER'S DISEASE PATIENTS, COLOMBIA". <b><u>Luis Fernando Valladales Restrepo</u></b> , MD. MSc. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.
PO-02	11:00-11:10	"INFLUENCING FACTORS IN THE DISCONTINUATION, CHANGE, OR FAILURE OF HORMONAL CONTRACEPTION AMONG A UNIVERSITY POPULATION IN TUNJA, BOYACÁ, COLOMBIA, 2018". <b><u>Carlos Alberto Niño-Avenida</u></b> , Vargas-Rodríguez L., González -Jiménez N.* Universidad Pedagógica y Tecnológica de Colombia, Tunja, Boyacá, Colombia.
PO-03	11:10-11:20	"PRESCRIPTION PATTERNS AND INDICATIONS OF FLUOROQUINOLONES IN A GROUP OF AMBULATORY PATIENTS IN COLOMBIA". <b><u>Manuel Enrique Machado Duque</u></b> , MD. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.
PO-04	11:20-11:30	"POTENTIALLY INAPPROPRIATE PRESCRIPTIONS OF ANTICHOLINERGIC MEDICATIONS IN PATIENTS WITH CLOSED-ANGLE GLAUCOMA". <b><u>Luis Fernando Valladales Restrepo</u></b> , MD. MSc. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.
PO-05	11:30-11:40	"MANAGEMENT OF RESIDUES OF MEDICINES GENERATED IN HEALTH INSTITUTIONS". <b><u>Ivanoba Pardo Herrera</u></b> , Estrada C., Pardo A. Universidad Santiago de Cali. Cali. Colombia.
PO-06	11:40-11:50	"REMINEERALIZATION OF DENTAL ENAMEL WITH COCONUT OIL AND FLUORINE VARNISH IN CHILDREN".

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XXII CONGRESO LATINOAMERICANO DE FARMACOLOGIA  
XVII CONGRESO COLOMBIANO DE FARMACOLOGIA Y TERAPEUTICA

CENTRO DE CONVENCIONES, UNIVERSIDAD LIBRE "VALLE DEL LILI"

Santiago de Cali, Colombia. 26-29 de septiembre, 2019

Sitio web: <http://latinfarma2019.com> / [www.asocolfarma.com](http://www.asocolfarma.com)

		<b><u>Myriam Bermeo de Rubio</u></b> , Arias G., Motlak M., Rangel Bryan., Millán J., Pardo I. Universidad santiago de Cali. Cali. Colombia.
PO-07	12:00-12:10	"POTENTIALLY INAPPROPRIATE ANTICHOLINERGIC DRUG PRESCRIPTIONS FOR PATIENTS WITH SJÖGREN'S SYNDROME". <b><u>Luis Fernando Valladales Restrepo</u></b> , MD. MSc. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.
PO-08	12:10-12:20	"AN ELECTROPHYSIOLOGICAL APPROACH TO DETECT PALLYTOXIN-LIKE EFFECT FROM <i>Palythoa caribaeorum</i> EXTRACTS". <b><u>Katherine Medina-Ortiz</u></b> <sup>1</sup> , Santiago Castaño <sup>2</sup> <sup>1</sup> PhD Student, Department of Physiological Sciences. Faculty of Health. Universidad del Valle, <sup>2</sup> PhD, Department of Physiological Sciences. Faculty of Health. Universidad del Valle, Cali. Colombia.
PO-09	12:20-12:30	"POTENTIALLY INAPPROPRIATE PRESCRIPTIONS FOR ANTICHOLINERGIC MEDICATIONS FOR PATIENTS WITH CONSTIPATION". <b><u>Luis Fernando Valladales Restrepo</u></b> , MD. MSc. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.
	12:30-13:30	<b>ALMUERZO / LUNCH</b>
PO-10	12:35-12:45	"PHARMACOTHERAPEUTIC FOLLOW-UP AS A FACTOR ASSOCIATED WITH THE VITAL STATE OF HOSPITAL DISCHARGE IN TERTIARY CARE CENTER". <b><u>Yuri Zulim López-Guerra</u></b> , Pérez-Agudelo JM. Audifarma S.A, Manizales, Caldas – Colombia. Caja de Compensación Familiar de Caldas – Clínica San Marcel, Manizales – Caldas – Colombia.
PO-11	12:45-12:55	"ADEQUATE INTERVENTION IN A PATIENT WITH POLYPHARMACY: CASE STUDY". <b><u>Nicolás Blanco</u></b> , Arevalo H. A., Laverde L. A. Fundación Universitaria Navarra – Uninavarra.
PO-12	12:55-13:05	"POST SURGICAL PAIN MANAGEMENT IN PATIENTS WITH RENAL TRANSPLANTATION WITH PHARMACOLOGICAL VS NON-PHARMACOLOGICAL INTERVENTION". <b><u>Jéssica López Peláez</u></b> , Cañadas L, Gomez L, Henao C. Research Professor, Universidad Santiago de Cali, Calle 5 # 62-00, Cali, Valle del Cauca, Colombia.
PO-13	13:05-13:15	"IN VITRO INHIBITION OF ANGIOTENSIN-CONVERTING ENZYME WITH EXTRACTS OF JATROPHA GOSSIPYFOLIA AND HELIOTROPICUM INDICUM". <b><u>Marlene Durán Lengua, Cristina Bohórquez Moreno</u></b> . PhD. University of Cartagena, Cartagena, Colombia.
PO-14	13:15-13:25	"ENZYMATIC-COLORIMETRIC BIOASSAY TO STUDY GLUCOSE CONSUMPTION IN 3T3-L1 ADIPOSE CELLS". <b><u>Paola Andrea Rivera Díaz</u></b> , Gómez C. Departamento de Farmacia, Universidad Nacional de Colombia, sede Bogotá. Bogotá, Colombia.
PO-15	13:25-13:35	"CHEMOINFORMATIC ANALYSIS OF AGONISTS AND ANTAGONIST OF THE TRANSCRIPTIONAL REGULATORS OF LasR, PqsR and RhIR IN <i>Pseudomonas aeruginosa</i> ". <b><u>Daniel Felipe Victoria</u></b> , López-Vallejo F. Universidad Nacional de Colombia, Bogotá D.C., Colombia
PO-16	13:35-13:45	"EFFECTS ON THE ORAL CAVITY OF MEDICATIONS USED IN PATIENTS WITH PSYCHIATRIC DISORDERS". <b><u>Ana Cecilia Pardo Herrera</u></b> , Pardo I., Estrada C. Universidad Santiago de Cali, Calle 5 # 62-00, Cali, Valle del Cauca, Colombia

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PO-17	13:45-13:55	<p>"RELATED HABITS IN THE PRACTICE OF SELF-MEDICATION IN ADOLESCENTS".</p> <p><b><u>Dolly Villegas Arenas</u></b>, Luz Adriana Meneses Urrea. Enf. MsC. Profesora Cátedra, Programa Académico de Enfermería, Facultad de Salud, Universidad Santiago de Cali. Cali, Valle del Cauca, Colombia.</p>
PO-18	13:55-14:05	<p>"SMOKING IN ADOLESCENTS IN PALMIRA, COLOMBIA 2018, CROSS-SECTIONAL STUDY".</p> <p><b><u>Sandra Patricia Moreno Reyes, Freiser Eceomo Cruz Mosquera</u></b>, Ángela Mayerly Cubides Munevar. Santiago de Cali University ; San Martin University. Integral Health Research Group. Cali. Colombia.</p>
PO-19	14:05-14:15	<p>"PROBIOTICS AND PREBIOTICS IN CHILDREN'S DIARRHEA: CASE L. rhamnosus GG".</p> <p><b><u>Katerine Rojas-Renjifo</u></b><sup>1,2*</sup>, Urrego LM<sup>1</sup>, Ramírez-Navas JS<sup>2,3,4</sup></p> <p><sup>1</sup>Nutrición y Dietética, Fac. Salud y Rehabilitación, Escuela Nacional del Deporte. <sup>2</sup>Grupo GBCP, Corporación Biotec. <sup>3</sup>Grupo GIEMA, Facultad de Ciencias Básicas, Universidad Santiago de Cali. <sup>4</sup>Grupo GIPAB, Esc. Ing. Alim., Universidad del Valle.</p>
PO-20	14:15-14:25	<p>"DETECCIÓN DE RIESGOS ASOCIADOS A LA TERAPIA ANTIMICROBIANA DE UN PACIENTE HOSPITALIZADO CON POLIFARMACIA".</p> <p><b><u>Álvaro Vallejos</u></b><sup>1</sup>, Salazar D.<sup>2</sup>, Bogoyá C.<sup>3</sup>, Buitrago N.<sup>3</sup>, Mahecha D.<sup>3</sup>, Palacios P.<sup>3</sup> Piñeros N.<sup>3</sup></p> <p><sup>1</sup>Jefe de cátedra de farmacología - Fundación Universitaria de Ciencias de la Salud (FUCS), Bogotá, Colombia. <sup>2</sup>Estudiante IX semestre medicina - Fundación Universitaria de Ciencias de la Salud (FUCS), Bogotá, Colombia. <sup>3</sup>Estudiante V semestre medicina - Fundación Universitaria de Ciencias de la Salud (FUCS), Bogotá, Colombia.</p>
PO-21	14:25-14:35	<p>"PHARMACOLOGICAL MANAGEMENT IN ODONTOGENIC ABSCESES AT THE FIRST LEVEL OF CARE".</p> <p><b><u>Norayda Franco Fuentes</u></b>, Castro E <sup>2</sup>.Pardo I <sup>3</sup></p> <p><sup>1</sup> Magister / Profesor, Universidad Santiago de Cali, Calle 5 # 62-00, Cali, Valle del Cauca, Colombia. <sup>2</sup> Especialidad Medico Quirúrgica / Profesor, Universidad Santiago de Cali, Calle 5 # 62-00, Cali, Valle del Cauca, Colombia. <sup>3</sup> Doctorado / Profesor, Universidad Santiago de Cali, Calle 5 # 62-00, Cali, Valle del Cauca, Colombia</p>
PO-22	14:35-14:45	<p>"ADVERSE EVENTS OF DIPYRONE: HYPOXIC ENCEPHALOPATHY. CLINICAL CASE".</p> <p><b><u>Alejandro Botero Carvajal</u></b>, Jimenez Urrego, A. M., Cubides Munebar, A.M.*</p> <p>Universidad Santiago de Cali; Universidad San Buenaventura; Universidad San Martín, Cali, Valle, Colombia.</p>
PO-23	14:45-14:55	<p>"TYPE 1 DIABETES AND INSULIN CONTINUOUS SUBCUTANEOUS INFUSION THERAPY".</p> <p><b><u>Rosa N. Zambrano</u></b><sup>1</sup>. López Y<sup>2</sup>. Rivera V<sup>2</sup></p> <p><sup>1</sup>Doctorate / Professor, <sup>2</sup>Magister / Professor, Universidad Santiago de Cali, Cali, Valle del Cauca, Colombia.</p>
	15:00-15:30	RECESO / COFFEE BREAK
PO-24	15:35-15:45	<p>"IMPLEMENTATION OF A RISK MANAGEMENT MODEL IN PATIENTS WITH REUMATOID ARTHRITIS WHO RECEIVE THERAPY WITH DISEASE MODIFIER DRUGS IN A SPECIALIZED CENTER OF THE CITY OF BARRANQUILLA, COLOMBIA".</p> <p><b><u>Belkis Palacio Villalba</u></b>, González, J., Manrique, E. Durán, M. Pereira, I., Caballero, E. University of Cartagena, Zaragocilla, Cartagena, Colombia.</p>

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PO-25	15:45-15:55	"VIRTUAL SCREENING OF PHYSALIN ANALOGUES AS POTENTIAL INHIBITORS OF TRYPAOSOMA CRUZI". <b><u>Neyder Contreras-Puentes</u></b> , <b><u>Daimer Pérez-Orozco</u></b> , Dilia Aparicio Marengo Universitary Corporation Rafael Nuñez, Cartagena, Colombia
PO-26	15:55-16:05	"PHARMACOLOGICAL TREATMENT OF FIBROMYALGIA". <b><u>Diana Yesenia Pinzón</u></b> , Lopez J, A. Universidad Nacional de Colombia, Cr 69N # 63A-12, Bogotá, Colombia.
PO-27	16:05-16:15	"PHARMACOVIGILANCE IN ANTIBIOTICS 2007-2017 IN A HOSPITAL OF HIGH LEVEL OF COMPLEXITY OF MEDELLIN COLOMBIA". <b><u>Paola A. Castaño Arias</u></b> ., Angulo Castañeda N., Gonzalez K., Duarte G., Galeano Y. Lopez J. Jaramillo N., Rodriguez K., Oquendo H.*. University of Antioquia/Clínica Leon XIII, Medellin, Antioquia, Colombia.
PO-28	16:15-16:25	"ETIOLOGY AND PROFILE OF ANTIMICROBIAL RESISTANCE IN PATIENTS WITH URINARY INFECTION OF A HEALTH INSTITUTION OF THIRD LEVEL OF CARTAGENA, COLOMBIA JANUARY 2016- JUNE 2019". <b><u>Elin Y. Manrique</u></b> , Palacio, B., Pimienta, J., Durán, M. University of Cartagena, Zaragocilla, Cartagena, Colombia.
PO-29	16:25-16:35	"DRESS SYNDROME ASSOCIATED WITH PHENYTOIN" <b><u>Álvaro Vallejos Narváez</u></b> , Canal J , Acelas G , Pérez J , Salazar D , Rojas D 6, García A. Fundación Universitaria de Ciencias de la Salud – FUCS, Bogotá, Colombia.
PO-30	16:35-16:45	"EFFECTS OF KIWI ON ORAL CAVITY: ANTIBACTERIAL AND ANTI INFLAMMATORY". <b><u>Myriam Bermeo de Rubio</u></b> , Pardo-Herrera I, Gaviria T, Nieto L. Universidad Santiago de Cali, Calle 5 # 62-00, Cali, Valle del Cauca, Colombia
PO-31	16:45-16:55	"STORAGE OF DRUGS IN HOUSES OF A COMMUNE IN SANTIAGO DE CALI". <b><u>Jobany Castro Espinosa</u></b> , Mina Arboleda DM, Quiñones Góngora JS , Guerrero López EY, Díaz González DMy Parra Gutiérrez M. Grupo de Investigación en Educación en Salud (GINEYSA). Universidad Santiago de Cali, Valle del Cauca, Santiago de Cal, Colombia. Semillero de Investigación en Farmacia (SEINFAR). Universidad Santiago de Cali, Valle del Cauca, Santiago de Cali, Colombia.
PO-32	16:55-17:05	"FREE TIME AND THE CONSUMPTION OF ALCOHOL IN SCHOOL TEENS IN CALI, COLOMBIA, PHENOMENOLOGICAL STUDY". <b><u>Claudia Lorena Perlaza</u></b> , <b><u>Freiser Eceomo Cruz Mosquera</u></b> . Santiago de Cali University. Integral Health Research Group. Cali. Colombia.
PO-33	17:05-17:15	"CONDITIONS OF ANTIDEPRESSANTS AND BRONCHODILATORS IN THE SWALLOWING OF OLDER ADULTS". <b><u>Mónica Yohana Perdomo Galindo</u></b> , <b><u>Edward Javier Ordóñez</u></b> Universidad Santiago de Cali. Cali. Valle del Cauca, Colombia
	17:20-18:30	<b>DISCUSION GENERAL</b>



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COORDINATORS**

**Octavio Piñeros**. MD, MSc. Presidente de la Asociación Colombiana de Farmacología y de la Asociación Latinoamericana de Farmacología (ALF). Universidad del valle, Cali. Colombia.

**René Delgado Hernández** (PhD), Past President "Sociedad Cubana de Farmacología", Vicepresidente, Asociación Latinoamericana de farmacología. Instituto de Farmacia y Alimento (IFAL), Universidad de La Habana (UH), La Habana, Cuba.

**CP-13:**

08:30-09:00

EMERGING STRATEGIES FOR NEUROPATHIC PAIN TREATMENT. BREAKING BARRIERS TO NOVEL ANALGESIC DRUGS DEVELOPMENT.

**Bárbara Beatriz Garrido Suárez**. MD. PhD. Especialista en Anestesiología. Coordinadora Capítulo de la IASP, Cuba. (Asociación Internacional de Estudios del Dolor), Instituto de Ciencias del Mar (ICIMAR), La Habana, Cuba.

**CP-14**

09:05-09:35

PHARMACOGENETICS AND HERBAL MEDICINES.

**Diadelis Remirez Figueredo**. Bioquímica. PhD. Centro Nacional para el Control Estatal de Medicamentos, Equipos y Dispositivos Médicos. Agencia Cubana de Medicamentos. (CECMED). La Habana, Cuba.

09:40-10:00

**RECESO / COFFEE BREAK**

10:00-13:00

**SIMPOSIOS (S), COMUNICACIONES ORALES (CO) Y CARTELES  
ORALES (PO) / SYMPOSIA (S), ORAL COMMUNICATIONS (CO) AND  
POSTERS ORALES (PO)****SALA / ROOM "PARANINFO 1" DOMINGO 29 SEPTIEMBRE / SUNDAY , SEPTEMBER 29****SIMPOSIO 10: "FARMACOEPIDEMIOLOGIA Y FARMACOVIGILANCIA"****COORDINADORES /  
COORDINATORS**

**Jorge Enrique Machado Alba**. MD, PhD. Grupo Investigación Farmacoepidemiología y Farmacovigilancia, Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.

**Maria Acelia Marrero Miragaya**. MD, PhD. Presidenta Sociedad Cubana de Farmacología. Coordinadora de Proyectos. Centro Nacional Coordinador de Ensayos Clínicos (CENCEC), La Habana, Cuba.

**CO-92**

10:05-10:20

USE OF NON-VITAMIN K ANTAGONIST ORAL ANTICOAGULANTS IN PATIENTS WITH NON-VALVULAR ATRIAL FIBRILLATION IN COLOMBIA.

**Jorge Enrique Machado Alba**. MD, PhD. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.

**CO-93**

10:25 - 10:40

CLINICAL CHARACTERISTICS AND RESOURCE USE OF SYSTEMIC LUPUS ERYTHEMATOSUS IN COLOMBIA.

Machado-Alba JE\*, Machado-Duque ME., **Andrés Gaviria-Mendoza**, González A., Duarte-Rey. Grupo Investigación Farmacoepidemiología y Farmacovigilancia, Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia. Biomedicina, Fundación Universitaria Autónoma de las Américas. Pereira, Colombia. GlaxoSmithKline, Bogotá, Colombia.

**CO-94**

10:45-11:00

POTENTIALLY INAPPROPRIATE PRESCRIPTIONS OF ANTICHOLINERGIC DRUGS IN PATIENTS WITH BENIGN PROSTATIC HYPERPLASIA.

**Luis Fernando Valladales Restrepo**. MD. MSc. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.

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CO-95	11:05-11:20	IDENTIFICATION AND ANALYSIS OF ADVERSE DRUG REACTIONS (ADRs) TO ANTIRETROVIRALS IN PATIENTS WITH HIV/AIDS AND PREDICTION OF CAUSALITY USING BIOINFORMATIC TOOLS. <b><u>Martín Luis Alvis Serrano</u></b> . (Alvis, M.1, González, T.2, Durán, M. 4 *Alviz, A.3). Universidad de Cartagena, Zaragocilla, Cartagena, Colombia.
CO-96	11:25-11:40	FACTORS RELATED TO EXCESSIVE POLYPHARMACY IN A COLOMBIAN POPULATION. <b><u>Andres Gaviria Mendoza</u></b> . Grupo Investigación Farmacoepidemiología y Farmacovigilancia, Universidad Tecnológica de Pereira-Audifarma S.A. and Biomedicina, Fundación Universitaria Autónoma de las Américas. Pereira, Colombia.
CO-97	11:45 -12:00	INSULIN PRICES IN COLOMBIA: A LONGITUDINAL ANALYSIS <b><u>Fabian A. Hernández</u></b> <sup>1</sup> , Galvis MF <sup>1</sup> , Currea N <sup>1</sup> , Zapata JD <sup>1</sup> , Venegas J <sup>1</sup> , Vaca C <sup>2</sup> <sup>1</sup> Universities Allied for Essential Medicines, Chapter Universidad Nacional de Colombia, Sede Bogotá. <sup>2</sup> Pharmacy Department, Universidad Nacional de Colombia, Sede Bogotá. Colombia.
CO-98	12:05-12:20	ADVERSE EVENTS IN DENTAL PROCEDURES RELATED TO MEDICATION. <b><u>Catalina Estrada González</u></b> . (Estrada C., Pardo I.) Universidad Santiago De Cali, Colombia.
CO-99	12:25-12:40	PHARMACOLOGICAL TREATMENT AND INAPPROPRIATE PRESCRIPTIONS IN PATIENTS WITH ERECTILE DYSFUNCTION. <b><u>Luis Fernando Valladales Restrepo</u></b> . MD. MSc. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.
CO-100	12:45-13:00	SEROTONINERGIC SYNDROME (SS) <b><u>Clara Inés Manrique</u></b> . MD, Toxicóloga Clínica. CES. Medellín, Colombia
CEREMONIA DE CLAUSURA	13:00-14:00	<b>CEREMONIA DE CLAUSURA. RELATORIA Y PREMIACIONES. PRESENTACION DE LA NUEVA DIRECCION DE LA ASOCIACION LATINOAMERICANA DE FARMACOLOGIA (ALF) PERIODO 2020-2021. PRESENTACION DE LA CONVOCATORIA AL XXIII CONGRESO LATINOAMERICANO DE FARMACOLOGIA.</b>
<b>SALA 2 / ROOM "AUDITORIO 401"</b>		
<b>DOMINGO 29 SEPTIEMBRE / SUNDAY , SEPTEMBER 29</b>		
<b>SIMPOSIO 11: "SEGURIDAD Y EFICACIA. BIOTECNOLÓGICOS EN DERMATOLOGÍA"</b>		
COORDINADORES / COORDINATORS		<b><u>Celine Blanche</u></b> . BSc, MSc I&R Productos Cosméticos. CB Consulting SAS. Francia. <b><u>Rafael Enrique Campo Misas</u></b> . QF, MSc. Presidente Colegio Nacional de Químicos Farmacéuticos. Unidad Regional Valle del Cauca. Cali. Colombia.
CO-101	10:05-10:35	"DERMATOLOGÍA FARMACOLÓGICA. PATOLOGÍAS FRECUENTES". <b><u>Vanesa Eugenia Echeverry Morales</u></b> . MD. Dermatologa. HUV. UniValle. Cali. Colombia.
CO-102	10:40-11:10	"STUDIES AND METHODS FOR THE EFFICACY EVALUATION OF DERMATOLOGICAL PRODUCTS". <b><u>Celine Blanche</u></b> . BSc, MSc I&R Productos Cosméticos. CB Consulting SAS. Francia.
CO-103	11:15-11:45	"ASSESSMENT OF THE SAFETY OF DERMATOLOGICAL PRODUCTS". <b><u>Celine Blanche</u></b> . BSc, MSc I&R Productos Cosméticos. CB Consulting SAS. Francia.
CO-104	11:50-12:20	"DERMATOCOSMÉTICOS Y COSMECÉUTICOS. EXPORTACIÓN Y REGULACIONES".

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		<b><u>Rafael Enrique Campo Misas</u></b> , QF, MSc. Presidente Colegio Nacional de Químicos Farmacéuticos. Unidad Regional Valle del Cauca. Cali. Colombia.
CO-105	12:25-12:55	<p>"FACIAL BIOSTIMULATION WITH PLATELET RICH PLASMA ACTIVATED WITH OZONE RESOUND ON CELLULAR REDOX BALANCE, IMPROVES LIPOATROPHY AND QUALITY OF LIFE IN HIV PATIENTS".</p> <p><b><u>Lizette Gil del Valle</u></b> (PhD). Directivo, Sociedad Cubana de Farmacología, Instituto de Medicina Tropical "Pedro Kouri", (IPK), La Habana, Cuba</p>
		DISCUSIÓN GENERAL
<b>SALA 3 / ROOM "AUDITORIO 402"</b> <b>DOMINGO 29 SEPTIEMBRE / SUNDAY , SEPTEMBER 29</b>		
<b>SIMPOSIO 12: "LA ENSEÑANZA EN FARMACOLOGÍA: EL RETO DE LA INNOVACIÓN"</b>		
<b>COORDINADORES / COORDINATORS</b>		<p><b><u>Marian Hernández Colina</u></b>, PhD. Profesora Titular. Junta de Gobierno, Sociedad Cubana de Farmacología. Vice Rectora Docente. Universidad de La Habana. Cuba.</p> <p><b><u>Nancy Yodú Ferral</u></b>, Presidenta Sección de Educación, Sociedad Cubana de Farmacología, Profesora de Titular de Farmacología, Facultad de Ciencias Médicas "10 de Octubre". Universidad Médica de la Habana. Cuba.</p>
CO-106	10:05-10:25	<p>"ACADEMY AND SCIENTIFIC SOCIETY OF PHARMACOLOGY: LINKS, ACHIEVEMENTS AND CHALLENGES IN THE TEACHING OF PHARMACOLOGY IN CUBA".</p> <p><b><u>Nancy Yodú Ferral</u></b>. MD. MSc. Profesor Titular. Facultad "10 de Octubre". Universidad Medica de la Habana, Cuba.</p>
CO-107	10:30 - 10:50	<p>"IMMUNOPHARMACOLOGY: A VIEW FROM SCIENCE TO TEACHING".</p> <p><b><u>Marian Hernández Colina</u></b>, PhD. Profesora Titular. Junta de Gobierno, Sociedad Cubana de Farmacología. Vice Rectora Docente. Universidad de La Habana. Cuba.</p>
CO-108	10:55-11:25	<p>"INNOVACIONES PARA EL APRENDIZAJE DE LA FARMACOLOGÍA".</p> <p><b><u>Ricardo A. Peña Silva</u></b> M.D., Ph.D. Director de Investigaciones. Profesor Asociado. Facultad de Medicina, Universidad de los Andes</p> <p><b><u>María Alejandra Larrarte González</u></b>, MD. Médica Interna. Facultad de Medicina de la Universidad Andes. Asistente de Investigación. Laboratorio de Farmacología vascular. Universidad de los Andes, Bogotá. Colombia.</p>
CO-109	11:30-11:45	<p>"LA WEB COMO RECURSO PARA LA ENSEÑANZA DE FARMACOLOGÍA Y SU ENSEÑANZA: LECCIONES APRENDIDAS".</p> <p><b><u>Andres Quintero</u></b>. MD, MSc, PhD. Universidad Libre, Cali. Colombia.</p>
CO-110	11:50-12:05	<p>"DE LA FARMACOCINÉTICA A LA FARMACODINÁMICA, ¿ESTAMOS LISTOS PARA LOS SOFTWARE 3D?".</p> <p><b><u>Luis Alberto Tafur</u></b> B. MD. M.Sc. Anestesiología – UNIVALLE. Epidemiología Clínica – UFRO. Anestesia Para Trasplante - Hospit Clinic. Docente, UNILIBRE SECCIONAL CALI y UNIVERSIDAD SURCOLOMBIANA. Cali – Colombia.</p>
CO-111	12:10-12:25	<p>"THE TEACHING OF PHARMACEUTICAL SCIENCES IN CUBA. EXPERIENCES AND PROJECTIONS.</p> <p><b><u>Yania Suárez Pérez</u></b>. PharmSc. PhD. Institute of Pharmacy and Food (IFAL). University of Havana (UH), La Habana. Cuba</p>
CO-112	12:30 -12:45	<p>"IMPACT OF VIRTUAL LABORATORIES FOR BIOMEDICAL COURSES AT THE MEDICAL SCHOOL".</p> <p><b><u>María A. Larrarte-González</u></b>; Ana Sierra, José Oscar Mantilla Rivas, Daniel Francisco Santamaría Rodríguez, Silvia Marcela Gómez Montero, Adriana</p>

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## LATINFARMA CALI 2019

XXII CONGRESO LATINOAMERICANO DE FARMACOLOGIA  
XVII CONGRESO COLOMBIANO DE FARMACOLOGIA Y TERAPEUTICA

CENTRO DE CONVENCIONES, UNIVERSIDAD LIBRE "VALLE DEL LILI"

Santiago de Cali, Colombia. 26-29 de septiembre, 2019

Sitio web: <http://latinfarma2019.com> / [www.asocolfarma.com](http://www.asocolfarma.com)

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		Marcela Giraldo Villa; Verónica Akle, Ricardo Alfonso Peña Silva. Universidad de los Andes, Bogotá, Colombia.
CO-113	12:50-13:05	THE "MEMORY CLINICS" AS A COMPLEMENTARY TOOL FOR THE IMPROVEMENT OF MEMORIZATION SKILLS IN A PHARMACOLOGY COURSE <u><b>María Alejandra Larrarte-González</b></u> . Ana Sierra, Ricardo Pena-Silva Universidad de Los Andes, Bogotá, Colombia.
CEREMONIA DE CLAUSURA	13:00-14:00	CEREMONIA DE CLAUSURA. RELATORIA Y PREMIACIONES. PRESENTACION DE LA NUEVA DIRECCION DE LA ASOCIACION LATINOAMERICANA DE FARMACOLOGIA (ALF) PERIODO 2020-2021. PRESENTACION DE LA CONVOCATORIA AL XXIII CONGRESO LATINOAMERICANO DE FARMACOLOGIA.



**XVII Colombian Congress of Pharmacology and Therapeutics  
XXII Latin American Congress of Pharmacology  
(LATINFARMA 2019)**



**Convention Center, Universidad Libre, Valle del Lili,  
Santiago de Cali, Colombia  
September 26-29, 2019**

***Conference Proceedings***







XVII Colombian Congress of Pharmacology and Therapeutics  
XXII Latin American Congress of Pharmacology  
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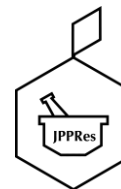


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## STATEMENT OF PEER REVIEW

*XVII Colombian Congress of Pharmacology and Therapeutics and XXII Latin American Congress of Pharmacology*  
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*Santiago de Cali, Colombia*  
*September 26-29, 2019.*

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## PREFACE

The **COLOMBIAN ASSOCIATION OF PHARMACOLOGY AND THERAPEUTICS (ACF)** and the **LATIN AMERICAN ASSOCIATION OF PHARMACOLOGY (ALF)**, have the opportunity to welcome you to the **XVII Colombian Congress of Pharmacology and Therapeutics** and in the **XXII Latin American Congress of Pharmacology (LATINFARMA 2019)**, between 26 and 29 September 2019 in the city of Cali, at the Universidad Libre headquarters Valle de Lili.

This regional and international event is an excellent interrelation and union opportunity for pharmacology and therapeutic professionals in Colombia, Latin America and the world, as well as the integration between university, state and pharmaceutical industry, offering the possibility of presenting his research and the latest information on the state of the art of basic, clinical and therapeutic pharmacology, without forgetting its social impact on access to medicines and its relationship with the epidemiological profile.

This congress makes it possible to share knowledge and build bridges between different researchers that will create opportunities for new research cooperation. With the presence of more than 130 speakers from different universities and research centers in several countries, including Belgium, France, Cuba, Mexico, Peru, Ecuador, Chile, Uruguay, Argentina and Colombia among others.

In addition to science, LATINFARMA is a unique opportunity to experience our culture, with open arms for all our visitors and a geographical area rich in biodiversity. Colombia and the Pacific jungle are one of the most biodiverse areas in the world, our theme: "From Biodiversity to Pharmacology: Knowledge Dialogue"

Receive our welcome and we appreciate your participation.

*Dr. Rene Delgado H.*  
Vice President  
ALF

*Dr. Octavio Piñeros*  
President  
ACF/ALF

*Dr. Jorge E. Machado A.*  
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ACF



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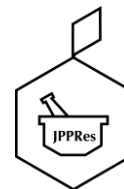


## PROGRAM OF PRE-CONGRESS COURSES

   	
<p align="center"><b>PRECONGRESS COURSE CPC-01 / Auditorium 401</b></p> <p align="center"><b>RESEARCH-DEVELOPMENT OF HERBAL NATURAL PRODUCTS, FROM ETHNOPHARMACOLOGY TO CLINICAL PRACTICE. EXPLORING THE HERBOLARY BIODIVERSITY OF OUR COUNTRIES</b></p> <p>Coordinators:  <b>Dr. René Delgado Hernández</b>, BSc, PhD, Instituto de Farmacia y Alimentos, Universidad de La Habana, Cuba.  <b>Dr. Giovanni Garavito Cárdenas</b>, Ph, MSc, PhD, Pharmacy Department, Universidad Nacional. Bogotá Colombia.</p>	
<p align="center"><b>Thursday, September 26 from: 7:30 AM - 6 PM (Full day)</b></p> <p align="center"><b>Convention Center. Valle del Lili Headquarters. Universidad Libre</b></p>	
Hour	THEME AND SPEAKERS
7:30 AM	Registration.
8:00 AM	Introduction to the course. Presentation of teachers and students. <b>All speakers.</b>
8:15 AM	Ethnopharmacology: from traditional knowledge to the scientist and from the scientist to society. <b>Dr. Giovanni Garavito</b> QF, MSc, PhD.
9:15 AM	Preclinical pharmacological studies. General Bases Integrative holistic approach. Studies of anti-inflammatory activity. <b>Dr. René Delgado Hernández</b> , Lic. Bioq, PhD.
10:15 AM	Studies of oxidative stress. Search for new antioxidants. Myths and realities. <b>Dr. Lizette Gil Del Valle</b> . Lic. Bioq, PhD.
11:15 AM	Coffee / Snack.
11:30 AM	Studies of analgesic activity. <b>Dr. Bárbara Beatriz Garrido Suarez</b> . MD, PhD.
12:30 PM	Lunch.
13:30 PM	Mitochondrial level studies; mitochondria as a pharmacological target in ethnomedicine. <b>Dr. Gilberto L. Pardo Andreu</b> . LCF, PhD.
14:30 PM	Toxicological studies and safety pharmacology. The myth of the safety of herbal products. <b>Dr. Idania Rodeiro Guerra</b> . Lic. Bioq, PhD.
15:30 PM	Controlled clinical studies in natural products. Golden rule to introduce new herbal medicines. <b>Dr. María Acelia Marrero Miragaya</b> . MD, MSc, PhD.
16:30 PM	Regulatory aspects New product registrations. Realities and perspectives. <b>Dr. Diadelis Ramirez Figueredo</b> . Lic. Bioq., MSc, PhD.
17:00 PM	Conclusions General Discussion Integrative testing exercises. Open panel with practical examples. All speakers.
17:30 PM	Course Closure.



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<p align="center"><b>PRECONGRESS COURSE CPC-02 / Auditorium 402</b> <b>UPDATE IN VETERINARY PHARMACOLOGY</b></p> <p>Coordinators:  <b>Dr. Juan Gonzalo Restrepo</b>, MD Vet, MSc, PhD Pharmacology.  <b>Dr. Ángel Céspedes Rubio</b>, MD Vet, MSc, PhD Pharmacology.  <b>Dr. Ricardo Malaver</b>, MD Vet, MSc.</p>					
<p align="center"><b>Thursday, September 26 from: 7:30 AM - 6 PM (Full day)</b> <b>Convention Center. Valle del Lili Headquarters. Universidad Libre</b></p>					
<b>Hour</b>	<b>THEME AND SPEAKERS</b>				
7:30 AM	Registration.				
8:00 AM	Endocrine Drugs and Disruptors. <b>Ricardo Malaver</b> , MD Vet, MSc.				
8:30 AM	Veterinary Medication and Agricultural Production. <b>Jainer Cañas</b> , Zoot, MSc Pharmacology -INVIMA				
9:00 AM	Pharmacology in Small Animals. <b>Angélica Castellanos</b> , MD Vet. MSc and Phd. Biomedical Sciences - Pharmacology.				
10:00 -10:15 AM	Coffee / Snack.				
10:15 - 11:00 AM	Pharmacology of Large Animals. <b>Alexander Martínez</b> MD Vet. MSc Biomedical Sciences Pharmacology.				
11:AM -12:00 AM	Rational treatment of chronic inflammatory pain in elderly dogs. <b>Dr. Ángel Céspedes Rubio</b> , MVZ, MSc, PhD. Neurodegenerative Diseases Research Group. Toxicology and Pharmacology Laboratory. Animal Health Department Universidad del Tolima.				
12:00 - 1:00 PM	Decrease in the use of animals for Surgical Medical Training through alternatives in a Public Hospital. <b>Marcelo Asprea</b> , MDV, PhD. Argentina.				
1:00 - 2:00 PM	Lunch.				
2:00 - 3:00 PM	Presentation of the Information and Study Center for Medicines and Toxics in Veterinary Medicine (CIEMTO - VET U de A). <b>Juan Gonzalo Restrepo</b> , MD Vet, MSc, PhD Pharmacology.				
3:00 - 4:00 PM	Medical prescription (conference - workshop). <b>Juan Gonzalo Restrepo</b> , MD Vet, MSc, PhD Pharmacology.				
3:00 - 6:00 PM	Problem-based learning (conference - workshop). <b>Juan Gonzalo Restrepo</b> , MD Vet, MSc, PhD Pharmacology.				
6:00 PM	Course Closure.				



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<p align="center"><b>PRECONGRESS COURSE CPC-03 / Auditorium 403</b> <b>"UPDATE IN ODONTOLOGICAL PHARMACOLOGY"</b></p> <p>Coordinators: <b>Dr. Rodolfo Molano</b>, Odontólogo, MD, MSc. <b>Dr. Alfonsina Martínez</b>, Enf., MSc Farmacología.</p> <p align="center"><b>Thursday, September 26 from: 7:30 AM - 6 PM (Full day)</b> <b>Convention Center. Valle del Lili Headquarters. Universidad Libre</b></p>	
Hour	THEME AND SPEAKERS
7.30 AM	Registration.
8:00 AM	PK / PD and Pharmaceutical forms in Dental medication. <b>Claudia Viviana Arce</b> , QF, MSc Pharmacology. Invima.
9:00 AM	Anesthesia and anesthetics for use in dentistry, local and regional. <b>Rodolfo Molano</b> , Odontólogo, MD, MSc.
10:00 - 10:15 AM	Coffee.
10:15 - 11:00 AM	Analgesia, Analgesics and Anti-inflammatories in Dentistry. <b>Bárbara Beatriz Garrido Suarez</b> , MD, Anesthesiologist, Pain Specialist. PhD in Science, Cuba.
12:00 - 1:00 PM	Antimicrobials Used in Dentistry. <b>Alfonsina Martínez</b> , Enf., MSc Pharmacology.
1:00 - 2:00 PM	Lunch.
2:00 PM	Antivirals and Antifungals Used in Dentistry. <b>Alfonsina Martínez</b> , Enf., MSc Pharmacology.
3:00 PM	Systemic Dental Medicine. <b>Andrés Quintero</b> , MD, MSc, PhD.
4:00 PM	Coffee.
5:00 PM	Pharmacological Precautions in Dentistry in Polymedicate Patients or with chronic diseases. <b>Andrés Quintero</b> , MD, MSc, PhD.
6:00 PM	Course Closure.





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<p><b>PRECONGRESS COURSE CPC-04 / Paraninfo 1</b></p> <p><b>MEDICINAL CANNABIS. THERAPEUTIC USES. MBE EVIDENCE-BASED MEDICINE</b></p> <p>Coordinators:</p> <p><b>Dr. Luis Alfonso Laverde Gaona</b>, MD, MSc Farmacología.</p> <p><b>Dr. Rafael Campo Misas</b>, QF, MSc.</p>					
<p><b>Thursday, September 26 from: 7:30 AM - 6 PM (Full day)</b></p> <p><b>Convention Center. Valle del Lili Headquarters. Universidad Libre</b></p>					
<b>Hour</b>	<b>THEME AND SPEAKERS</b>				
7.30 AM	Registration.				
8:00 AM	History of medical cannabis. <b>Luis Alfonso Laverde</b> , MD, MSc.				
9:00 AM	Regulatory aspects of medical cannabis. <b>Rafael Ocampo</b> , QF, MSc.				
10:00 AM	Coffee / Snack.				
10:15 - 11:00 AM	Industrial production with quality. <b>Rafael Ocampo</b> , QF, MSc.				
11:00 AM	MBE uses of cannabis in various pathologies. <b>Octavio Piñeros</b> , MD, MSc Epi, MSc Farm.				
12:00 M	Medical cannabis PK PD Receptors. <b>Luis Alfonso Laverde</b> , MD, MSc.				
1:00 PM	Lunch.				
<b>USES AND PRESCRIPTION OF MEDICINAL CANNABIS</b>					
2:00 PM	Cannabis Use Pain. <b>Alex Mosquera</b> , MD, Anesthesiologist, Pain Specialist.				
3:00 PM	Veterinary and Cannabinoid Medicine. <b>Santiago Acosta</b> MDV PGDip.				
4:00 PM	Coffee / Snack.				
4:15 PM	Prescription of medical cannabis. <b>Luis Alfonso Laverde</b> , MD, MSc.				
5:00 PM	Workshop: pharmacovigilance in medical cannabis. <b>Luis Alfonso Laverde</b> , MD, MSc.				
6:00 PM	Course Closure.				



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#### PRECONGRESS COURSE CPC-05 / Paraninfo 2

#### DERMATOLOGICAL, DERMATOCOSMETICS, AND COSMETICS: PRACTICAL EVALUATION OF EFFECTIVENESS AND SAFETY

Coordinator:

**Dra. Celine Blanche (Francia)**, BSc Ciencia, MSc I&R Productos Cosméticos.

**Thursday, September 26 from: 7:30 AM - 6 PM (Full day)**

**Convention Center. Valle del Lili Headquarters. Universidad Libre**

Hour	THEME AND SPEAKERS
7.30 AM	Registration.
8:00 - 9:00 AM	Legislation and Dermatological Formulation. <b>Rafael Campo Misas</b> . QF, MSc.
10:00 AM	Coffee / Snack.
10:30 AM - 1:00 PM	Efficacy Evaluation in dermatological and cosmetic products. Cosmetic claims support: proclamations and methods available for scientific support. <b>Celine Blanche</b> (France), BSc Science, MSc I&R Cosmetic Products.
1:00 - 2:00 PM	Lunch.
2:00 - 6:00 PM	Generalities on objectification of claims in the cosmetic sector and clinical studies. <b>Celine Blanche</b> (France), BSc Science, MSc I&R Cosmetic Products.
6:00 PM	Course Closure.



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September 26-29, 2019



**PRECONGRESS COURSE CPC-06 / Auditorium 404**

**OXIDATIVE STRESS AS A COFACTOR OF VARIOUS DISEASES AND THEIR REGULATION WITH BIOXIDATIVE OR ANTIOXIDANT PHARMACOTHERAPY**

Coordinator:

**Dr. Lizette Gil del Valle**, BSc. Biochemistry, Doctor of Pharmaceutical Sciences (PhD) (Pharmacology). Director of the Department of Pharmacological Research, Institute of Tropical Medicine "Pedro Kourí", Havana, Cuba.

**Thursday, September 26 from: 7:30 AM - 6 PM (Full day)**

**Convention Center. Valle del Lili Headquarters. Universidad Libre**

Hour	THEME AND SPEAKERS
7.30 AM	Registration.
8:00 AM	Introduction to the course Presentation of the Speaker. <b>Course objective:</b> To expose the updated basic theoretical aspects related to the fundamental elements of the redox state and oxidative metabolism in physiology and pathophysiology, the use of bioindicators related to this metabolism in medical practice in monitoring the evolution of some clinical conditions and the influence on this metabolism of pharmacological interventions and treatments.
8:15 AM	Reactive oxygen species. Main pro-oxidant species. Reactions and organelles involved in its generation. Main targets thereof. Redox signaling in the mechanisms of cellular adaptation in physiological processes and their modulation.
10:30 AM	Coffee / Snack.
10:35 AM	Oxidative stress in redox signaling in the pathogenesis and pathophysiology of various diseases. Biomarkers most used to quantify redox status in biological samples.
11:30 AM	Current evidence of the contribution of quantification of redox status in biological samples to biomedical research and clinical practice.
1:00 PM	Lunch.
2:30 PM	Molecular biological basis of the effects of natural products and drugs used in various diseases. Analysis of the evaluation of redox balance indicators in individualized clinical practice and preclinical and clinical research.
4:00 PM - 5:30 PM	Course Closure.



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<p align="center"><b>PRECONGRESS COURSE CPC-07</b> <b>TRAINING PROGRAM FOR RESEARCHERS</b> <b>TRAINING AND CERTIFICATION IN GOOD PRACTICES IN CLINICAL RESEARCH</b></p> <p>Coordinator: <b>Franklin Ruiz</b>, MD, MSc, Universidad Nacional de Colombia. Pfizer- Colombia.</p>	
<p align="center"><b>Thursday, September 26 from: 7:30 AM - 6 PM (Full day)</b> <b>Hotel NH Royal. Holguines Trade Center</b></p>	
Hour	THEME AND SPEAKERS
7:30 AM	Registration.
8:00 AM	Presentation. Introduction to the event methodology. <b>Claudia Rojas</b> BSc Regional Clinical Site Lead (Pfizer - Colombia).
8:30 AM	¿How is the investigation of new medicines developed? <b>Carlos Maldonado</b> . MD MSc. Professor of Pharmacy. Universidad Nacional de Colombia.
9:30 AM	¿How to start a clinical study? <b>Hector Cacique</b> Regional Clinical Site Lead (Argentina).
10:30 AM	The art and science of informed consent. <b>Carlos Fiquitiva</b> . Senior Project Manager
11:30 AM	Coffee break.
11:45 AM	¿How to carry out a clinical study? <b>William José Otero Escalante</b> MD. SERMIVED Director (Bucaramanga).
12:45 PM	Lunch.
1:45 PM	¿ How to supervise a study? <b>Claudia Rojas</b> BSc Regional Clinical Site Lead (Pfizer - Colombia).
2:30 PM	Safety in clinical trials. <b>Fredy Jimenez</b> QF. Drug Safety Manager (Bogotá).
3:30 PM	Regulation of clinical trials in Colombia. <b>Eliana Polished</b> QF. Regulatory Affairs Manager (Bogotá).
4:30 PM	Course Closure ITP Certification.



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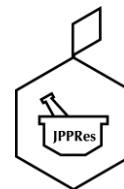
## CONGRESS PROGRAM

FRIDAY, SEPTEMBER 27		
	07:30-8:30	Welcome coffee and registration of participants.
ROOM 1 "PARANINFO"		
PLENARY LECTURES		
	08:30-9:15	<p><i>Opening ceremony</i></p> <p>Opening words. Regards. Government Personalities of Cali, INVIMA, Colombian Association of Pharmacology, Universidad del Valle, Universidad Libre-Valle del Lili, Cali and the Latin American Association of Pharmacology (ALF).</p>
COORDINATORS		<p><i>Octavio Piñeros</i>. MD, MSc, MBA President, Colombian Association of Pharmacology (ACF). President, Latin American Pharmacology Association (ALF). Professor <i>Ad Honorem</i>, Family Medicine, School of Medicine, Universidad de Valle, Cali, Colombia.</p> <p><i>René Delgado Hernández</i> (BSc, PhD), Pas-President, Cuban Society of Pharmacology. Vice President Latin American Association of Pharmacology (ALF). Researcher and Professor, PhD, Institute of Pharmacy and Food (IFAL), Universidad de La Habana (UH), Cuba.</p>
CP-01	09:15-09:40	<p><b>Inaugural Conference 01: "LAW ON ORPHAN DISEASES. AN ALLIANCE BETWEEN SCIENCE, COMMUNITY AND POLITICS"</b></p> <p><i>Dilian Francisca Toro</i>. MD, Rheumatologist, Governor of the Valle del Cauca, Colombia.</p> <p><i>Maria C. Lesmes</i>, MD, MSc, Director Department of Public Health Department. Valle del Cauca, Colombia.</p>
CP-02	09:45-10:15	<p><b>Inaugural Conference 02: "A NUTRI-EPIGENETIC PERSPECTIVE ON HEALTH AND "INFLAMM-AGING" DISEASE: CAN WE ADD HEALTHY YEARS TO OUR LIFE?"</b></p> <p><i>Wim Vanden Berghe</i>. BBS, PhD. Head Epigenetic Signalling lab (PPES), Department Biomedical Sciences, University Antwerp, Belgium.</p>
	10:15-10:30	COFFEE BREAK
	10:30-18:15	SYMPOSIA (S), ORAL COMUNICATIONS (CO) AND POSTERS (P)
ROOM 1 "PARANINFO 1" FRIDAY, SEPTEMBER 27		
SYMPOSIUM 01: "ORPHAN AND RARE DISEASES"		
COORDINATORS		<p><i>Hernán Rodríguez</i>. MD, MSc. Director of Orphan Diseases Program. Hospital Universitario del Valle (HUV). Universidad del Valle. Cali. Colombia.</p> <p><i>Julián Ramírez</i>. MD, Geneticist, PhD. HUV, Universidad del Valle. Cali. Colombia</p>
CO-001	10:30-10:50	<p>"FROM THE THEORY TO PRACTICE: LAW ENFORCEMENT FOR THE ORPHAN DISEASES"</p> <p><i>Hernán Rodríguez</i>. MD, MSc. Director of Orphan Diseases Program. Hospital Universitario del Valle (HUV). Universidad del Valle. Cali. Colombia.</p>
CO-002	10:55- 11:15	<p>"ORPHAN MEDICINES AND GENETIC DISEASES"</p> <p><i>Julián Ramírez</i>. MD, Geneticist, PhD. HUV, Universidad del Valle. Cali. Colombia</p>
CO-003	11:20-11:40	<p>"REPRESENTATION OF THE GENOMIC VARIABILITY OF THE MUCOPOLYSACCHARIDOSIS COMPLEX IN THE SOUTH-WEST OF COLOMBIA"</p> <p><i>Lina Johana Moreno Giraldo</i>. MD. Geneticist Pediatrician. Universidad del Valle Cali. Colombia</p>





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CO-004	11:45-12:05	"NEW PROGRESS IN TREATMENT OF NEURODEGENERATIVE METABOLIC <u>José María Satizabal</u> . MD, MSc, PhD, Geneticist. Universidad del Valle, Cali. Colombia.
CO-005	12:10-12:25	"ORPHAN DISEASES. THEY HAVE FACE AND A HISTORY <u>Solanyi Mosquera</u> . Municipal Public Health Secretary. Cali. Colombia.
	12:30-13:30	<b>LUNCH</b>
PLENARY CONFERENCE CP-03	13:35-14:10	"MONOCLONAL BIOTECHNOLOGICAL: A NEW APPROACH IN MANAGEMENT FOR MALARIA" <u>Sócrates Herrera</u> . MD Immunologist, Caucesco Research Center. Cali. Colombia.
CO-006	14:15-14:35	"NEONATAL SIZE EVALUATING THE METABOLISM. REALITY OR UTOPIA? IN DEVELOPING COUNTRIES" <u>Miryam Arévalo</u> . Mic-Lab, MSc, PhD, Caucesco Research Center. Cali. Colombia.
CO-007	14:40-15:00	"TREATMENT IN ENDOCRINE ORPHAN DISEASES IN PEDIATRICS: TURNER SYNDROME" <u>Audrey Mary Matallana</u> . MD. Pediatrician Endocrinologist, Hospital Universitario del Valle. Department of Pediatrics. Medicine School. Universidad del Valle, Cali, Colombia.
CO-008	15:05-15:25	"NEW THERAPIES FOR THE TREATMENT OF MUSCULAR DYSTROPHY OF DUCHEN" <u>Heidi E. Mateus A.</u> MD, MSc Genetics, Universidad Nacional de Colombia.
	15:30-15:45	<b>COFFEE BREAK</b>
CO-009	15:50-16:10	"EPIGENOMICS AND EPIGENETIC DRUGS: A NEW ALTERNATIVE FOR COMPLEX DISEASES" <u>Felipe García</u> . Bio. MSc, PhD. Ex Director of Colciencias. Universidad del Valle, Cali, Colombia.
CO-010	16:15-16:35	"EVIDENCE IN PHARMACOGENOMIC IN PERUVIAN POPULATION: POLYMORPHISMS RELATED TO METABOLISM, TRANSPORT AND TARGET OF DRUGS" <u>Alberto Alcibiades Salazar Granara</u> et al. MD, MSc. Director of the Basic Sciences Unit. CIMTFAR. TOP. Universidad de San Martín de Porres, Lima, Perú.
CO-011	16:40-17:00	"EPIDEMIOLOGICAL OVERVIEW OF ORPHAN AND RARE DISEASES AS OF SEPTEMBER 2019 VALLE DEL CAUCA" <u>Roberto F. Velasco R.</u> Dentist, MSc Epidemiology, Public Health Gobernación del Valle
PLENARY CONFERENCE CP-04	17:05-17:30	"A MODEL OF DISCOVERY AND DEVELOPMENT OF PROBIOTICS PRODUCTS: ESTABLISHING A PARADIGM, EFFECTIVE BIOPROSPECTING, RELEVANT SCREENING AND SUCCESSFUL DEPLOYMENT" <u>David Johnston-Monje</u> . PhD. Principal Investigator and Max Planck Tandem Group Leader in Plant Microbial Ecology. Universidad del Valle, Cali, Colombia.
PLENARY CONFERENCE CP-05	17:35-18:05	"BIOSIMILARS IN HEMATO ONCOLOGY" <u>Henry Hidrobo Quintero</u> . MD, Oncologist. Hospital Universitario del Valle, Universidad del Valle, Cali. Colombia.
	18:10-20:00	<b>WELCOME MEETING. SOCIALIZATION BETWEEN PARTICIPANTS IN THE CONGRESS.</b> <b>-SPECIAL INTERVENTIONS. TOURIST OFFICE. CALI. VALLE DEL CAUCA.</b> <b>DIRECTOR OF THE SECRETARY OF TOURISM.</b> <b>POSTUMO RECOGNITION Dr. ALFONSO MATAALLANA. (RIP).</b>



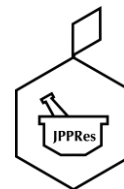
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16:30-18:00: MEETING ALF	MEETING ROOM: UNIVERSIDAD LIBRE:	MEETING OF THE EXECUTIVE COMMITTEE OF THE LATIN AMERICAN ASSOCIATION OF PHARMACOLOGY. SELECTION OF NEXT MANDATES AND HEADQUARTERS OF THE XXIII LATIN AMERICAN CONGRESS OF PHARMACOLOGY
ROOM 2 "AUDITORIUM 401" FRIDAY, SEPTEMBER 27		
SYMPOSIUM 02: "DEVELOPMENT OF PHYTOMEDICAMENTS"		
COORDINADORES / COORDINATORS		<p><u>René Delgado Hernández</u> (BSc, PhD), Past President "Cuban Society of Pharmacology", Vice President, Latin American Association of Pharmacology Institute of Pharmacy and Food (IFAL), Universidad de La Habana (UH), Havana, Cuba.</p> <p><u>Giovanny Garavito Cárdenas</u> (Pharmacy, PhD), Principal Investigator Research Group: FaMeTra - Pharmacology of Traditional and Popular Medicine, Universidad Nacional de Colombia, Bogota Colombia.</p>
CO-012	10:30-10:50	<p>"RAPANONE, A NATURALLY OCCURRING BENZOQUINONE, INHIBITS MITOCHONDRIAL RESPIRATION AND INDUCES HEPG2 CELL DEATH"</p> <p><u>Gilberto L. Pardo Andreu</u>, et al. PharmacSc. PhD. CEIEB Director. Institute of Pharmacy and Food (IFAL), Universidad de La Habana, Cuba.</p>
CO-013	10:55- 11:15	<p>"MANGIFERIN: PRECLINICAL ANTIANGIOGENIC AND ANTITUMORAL ACTIONS OF A NATURAL GLUCOXYLXANTHONE: PRESENT RESEARCH RESULTS AND FUTURE DRUGS DEVELOPMENT"</p> <p><u>René Delgado Hernández</u> et al. Biochemical. PhD Senior Researcher, CEIEB. Institute of Pharmacy and Food (IFAL), Universidad de La Habana, Cuba.</p>
CO-014	11:20-11:40	<p>"ANTIPARASITIC PROFILE OF ALSINOL, A PROMISING MOLECULE AGAINST PROTOZOAN HEMOPARASITES"</p> <p><u>Maria Helena Arias Marciales</u>, Quiliano M, Berthier D, Minet C, Chantal I, Valentin A, Garavito G, Aldana I, Deharo E. Universidad Nacional de Colombia, Bogotá DC, Colombia.</p>
CO-015	11:45-12:05	<p>"ANTIOXIDANT SUPPLEMENTATION EFFECTS IN AIDS PATIENTS WITH DELAYED DIAGNOSIS OF HIV: AN OPEN RANDOMIZED CONTROLLED TRIAL"</p> <p><u>Lizette Gil del Valle et al.</u> (PhD). Board of Directors, "Cuban Society of Pharmacology", Institute of Tropical Medicine "Pedro Kouri", (IPK), Havana, Cuba.</p>
CO-016	12:10-12:30	<p>"FUNCTIONAL FOOD AND INGREDIENTS"</p> <p><u>Juan Sebastián Ramírez</u>. Ing Al. MSc, PhD. Universidad del Valle, Cali. Colombia.</p>
	12:35-13:35	LUNCH
PLENARY CONFERENCE CP-06	13:40-14:10	<p>"ETHNOPHARMACOLOGY WITH SOCIAL RESPONSIBILITY"</p> <p><u>Giovanny Garavito Cárdenas</u> (PhD), Principal Investigator Research Group: FaMeTra - Pharmacology of Traditional and Popular Medicine, Universidad Nacional de Colombia, Bogotá, Colombia.</p>
CO-017	14:15-14:35	<p>"MEDICAL CANNABIS: THE PLANT THAT RELIEVES?"</p> <p><u>Luis Alfonso Laverde</u>, MD, MSc Epi, MSc Farm. Uninavarra, Colombia.</p>
CO-018	14:40-15:00	<p>"ADVANCES IN BIOLOGICAL EFFECTS OF THE PERUVIAN "CHUCHUHUASI" <i>Maytenus macrocarpa</i> (Ruiz &amp; Pav.) Briq: ANALGESIC DOSE-RESPONSE AND ANTIDEPRESSIVE/NEUROLEPTIC EFFECT"</p> <p><u>Alberto Alcibiades Salazar Granara</u> et al. MD, MSc. Director of the Basic Sciences Unit. CIMTFAR. TOP. Universidad de San Martín de Porres, Lima, Perú.</p>



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CO-019	15:05-15:25	<p>"VASCULAR INTERACTIONS OF THE MAIN METABOLITES ISOLATED FROM <i>Croton schiedeanus</i>" ALMIZCLILLO"</p> <p><u>Alejandra Paola Ortiz Sanchez</u>, QF. MSc. Pharmacology, PhD Student. Department of Pharmacy Universidad Nacional de Colombia, Bogota, Colombia.</p>
	15:30-15:45	COFFEE BREAK
CO-020	15:50-16:05	<p>"CLINICAL TRIAL IN NATURAL PRODUCTS. GOLDEN RULES ABOUT MEDICINAL PLANT"</p> <p><u>Maria Acelia Marrero Miragaya</u>, MD, PhD. National Coordinating Centre of Clinical Trials (CENCEC), La Habana, Cuba.</p>
CO-021	16:10-16:25	<p>"REGULATORY FRAMEWORK OF TRADITIONAL, COMPLEMENTARY AND INTEGRATIVE MEDICINE IN CUBA"</p> <p><u>Diadelis Ramirez Figueredo</u>, Bioquímica. PhD. National Centre of the State Quality Control of Drugs Equipment and Medical Devices. Cuban Regulatory Agency. (CECMED). La Habana, Cuba.</p>
CO-022	16:30-16:45	<p>"DEVELOPMENT OF A RESEARCH STRATEGY FOR THE USE OF FRUIT WASTES FROM ATACAMA DESERT AS A SOURCE OF OBTAINING EXTRACTS, WITH ANTIOXIDANT AND HYPOGLYCEMIC ACTIVITY, THROUGH NON-CONVENTIONAL EXTRACTION TECHNIQUES"</p> <p><u>Gabino Garrido Garrido</u> et al. PhD, Pharmacognosy Laboratory. Department of Pharmaceutical Sciences, Faculty of Sciences. Universidad Católica del Norte, Antofagasta, Chile.</p>
CO-023	16:50-17:05	<p>"EFFECT OF THE VEGETABLE OIL EXTRACTED FROM <i>Annona cherimola</i> SEEDS ON THE RELEASE OF MATRIX METALLOPROTEINASE-9 GRANULES IN HUMAN NEUTROPHILS"</p> <p><u>Andrés Ortiz Sotelo</u>, España A, Hurtado A, Mena J. Universidad de Nariño, Department of Medicine, Pasto, Nariño, Colombia.</p>
CO-024	17:10-17:25	<p>"NEUROPROTECTIVE ACTION OF <i>Mauritia flexuosa</i> OIL (AGUAJE) IN AN EXPERIMENTAL MODEL OF EPILEPSY"</p> <p><u>Oscar Herrera Calderón</u>, Arroyo JL, Rojas JP, Chacaltana L, Pari B. Faculty of Pharmacy and Biochemistry, Universidad Nacional Mayor de San Marcos, Jr Puno 1002, Lima, Perú.</p>
CO-025	17:30-17:45	<p>"POTENTIAL FRACTION OF PENTACYCLIC TRITERPENES OF SPECIES <i>C. ANGUSTIFOLIA</i> AND TELENITIDE AS INHIBITOR OF 11 BETA - HYDROXISTEROID DEHYDROGENASE <i>in Vitro</i>"</p> <p><u>Laura M. Valencia Torres</u>, Montoya G. Universidad ICESI, Cali, Valle, Colombia.</p>
	17:50-18:00	GENERAL DISCUSSION
ROOM 3 "AUDITORIUM 402" FRIDAY, SEPTEMBER 27		
SYMPOSIUM 03: "DEVELOPMENT OF NEW MEDICINES"		
COORDINATORS		<p><u>Gilberto L. Pardo Andreu</u>, PharmacSc. PhD CEIEB, Director. Institute of Pharmacy and Food (IFAL), Universidad de La Habana, Cuba.</p> <p><u>Richard D'Vries</u> (PhD), Professor, Universidad Santiago de Cali, Colombia.</p>
CO-026	10:30-10:50	<p>"DEVELOPMENT AND SYNTHESIS OF NEW MOLECULES FOR THE TREATMENT OF DIABETES, METABOLIC SYNDROME AND INSULIN RESISTANCE"</p> <p><u>Richard D'Vries</u>, Villamizar Delgado S, Porras LM, Piñeros O, Ellena J. Universidad Santiago de Cali, Colombia.</p>



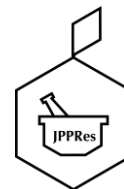
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CO-027	10:55- 11:15	<p>"TARGETING NEUROINFLAMMATION WITH JM-20, A NOVEL SYNTHETIC NEUROPROTECTIVE COMPOUND. A NEW APPROACH TO DEVELOPMENT THERAPIES FOR NEUROPATHIC PAIN"</p> <p><u>Bárbara Beatriz Garrido-Suárez</u>, et al. MD. PhD. Specialist in Anesthesiology. Institute of Marine Sciences (ICIMAR), Havana, Cuba.</p>
CO-028	11:20-11:40	<p>"MULTI-TARGETING EFFECTS OF JM-20 AT MITOCHONDRIA LEVEL AS A PROMISING APPROACH TO PROTECT THE BRAIN FROM ISCHEMIC DAMAGE"</p> <p><u>Gilberto L. Pardo Andreu</u>, et al. PharmSc. PhD CEIEB Director. Institute of Pharmacy and Food (IFAL), Universidad de La Habana, Cuba.</p>
CO-029	11:45-12:00	<p>"TECHNOLOGICAL AND COMPETITIVE SURVEILLANCE IN PHARMACOLOGY. WHY? FOR WHAT?"</p> <p><u>Felipe Ortiz</u>. Adm, MSc. Universidad del Valle. Octopus. Cali. Colombia.</p>
CO-030	12:05-12:20	<p>"ECONOMIC EVALUATION OF THE DEVELOPMENT OF A NEW DRUG"</p> <p><u>Pedro Cruz</u>. Eco. MSc, PhD Prospective Institute. Universidad Santiago de Cali. Colombia.</p>
CO-031	12:25-12:40	<p>"DRUGS DESIGN ASSISTED BY COMPUTATIONAL TOOLS"</p> <p><u>Melissa Andrea Mejía Gutiérrez</u>. Chemistry. Master in Biomedical Sciences. Researcher Pharmacology Group, Universidad del Valle. Cali. Colombia.</p>
	12:45-13:35	LUNCH
ROOM 3 "AUDITORIUM 402" FRIDAY, SEPTEMBER 27		
SYMPOSIUM 04: "PHARMACOLOGY AND THERAPEUTICS IN GERIATRY"		
COORDINATORS		<p><u>Ximena Castro</u>. MD, Family Medicine, Universidad del Valle, Cali, Colombia.</p> <p><u>Jose Mauricio Ocampo</u>. MD, Family Medicine, Gerontologist. Universidad del Valle Cali. Colombia.</p>
PLENARY CONFERENCE CP-07	13:40-14:10	<p>"CARDIOVASCULAR RISK. PHARMACOLOGICAL PREVENTION"</p> <p><u>Gilberto Castillo</u>. MD Internal Medicine. Hospital Universitario del Valle. Universidad del Valle, Cali. Colombia.</p>
CO-032	14:15-14:35	<p>"ANTI-AGING MEDICINE: MYTHS AND REALITIES"</p> <p><u>Ángela María Rojas Zapata</u>. MD. Universidad de Nariño. Specialist in Internal Medicine - Geriatrics. Clinic of the Universidad de Caldas. Assistant professor of the Clinical Geriatrics specialization - Universidad del Valle. Cali. Colombia.</p>
CO-033	14:40-15:00	<p>"A REQUIEM TO PANACEA"</p> <p><u>Ximena Castro Flórez</u>. MD. Department of Family Medicine. School of Health, Universidad del Valle School of Medicine, Cali. Colombia.</p>
CO-034	15:05-15:25	<p>"POLYPHARMACY AND GERIATRIC SYNDROMES"</p> <p><u>Jose Mauricio Ocampo</u>. MD, Family Medicine, Gerontologist. Universidad del Valle Cali. Colombia.</p>
	15:30-15:45	COFFEE BREAK
CO-035	15:50-16:05	<p>"EVERYTHING IS SEEN IN THE MOUTH: ORAL MANIFESTATIONS OF ADVERSE DRUG REACTIONS"</p> <p><u>Maria Teresa Calzada</u>. Dentist, MSc. Universidad del Valle, Cali, Colombia.</p>



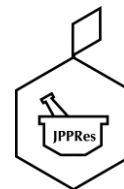
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CO-036	16:10-16:25	<p>"RATIONAL USE OF ANTIBIOTICS IN THE ELDERLY"</p> <p><u>Leidy Aristizabal Gómez</u>, MD, MSc Medical internist and Geriatrist - Universidad de Caldas, Master in Palliative Care - Universidad de la Rioja, Cali, Colombia.</p>
CO-037	16:30-16:45	<p>"SHOULD WE ALL TAKE MEDICATIONS TO PREVENT CARDIOVASCULAR EVENTS?"</p> <p><u>Carlos Andrés Pineda</u>, MD, Md Familiar, MSc. Universidad del Valle, Cali, Colombia.</p>
CO-038	16:50-17:05	<p>"ASSOCIATION BETWEEN THE USE OF BENZODIAZEPINES AND OPIOIDS WITH THE RISK OF FALLS AND HIP FRACTURES IN OLDER ADULTS"</p> <p><u>Manuel Enrique Machado</u>, MD. Universidad Tecnológica de Pereira -Audifarma S.A, Pereira, Colombia.</p>
CO-039	17:10-17:25	<p>"POLIPHARMACIA IN THE ADULT MAJOR: ROLE OF THE NURSE"</p> <p><u>Luz Adriana Meneses Urrea, Dolly Villegas Arenas</u>, Universidad Santiago de Cali, Cali, Colombia.</p>
CO-040	17:30-17:50	<p>"PREVENTION OF USE OPIOID PRODUCTS FOR THE PURPOSE OF ABUSE: FDA CRITERIA"</p> <p><u>Alba Rocío Castillo Pabón</u>, QF, MSc. Mundipharma Colombia SAS. Regional Regulatory Affairs Manager. Colombia, Andean &amp; South Cone. Bogotá. Colombia.</p>
ROOM 4 "PARANINFO 2" FRIDAY, SEPTEMBER 27		
SYMPOSIUM 05: "CLINICAL PHARMACOLOGY AND OTHERS"		
COORDINATORS		<p><u>María Acelia Marrero Miragaya</u>, MD, PhD. National Center for Clinical Testing (CENCEC), President, Cuban Society of Pharmacology. Havana Cuba.</p> <p><u>Lizette Gil del Valle</u> (PhD). Board of Directors, Cuban Society of Pharmacology, Head of the Department of Pharmacological Research. Institute of Tropical Medicine "Pedro Kouri", (IPK), Havana, Cuba.</p>
CO-041	10:30-10:50	<p>"ANTIPSYCHOTICS DRUGS DISPENSATION TO CHILDREN UNDER 15 YEARS DURING THE PERIOD 2014-2019 IN A PEDIATRIC REFERENCE HOSPITAL, MONTEVIDEO, URUGUAY"</p> <p><u>Juan Pablo García</u>, Nan L, Giachetto G. Pharmacology Unit - Pereira Rossell Hospital Center. Associate Professor of Pharmacology, Faculty of Medicine - Universidad CLAEH, Montevideo. Uruguay.</p>
CO-042	10:55- 11:15	<p>"ANALYSIS OF SECONDARY PREVENTION MEASURES IMPLEMENTED IN PATIENTS WITH A HISTORY OF ACUTE CORONARY SYNDROME"</p> <p><u>Jorge Enrique Machado Alba</u>, MD, PhD. Universidad Tecnológica de Pereira -Audifarma S.A, Pereira, Colombia.</p>
CO-043	11:20-11:40	<p>"PRIOR USE OF MEDICATION FOR PRIMARY PREVENTION IN A GROUP OF COLOMBIAN PATIENTS WITH CORONARY SYNDROME"</p> <p><u>Andrés Gaviria Mendoza</u>, Pharmacoepidemiology and Pharmacovigilance Research Group, Universidad Tecnológica de Pereira-Audifarma S.A. and Biomedicine, Autonomous University Foundation of the Americas. Pereira, Colombia.</p>
CO-044	11:45-12:05	<p>"TRANSMISSION BLOCKING STRATEGIES FOR VECTOR-BORNE DISEASES"</p> <p><u>Angelica Castellanos Sánchez</u>, VMD, PhD. School of Bacteriology and Clinical Laboratory of the Universidad del Valle / Universidad Santiago de Cali, Colombia.</p>



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CO-045	12:10-12:30	<p>"STATINS IN POLYMERIC NANOSUSPENSION ASSOCIATE TO SMALL PEPTIDES PROTECT NEURONAL CULTURES FROM OXYGEN-GLUCOSE DEPRIVATION (OGD) MODEL"</p> <p><u>Ángel Céspedes Rubio</u>. MVZ, MSc, PhD. Neurodegenerative Diseases Research Group. Toxicology and Pharmacology Laboratory. Animal Health Department. Universidad de Tolima. Colombia.</p>
	12:35-13:35	LUNCH
PLENARY CONFERENCE CP-08	13:40-14:10	<p>"CUBAN NETWORK OF CLINICAL TRIALS. EXPERIENCES AND PERSPECTIVES: YOUR CONTRIBUTION TO THE DEVELOPMENT OF THE CUBAN BIOPHARMACEUTICAL INDUSTRY"</p> <p><u>María Acelia Marrero Miragaya</u>. MD, PhD. National Center for Clinical Trials (CENCEC), President of the Cuban Society of Pharmacology. Havana Cuba.</p>
CO-046	14:15-14:35	<p>"SWITCHING OF BIOLOGICAL PRODUCTS IN THE TREATMENT OF PSORIASIS IN COLOMBIA"</p> <p><u>Luis Lezama-Rodríguez</u>, Torres-Guerrero R, Ricardo P, Angulo- Quisobony D, Palacios M. Audifarma S.A. Cali, Colombia. Universidad del Valle. Cali, Colombia.</p>
CO-047	14:40-15:00	<p>"DOES METFORMIN POTENTIATE THE EFFECT OF SILDENAFIL IN THE TREATMENT OF EXPERIMENTAL PULMONARY HYPERTENSION?"</p> <p><u>Vicente Benavides Córdoba</u>, Silva M, Castaño S, Varela X, Palacios M. Universidad del Valle. Cali. Colombia.</p>
CO-048	15:05-15:25	<p>"DRUG UTILIZATION STUDY IN THE EMERGENCY DEPARTMENT OF A HIGH COMPLEXITY HOSPITAL"</p> <p><u>Natalia P. Cárdenas</u>, López J, González A. Universidad Nacional de Colombia, Bogotá, Colombia.</p>
	15:30-15:45	COFFEE BREAK
CO-049	15:30-15:45	<p>"DRUG REPURPOSING IN PULMONARY HYPERTENSION, A PROMISING THERAPEUTIC STRATEGY"</p> <p><u>Vicente Benavides Córdoba</u>. PT, PhD(c). Center for Brain Studies, Faculty of Health, Universidad del Valle, Cali, Colombia.</p>
CO-050	15:50-16:05	<p>"TABLET SPLITTING, RIGHT OR WRONG PRACTICE?"</p> <p><u>David Galvis Pareja</u>, QF, PhD. University CES. Medellín. Colombia.</p>
CO-051	16:10-16:25	<p>"MYCOBACTERIUM TUBERCULOSIS AFTER <i>IN VITRO</i> EXPOSURE TO ISONIAZID"</p> <p><u>Luisa Maria Nieto</u>. PhD, Universidad Santiago de Cali. Colombia.</p>
CO-052	16:30-16:45	<p>"ANTIBIOTIC CONSUMPTION IN HEALTH CARE INSTITUTIONS IN CALI BETWEEN 2013 AND 2018"</p> <p><u>Jobany Castro Espinosa</u>, Saldarriaga E. San Martin University Foundation and Departmental Secretariat of Health of Valle del Cauca. Cali, Colombia.</p>
CO-054	17:10-25	<p>"PROTOTYPING OF NATURAL INGREDIENTS"</p> <p><u>José David Cárdenas-Nieto</u><sup>1,2*</sup>, González JF<sup>1</sup>, Ramírez-Navas JS<sup>1,3,4</sup>. GBCP Group, Biotec Corporation. Nutrition and Dietetics, Fac. Health and Rehabilitation, National Sports School. <sup>3</sup> Grupo GIEMA, Faculty of Basic Sciences, Universidad Santiago de Cali. <sup>4</sup> GIPAB Group, Esc. Ing. Alim., Universidad del Valle. Cali. Colombia.</p>
CO-055	17:30-17:45	<p>"ANTIBIOTIC THERAPY IN ODONTOGENIC INFECTIONS"</p> <p><u>Edison Castro Velasco</u>. DDS, Faculty of Health, Program of Dentistry, Universidad Santiago de Cali. Colombia.</p>





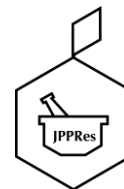
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CO-056	17:50-18:10	<p>"PRESCRIPTION INDICATION ANALYSIS OF ANTHELMINTICS IN A SAMPLE OF COLOMBIAN PATIENTS"</p> <p><u>Maria Camila Montes Montoya</u>, Pharmacoepidemiology and Pharmacovigilance Research Group, Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia. <sup>2</sup> Biomedicine, Autonomous University Foundation of the Americas. Pereira, Colombia.</p>
SATURDAY, SEPTEMBER 28		
	07:30-8:30	Welcome coffee and registration of participants.
ROOM "PARANINFO"		
PLENARY LECTURES		
COORDINATORS		<p><u>Marian Hernández Colina</u>, PhD Titular teacher. Government Board, Cuban Society of Pharmacology. Vice Chancellor. Universidad de La Habana, Cuba.</p> <p><u>Jorge Enrique Machado Alba</u>, MD, PhD. Vice President of the Colombian Pharmacology Association. Pharmacoepidemiology and Pharmacovigilance Research Group, Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.</p>
CP-09	08:30-09:00	<p>"PHYTOMEDICINAL VERSUS PHARMACOLOGICAL TREATMENT OF CANCER: AN EPIGENETIC PERSPECTIVE"</p> <p><u>Wim Vanden Berghe</u>, BBS, PhD. Epigenetic Signaling Laboratory (PPES), Department Biomedical Sciences, University Antwerp, Belgium.</p>
CP-10	09:05-09:35	<p>"NEW TRENDS IN THE QUALITY CONTROL OF VACCINES: ALTERNATIVE METHODS BASED ON 3RS AND BEYOND"</p> <p><u>Mario Landys Chovel Cuervo</u>, PharmSc, MSc. Director of Quality Control. Finlay Institute of Vaccines, Havana, Cuba.</p>
CP-11	09:40-10:25	<p>"CDK4 / 6 INHIBITORS: CHANGING PARADIGM IN THE TREATMENT OF PATIENTS WITH ADVANCED / METASTATIC BREAST CANCER HR + HER2-"</p> <p><u>Ana Cristina Avendaño</u>, MD. Clinical Oncologist, Hemato Oncólogos S.A, Cali. Colombia. "CONFERENCE SPONSORED BY NOVARTIS DE COLOMBIA S.A ONCOLOGY"</p>
	10:30-10:45	COFFEE BREAK
	10:50-18:30	SYMPOSIA (S), ORAL COMUNICATIONS (CO) AND POSTERS (P)
ROOM "PARANINFO 1" SATURDAY, SEPTEMBER 28		
SYMPOSIUM 06: "CANCER PHARMACOLOGY AND THERAPEUTICS UPDATE"		
COORDINATORS		<p><u>Wim Vanden Berghe</u>, BBS, PhD. Head Epigenetic Signalling Lab (PPES), Department Biomedical Sciences, University Antwerp, Belgium.</p> <p><u>Idania Rodeiro Guerra</u>, Biochem. PhD, Scientific Director Institute of Marine Sciences (ICIMAR), Havana. Cuba.</p>
PLENARY CONFERENCE CP-12	10:50-11:20	<p>"VALID RELEASE VARIABLES IN CLINICAL STUDIES IN ONCOLOGY"</p> <p><u>Abraham Hernández</u>, MD. Oncologist. Colombia.</p> <p>"CONFERENCE SPONSORED BY ASTRAZENECA COLOMBIA"</p>
CO-057	11:25-11:45	<p>"CANCER EPIDEMIOLOGY IN VALLE DEL CAUCA"</p> <p><u>Luis Eduardo Bravo</u>, MD, Oncologist, MSc. HUV. Universidad del Valle, Cali. Colombia.</p>



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CO-058	11:50-12:10	"NEW PROTEIN, NEW THERAPEUTIC TARGETS" <u>Adalberto Sánchez</u> , Bio. MSc, PhD. HUV. Universidad del Valle, Cali. Colombia.
CO-059	12:15-12:45	"MARINE ORGANISMS: SOURCES FOR THE DEVELOPMENT OF NEW ANTITUMOR DRUGS IN THE POST-GENOMIC ERA" <u>Idania Rodeiro Guerra</u> , et al. Biochem. PhD, Scientific Director Institute of Marine Sciences (ICIMAR), Havana. Cuba.
	12:45-13:45	<b>LUNCH</b>
CO-060	13:50-14:05	"THE GOOD CLINICAL PRACTICES IN CANCER RESEARCH" <u>Lyda Elena Osorio Amaya</u> , MD, MSc, PhD. HUV. Universidad del Valle, Cali. Colombia.
CO-062	14:30-14:45	"SURGICAL AND ONCOLOGICAL OUTCOMES OF THERAPIES FOR EARLY STAGE INVASIVE UTERINE CERVICAL CANCER" <u>Luz Angela Torres-de la Roche</u> , MD GO University of Oldenburg, Germany
CO-063	14:50-15:05	"OBJECTIVE RESPONSE RATE IN MULTIPLE MYELOMA PATIENTS ACCORDING TO FIRST-LINE THERAPY REGIMEN" <u>Juan Esteban García-Robledo</u> , Lasso JF, Correa JD, Cortés N, Chaves S, Martínez V, Morales M, Herrera JM, Urrego M, Idrobo H. Fundación Valle del Lili, Cali, Universidad Icesi, Cali, Valle del Cauca, Colombia; and others institutions.
	15:10-15:30	<b>COFFEE BREAK</b>
CO-064	15:30-15:45	"ORAL ADVERSE REACTIONS OF CHEMOTHERAPEUTIC DRUGS AT A CANCER INSTITUTION IN BARRANQUILLA-COLOMBIA 2019" <u>Ada Sofía Ramos Doval</u> <sup>1,2</sup> , Rebolledo M <sup>1</sup> , Duran M <sup>2</sup> . <sup>1</sup> Universidad Metropolitana de Barranquilla, Atlántico Colombia. <sup>2</sup> Universidad de Cartagena, Bolívar, Colombia.
CO-065	15:50-16:05	"PREVALENCE OF PERIPHERAL NEUROPATHY ASSOCIATED WITH CANCER CHEMOTHERAPY IN FOUR ONCOLOGY CENTERS OF COLOMBIA, 2015-2016" <u>Jorge Enrique Machado</u> , MD, PhD. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.
CO-066	16:10-16:25	"EVALUATION OF THE EXPRESSION OF KV10.1 AND P53 IN SIHA CELLS DURING THE GENERATION OF CISPLATIN RESISTANCE" <u>Catalina Rangel</u> , <u>Camila López</u> , Rodríguez J, Giraldo S, Lozano Y. Universidad de La Salle, Bogotá, Colombia.
PLENARY CONFERENCE CP-13	16:30-17:00	"EFFECTS OF THE HUMAN MICROBIOMA ON THE ADMINISTRATION OF MEDICINES: IS ANOTHER BRANCH OF PHARMACOLOGY NECESSARY?" <u>Daniel Romero Urrea</u> , MD. Medical Surgeon - Universidad del Valle. Biomedical Sciences (Emphasis in Pharmacology and Neurosciences). Universidad del Valle. Cali. Colombia. Medical Manager, Scientific Medical Direction. Tecnoquímicas S.A.
CO-053	17:00 - 17:25	"GRE FACTORS REGULATE THE EXPRESSION OF BIOFILM IN SALMONELLA ENTERICA SEROVAR TYPHIMURIUM" <u>Tania Gaviria Cantín</u> , PhD, Universidad Santiago de Cali. Cali. Colombia.
	17:25-18:00	GENERAL DISCUSSION
	18:00-20:00	<b>ACF MEMBERS EXTRAORDINARY ASSEMBLY COLOMBIAN ASSOCIATION OF PHARMACOLOGY</b>



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SATURDAY, SEPTEMBER 28		
SYMPOSIUM 07: "BIOTECHNOLOGY AND IMMUNOPHARMACOLOGY. VACCINES AND SOILS"		
COORDINATORS		<p><u>Mario Landys Chovel Crow</u>. Vice President Cuban Society of Pharmacology. Director of Quality Control, Finlay Institute of Vaccines, Havana, Cuba.</p> <p><u>Reinaldo Acevedo Grogues</u>. Director, Cuban Society of Pharmacology, Researcher. Project coordinator. Finlay Institute of Vaccines, Havana, Cuba.</p>
CO-067	10:50-11:20	<p>"OUTER MEMBRANE VESICLES: A PLATFORM FOR DEVELOPMENT OF ADJUVANT AND VACCINE FORMULATIONS"</p> <p><u>Reinaldo Acevedo Grogues</u>. PharmSc, PhD, Post Doc. Researcher. Project Coordinator. Instituto Finlay de Vacunas, La Habana, Cuba.</p>
CO-068	11:25-11:50	<p>"TECHNOLOGICAL CHALLENGES FOR THE CREATION OF A PLATFORM FOR THE PRODUCTION OF BIOSIMILAR MEDICINES IN COLOMBIA"</p> <p><u>Jorge Alberto Vasquez</u>. BSc, MSc and PhD in Biotechnology, SENA, Palmira, Valle del Cauca, Colombia.</p>
CO-069	11:55-12:20	<p>"MODERNIZATION OF LABORATORIES FOR THE PRODUCTION OF BIOPHARMACEUTICALS"</p> <p><u>Ernesto Josue Mendoz</u>. Ing. PhD. SENA, Palmira. Valle del Cauca, Colombia.</p>
	12:25-13:30	LUNCH
CO-070	13:35-14:00	<p>"ADVERSE REACTIONS ASSOCIATED WITH THE USE OF BIOTECHNOLOGICAL DRUGS IN COLOMBIA"</p> <p><u>Jorge Enrique Machado Alba</u>. MD, PhD. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.</p>
CO-071	14:05-14:35	<p>"PERTUSSIS CONTEXT AND THE NEED OF A NEW GENERATION OF VACCINES"</p> <p><u>Mario Landys Chovel Crow</u>. Vice President Cuban Society of Pharmacology. Director of Quality Control, Finlay Institute of Vaccines, Havana, Cuba.</p>
CO-072	14:40-15:05	<p>ADVERSE REACTIONS TO SNAKE ANTIVENOM, AND THEIR DRUG SURVEILLANCE</p> <p><u>Lina María Peña</u>. MD Clinical Toxicologist. Universidad de Antioquia. Medellin, Colombia.</p>
	15:10-15:30	COFFEE BREAK
CO-073	15:35-16:00	<p>"THE OFFICIAL ACCIDENT IN COLOMBIA: FROM PHARMACOLOGY TO THERAPEUTICS"</p> <p><u>Francisco Javier Ruiz</u>. Med Vet, Instituto Nacional de Salud. Colombia.</p>
CO-074	16:05-16:30	<p>"MOLECULAR EVOLUTION AND BIOINFORMATICS TOOLS FOR PRODUCING RECOMBINANT PROTEINS TO BE USED IN MEDICAL AND PHARMACEUTICAL APPLICATIONS"</p> <p><u>Diego Fernando Mejía C.</u>, PhD Assistant Professor, Department of Basic Sciences. Environmental Management Office Coordinator. Universidad Nacional de Colombia, Palmira Headquarters. Valle del Cauca, Colombia.</p>
CO-075	16:35-17:00	<p>"OUTER MEMBRANE VESICLES EXTRACTED FROM NEISSERIA MENINGITIDIS SEROGROUP X FOR PREVENTION OF MENINGOCOCCAL DISEASE IN AFRICA"</p> <p><u>Reinaldo Acevedo Grogues</u>, Zayas C, Gunnstein N<sup>2</sup>, Fernandez S, Cedre B, Aranguren Y, Gonzalez H, Hernandez M, Rosenqvist E<sup>2</sup>, Naess L<sup>2</sup>, Tunheim G<sup>2</sup>, Cardoso D, Garcia L. <sup>1</sup>Finlay Institute of Vaccines, Havana, Cuba. <sup>2</sup>Norwegian Institute of Public Health, Oslo, Norway.</p>



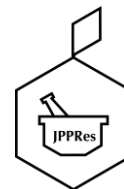
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CO-076	17:05-17:30	<p>"ADVERSE EFFECTS OF TETANUS TOXOID VACCINE IN NEIVA, COLOMBIA: A CASE REPORT"</p> <p><u>Sánchez, Camila</u>, Laverde L. Navarra University Foundation - Uninavarra, Uninavarra, Neiva, Huila, Colombia.</p>
CO-077	17:35-18:00	<p>"STUDY OF TOXINS FOR THE DEVELOPMENT OF NEW MEDICINES"</p> <p><u>Santiago Castaño</u>, BSc, PhD. Faculty of Basic Sciences, Faculty of Health, Universidad del Valle. Cali. Colombia.</p>
ROOM 3 "AUDITORIO 402" SATURDAY, SEPTEMBER 28		
SYMPOSIUM 08: "PHARMACOLOGY AND THERAPEUTICS OF METABOLIC ENDOCRINE DISORDERS AND OBESITY"		
COORDINATORS		<p><u>Audrey Mary Matallana</u>, MD, Surgeon. Pediatrician. Endocrinologist Hospital, University of the Valley. Former president of ACEP and SLEP. Universidad del Valle. Cali. Colombia.</p> <p><u>Helen Carolina Patiño</u>, MD. Pediatrician. Pediatric Endocrinologist of the University of Buenos Aires. Medical Universidad Santiago de Cali. Pediatric Endocrinologist. University Hospital of the Valley. Cali. Colombia.</p>
CO-078	10:50-11:15	<p>"TREATMENT OF DIABETES MELLITUS IN PEDIATRICS"</p> <p><u>Audrey Mary Matallana</u>, MD, Surgeon. Pediatrician. Endocrinologist Hospital, University of the Valley. Former president of ACEP and SLEP. Universidad del Valle. Cali. Colombia.</p>
CO-079	11:10-11:35	<p>"METFORMIN: THE PANACEA OF THE 21<sup>ST</sup> CENTURY?"</p> <p><u>Isaac Arbeláez</u>, MD, MSc, Universidad del Valle, Universidad Javeriana/Tecnoquímicas. Cali. Colombia.</p>
CO-080	11:40-12:05	<p>"OSTEOGENESIS IMPERFECTA AND BIPHOSPHONATE THERAPY IN CHILDREN AND ADOLESCENTS"</p> <p><u>Helen Carolina Patiño</u>, MD. Pediatrician. Pediatric Endocrinologist of the University of Buenos Aires. Medical Universidad Santiago de Cali. Pediatric Endocrinologist. Hospital Universitario del Valle. Cali. Colombia.</p>
CO-081	12:10-12:30	<p>"HYPOGLYCEMIC ACTIVITY OF A COORDINATION COMPOUND BASED ON METFORMINE AND COPPER(II) IN A DIABETES MELLITUS MOUSE MODEL"</p> <p><u>Rosa Elena Arroyo-Carmona</u>, <u>Albarado-Ibañez A</u>, Limón-Cantú M, Bernabé-Sánchez D, Torres-Jácome J*, Reyes-Ortega Y, Pérez-Benítez A.*Facultad de Ciencias Químicas, Benemérita Universidad Autónoma de Puebla, Puebla., México.</p>
	12:35-13:30	LUNCH



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ROOM 3 "AUDITORIO 402"		
SATURDAY, SEPTEMBER 28		
SYMPOSIUM 09: "ACCESS TO MEDICINES. AN OPPORTUNITY FOR INNOVATION IN HEALTH"		
COORDINATORS		<p><u>Alfonsina del Cristo Martínez</u>, Nurse, MSc, cPhD. Basic Sciences, Faculty of Health, Universidad Santiago de Cali.</p> <p><u>Ihonatan Venegas</u>, QF, Pharmacology. Universidad Nacional de Colombia.</p>
CO-082	13:35-13:45	<p>"NURSING INTERVENTIONS AIMED AT IMPROVING SAFETY IN THE USE OF MEDICINES"</p> <p><u>Magda Viameth Solano Roa</u>, Nurse. Mg in Pharmacology. Assistant Teacher. CAFAM University Foundation.</p>
CO-083	13:50-14:05	<p>"RESULTS OF THE TRAINING FOR GOOD USE OF MEDICINES IN THE PHARMACOLOGY CHAIR IN MEDICINE STUDENTS"</p> <p><u>Álvaro Vallejos, Sanabria</u> JD, Lamilla CA, Camargo DF, Navarrete A, Suárez L. Fundación Universitaria Ciencias de la Salud- FUCS, Bogotá D.C, Colombia.</p>
CO-084	14:10-14:25	<p>"COLOMBIA AND THE PHARMACEUTICAL GEOGRAPHIES FROM THE SOUTH: GENERICS, PATENTS SYSTEM AND ACCESS TO HEALTH IN THE 1960S"</p> <p><u>Víctor Manuel García</u>, Historian, Master EM "Dynamics of Health and Welfare" and PhD Candidate (EHESS-Cermes3-France). Assistant teacher. Department of Humanities. Universidad El Bosque. Bogotá, Colombia.</p>
CO-085	14:25-14:40	<p>EPIDEMIOLOGICAL PROFILE OF PATIENTS WITH SEPSIS IN THE INTENSIVE CARE UNIT OF A CLINIC IN THE CITY OF CALI, COLOMBIA</p> <p><u>Martínez A.</u>, Professor Faculty of Health, Universidad Santiago de Cali, Colombia.</p>
CO-086	14:40-14:10	<p>THERAPY FOR AUTOIMMUNE DISEASES IN SMALL ANIMALS</p> <p><u>Castellanos A, Miranda-Díaz A</u>, Faculty of Basic Sciences and Faculty of Health, Universidad Santiago de Cali, Colombia.</p>
	15:10-15:30	COFFEE BREAK
CO-087	15:30-15:45	<p>"THE ROLE OF THE UNIVERSITIES IN LATIN AMERICA IN ACCESS TO MEDICINES"</p> <p><u>Ihonatan Venegas</u>, QF, Pharmacology. Universidad Nacional de Colombia, Bogota, Colombia.</p>
CO-088	15:50-16:05	<p>"PREVALENCE OF POLYPHARMACY IN COLOMBIA 2018"</p> <p><u>Alfredo Portilla Pinzón</u><sup>1*</sup>, Torres D<sup>2</sup>, González N<sup>3</sup>, Buitrago J<sup>3</sup>, Herrera S<sup>3</sup>. <sup>1</sup>MSc Pharmacology, MSc Epidemiology, FUCS Bogotá DC. Colombia. <sup>2</sup>Director of the Pharmacoepidemiological Research Management of Audifarma S.A. <sup>3</sup>Pharmacology Research Seedbed, FUCS Bogotá DC. Colombia.</p>
CO-089	16:10-16:25	<p>"USE OF ANTIBIOTICS ACCORDING AWARE CLASSIFICATION IN COLOMBIA 2018"</p> <p><u>Alfredo Portilla Pinzón</u>, Torres D, González N, Buitrago J, Herrera S. FUCS Bogotá DC. Colombia. Director of the Pharmacoepidemiological Research Management of Audifarma S.A. Pharmacology research seedbed, FUCS Bogotá DC. Colombia.</p>
CO-090	16:30-16:45	<p>"PROFILE OF ANTICOAGULANT USE IN HOSPITALIZED PATIENTS, PHARMACOLOGICAL INTERACTIONS AND ADVERSE REACTIONS IDENTIFIED"</p> <p><u>Álvaro Vallejos</u>, Bello A, Domínguez M, Vallejos Narváez A. FUCS, Bogotá D.C, Colombia.</p>
CO-091	16:50-17:05	<p>"IMPORTANCE OF MOLECULAR STABILITY IN PHARMACEUTICS ESTABLISHMENTS AND THEIR THERAPEUTIC ACTION"</p> <p><u>Javier Orozco</u><sup>1</sup>, Bermeo M<sup>2</sup>. <sup>1</sup>Specialist/Professor, <sup>2</sup>MSc/Professor, Universidad Santiago de Cali, Cali, Colombia.</p>
	17:10-17:50	GENERAL DISCUSSION



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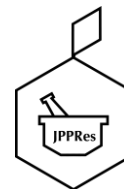


ROOM 4 "PARANINFO 2. Superior Area" SATURDAY, SEPTEMBER 28		
ROOM 04 (PARANINFO 2): POSTERS / POSTERS		
SHORT ORAL PRESENTATION (10 minutes each presentation)		
COORDINATORS		<p><u>Ivanoba Pardo Herrera</u>, Dentist Occupational Health Specialist. Master in Public Health. Doctor in Public Health. Senior Researcher COLCIENCIAS, leader of the research group in education and health GINEYSA. Associate Professor Universidad Santiago de Cali. Colombia.</p> <p><u>Catalina Estrada González</u>, Professional Surgical Instrumenter. PhD in education. Master in Higher Education. Master in Administration. Associate Researcher COLCIENCIAS, member of the research group in Education and Health - GINEYSA. Professor Universidad Santiago de Cali. Colombia.</p>
PO-01	10:50-11:00	<p>"PRESCRIPTION PATTERN OF ANTICHOLINERGIC DRUGS IN ALZHEIMER'S DISEASE PATIENTS, COLOMBIA"</p> <p><u>Luis Fernando Valladales Restrepo</u>, MD. MSc. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.</p>
PO-02	11:00-11:10	<p>"INFLUENCING FACTORS IN THE DISCONTINUATION, CHANGE, OR FAILURE OF HORMONAL CONTRACEPTION AMONG A UNIVERSITY POPULATION IN TUNJA, BOYACÁ, COLOMBIA, 2018"</p> <p><u>Carlos Alberto Niño-Avenida</u>, Vargas-Rodríguez L, González-Jiménez N. Universidad Pedagógica y Tecnológica de Colombia, Tunja, Boyacá, Colombia.</p>
PO-03	11:10-11:20	<p>"PRESCRIPTION PATTERNS AND INDICATIONS OF FLUOROQUINOLONES IN A GROUP OF AMBULATORY PATIENTS IN COLOMBIA"</p> <p><u>Manuel Enrique Machado Duque</u>, MD. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.</p>
PO-04	11:20-11:30	<p>"POTENTIALLY INAPPROPRIATE PRESCRIPTIONS OF ANTICHOLINERGIC MEDICATIONS IN PATIENTS WITH CLOSED-ANGLE GLAUCOMA"</p> <p><u>Luis Fernando Valladales Restrepo</u>, MD. MSc. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.</p>
PO-05	11:30-11:40	<p>"MANAGEMENT OF RESIDUES OF MEDICINES GENERATED IN HEALTH INSTITUTIONS"</p> <p><u>Ivanoba Pardo Herrera</u>, Estrada C, Pardo AC. Universidad Santiago de Cali. Colombia.</p>
PO-06	11:40-11:50	<p>"REMINERALIZATION OF DENTAL ENAMEL WITH COCONUT OIL AND FLUORINE VARNISH IN CHILDREN"</p> <p><u>Myriam Bermeo de Rubio</u>, Arias G, Motlak M, Rangel B, Millán J, Pardo I. Universidad Santiago de Cali. Colombia.</p>
PO-07	12:00-12:10	<p>"POTENTIALLY INAPPROPRIATE ANTICHOLINERGIC DRUG PRESCRIPTIONS FOR PATIENTS WITH SJÖGREN'S SYNDROME"</p> <p><u>Luis Fernando Valladales Restrepo</u>, MD. MSc. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.</p>
PO-08	12:10-12:20	<p>"AN ELECTROPHYSIOLOGICAL APPROACH TO DETECT Palythoa-LIKE EFFECT FROM <i>Palythoa caribaeorum</i> EXTRACTS"</p> <p><u>Katherine Medina-Ortiz</u><sup>1</sup>, Santiago Castaño<sup>2</sup>. <sup>1</sup>PhD Student, Department of Physiological Sciences. Faculty of Health. Universidad del Valle, <sup>2</sup>PhD, Department of Physiological Sciences. Faculty of Health. Universidad del Valle, Cali. Colombia.</p>





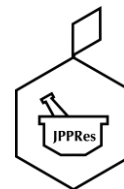
PO-09	12:20-12:30	<p>"POTENTIALLY INAPPROPRIATE PRESCRIPTIONS FOR ANTICHOLINERGIC MEDICATIONS FOR PATIENTS WITH CONSTIPATION"</p> <p><u>Luis Fernando Valladales Restrepo</u>, MD. MSc. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.</p>
	12:30-13:30	LUNCH
PO-10	12:35-12:45	<p>"PHARMACOTHERAPEUTIC FOLLOW-UP AS A FACTOR ASSOCIATED WITH THE VITAL STATE OF HOSPITAL DISCHARGE IN TERTIARY CARE CENTER"</p> <p><u>Yuri Zulim López-Guerra</u>, Pérez-Agudelo JM. Audifarma S.A, Manizales, Caldas, Colombia. Caldas Family Compensation Fund - San Marcel Clinic, Manizales - Caldas, Colombia.</p>
PO-11	12:45-12:55	<p>"ADEQUATE INTERVENTION IN A PATIENT WITH POLYPHARMACY: CASE STUDY"</p> <p><u>Nicolás Blanco</u>, Arevalo HA, Laverde LA. Fundación Universitaria Navarra - Uninavarra, Colombia.</p>
PO-12	12:55-13:05	<p>"POST SURGICAL PAIN MANAGEMENT IN PATIENTS WITH RENAL TRANSPLANTATION WITH PHARMACOLOGICAL vs. NON-PHARMACOLOGICAL INTERVENTION"</p> <p><u>Jéssica López Peláez</u>, Cañadas L, Gomez L, Henao C. Research Professor, Universidad Santiago de Cali, Colombia.</p>
PO-13	13:05-13:15	<p>"IN VITRO INHIBITION OF ANGIOTENSIN-CONVERTING ENZYME WITH EXTRACTS OF <i>Jatropha gossypifolia</i> AND <i>Heliotropium indicum</i>"</p> <p><u>Marlene Durán Lengua</u>, Bohórquez Moreno C, Ulloque Barrios R. Universidad de Cartagena, Cartagena, Colombia.</p>
PO-14	13:15-13:25	<p>"ENZYMATIC-COLORIMETRIC BIOASSAY TO STUDY GLUCOSE CONSUMPTION IN 3T3-L1 ADIPOSE CELLS"</p> <p><u>Paola Andrea Rivera Díaz</u>, Gómez C. Universidad Nacional de Colombia, Bogotá, Colombia.</p>
PO-15	13:25-13:35	<p>"CHEMOINFORMATIC ANALYSIS OF AGONISTS AND ANTAGONIST OF THE TRANSCRIPTIONAL REGULATORS OF LasR, PqsR and RhlR IN <i>Pseudomonas aeruginosa</i>"</p> <p><u>Daniel Felipe Victoria</u>, López-Vallejo F. Universidad Nacional de Colombia, Bogotá, Colombia</p>
PO-16	13:35-13:45	<p>"EFFECTS ON THE ORAL CAVITY OF MEDICATIONS USED IN PATIENTS WITH PSYCHIATRIC DISORDERS"</p> <p><u>Ana Cecilia Pardo Herrera</u>, Pardo I, Estrada C. Universidad Santiago de Cali, Colombia.</p>
PO-17	13:45-13:55	<p>"RELATED HABITS IN THE PRACTICE OF SELF-MEDICATION IN ADOLESCENTS"</p> <p><u>Dolly Villegas Arenas</u>, Meneses Urrea LA. Universidad Santiago de Cali, Colombia.</p>
PO-18	13:55-14:05	<p>"SMOKING IN ADOLESCENTS IN PALMIRA, COLOMBIA 2018, CROSS-SECTIONAL STUDY"</p> <p><u>Sandra Patricia Moreno Reyes</u>, Cruz Mosquera FE, Cubides Munevar AM. Universidad Santiago de Cali, Universidad San Martín, Cali, Colombia.</p>
PO-19	14:05-14:15	<p>"PROBIOTICS AND PREBIOTICS IN CHILDREN'S DIARRHEA: CASE <i>L. rhamnosus</i> GG"</p> <p><u>Katerine Rojas-Renjifo</u><sup>1,2*</sup>, Urrego LM<sup>1</sup>, Ramírez-Navas JS<sup>2,3,4</sup>. <sup>1</sup>Nutrition and Dietetics, Fac. Health and Rehabilitation, Escuela Nacional del Deporte. <sup>2</sup>GBCP Group, Biotec Corporation. <sup>3</sup>GIEMA Group, Universidad Santiago de Cali. <sup>4</sup>GIPAB Group, Esc. Ing. Alim., Universidad del Valle. Colombia.</p>



PO-20	14:15-14:25	<p>"DETECTION OF RISKS ASSOCIATED WITH ANTIMICROBIAL THERAPY OF A PATIENT HOSPITALIZED WITH POLYPHARMACY"</p> <p><u>Álvaro Vallejos</u><sup>1</sup>, Salazar D<sup>2</sup>, Bogoyá C<sup>3</sup>, Buitrago N<sup>3</sup>, Mahecha D<sup>3</sup>, Palaces P<sup>3</sup> Piñeros N<sup>3</sup>. <sup>1</sup>Chief of Pharmacology Chair - University Foundation of Health Sciences (FUCS), Bogotá, Colombia. <sup>2</sup>Student IX Semester Medicine - University Foundation of Health Sciences (FUCS), Bogotá, Colombia. <sup>3</sup>Student V Semester Medicine - University Foundation of Health Sciences (FUCS), Bogotá, Colombia.</p>
PO-21	14:25-14:35	<p>"PHARMACOLOGICAL MANAGEMENT IN ODONTOGENIC ABSCESES AT THE FIRST LEVEL OF CARE"</p> <p><u>Norayda Franco Fuentes</u>, Castro E, Pardo I. Universidad Santiago de Cali, Colombia</p>
PO-22	14:35-14:45	<p>"ADVERSE EVENTS OF DIPYRONE: HYPOXIC ENCEPHALOPATHY. CLINICAL CASE"</p> <p><u>Alejandro Botero Carvajal</u>, Jimenez Urrego AM, Cubides Munebar AM. Universidad Santiago de Cali; Universidad San Buenaventura; Universidad San Martín, Cali, Colombia.</p>
PO-23	14:45-14:55	<p>"TYPE 1 DIABETES AND INSULIN CONTINUOUS SUBCUTANEOUS INFUSION THERAPY"</p> <p><u>Rosa N. Zambrano</u><sup>1</sup>, López Y, Rivera V. Universidad Santiago de Cali, Colombia.</p>
	15:00-15:30	COFFEE BREAK
PO-24	15:35-15:45	<p>"IMPLEMENTATION OF A RISK MANAGEMENT MODEL IN PATIENTS WITH REUMATOID ARTHRITIS WHO RECEIVE THERAPY WITH DISEASE MODIFIER DRUGS IN A SPECIALIZED CENTER OF THE CITY OF BARRANQUILLA, COLOMBIA"</p> <p><u>Belkis Palacio Villalba</u>, González J, Manrique E, Durán M, Pereira I, Caballero E. Universidad de Cartagena, Colombia.</p>
PO-25	15:45-15:55	<p>"VIRTUAL SCREENING OF PHYSALIN ANALOGUES AS POTENTIAL INHIBITORS OF TRYPANOSOMA CRUZI"</p> <p><u>Neyder Contreras-Puentes</u>, <u>Dainer Pérez-Orozco</u>, Aparicio Marengo D. Corporación Universitaria Rafael Nuñez, Cartagena, Colombia.</p>
PO-26	15:55-16:05	<p>"PHARMACOLOGICAL TREATMENT OF FIBROMYALGIA"</p> <p><u>Diana Yesenia Pinzón</u>, Lopez JA. Universidad Nacional de Colombia, Bogotá, Colombia.</p>
PO-27	16:05-16:15	<p>"PHARMACOVIGILANCE IN ANTIBIOTICS 2007-2017 IN A HOSPITAL OF HIGH LEVEL OF COMPLEXITY OF MEDELLIN COLOMBIA"</p> <p><u>Paola A. Castaño Arias</u>, Angulo Castañeda N, Gonzalez K, Duarte G, Galeano Y, Lopez J, Jaramillo N, Rodriguez K, Oquendo H. Universidad de Antioquia/Clinica Leon XIII, Medellin, Antioquia, Colombia.</p>
PO-28	16:15-16:25	<p>"ETIOLOGY AND PROFILE OF ANTIMICROBIAL RESISTANCE IN PATIENTS WITH URINARY INFECTION OF A HEALTH INSTITUTION OF THIRD LEVEL OF CARTAGENA, COLOMBIA JANUARY 2016- JUNE 2019"</p> <p><u>Elin Y. Manrique</u>, Palacio B, Pimiento J, Durán M. Universidad de Cartagena, Colombia.</p>
PO-29	16:25-16:35	<p>"DRESS SYNDROME ASSOCIATED WITH PHENYTOIN"</p> <p><u>Álvaro Vallejos Narváez</u>, Canal J, Acelas G, Pérez J, Salazar D, Rojas D, García A. Fundación Universitaria de Ciencias de la Salud - FUCS, Bogotá, Colombia.</p>
PO-30	16:35-16:45	<p>"EFFECTS OF KIWI ON ORAL CAVITY: ANTIBACTERIAL AND ANTI INFLAMMATORY"</p> <p><u>Myriam Bermeo de Rubio</u>, Pardo-Herrera I, Gaviria T, Nieto L. Universidad Santiago de Cali, Colombia.</p>



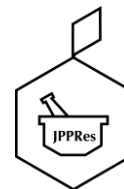
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PO-31	16:45-16:55	"STORAGE OF DRUGS IN HOUSES OF A COMMUNE IN SANTIAGO DE CALI" <i>Jobany Castro Espinosa</i> , Mina Arboleda DM, Quiñones Góngora JS, Guerrero López EY, Díaz González DM, Parra Gutiérrez M. Grupo de Investigación en Educación en Salud (GINEYA). Universidad Santiago de Cali, Colombia.
PO-32	16:55-17:05	"FREE TIME AND THE CONSUMPTION OF ALCOHOL IN SCHOOL TEENS IN CALI, COLOMBIA, PHENOMENOLOGICAL STUDY" <i>Claudia Lorena Perlaza, Freiser Eceomo Cruz Mosquera</i> . Universidad Santiago de Cali, Colombia.
PO-33	17:05-17:15	"CONDITIONS OF ANTIDEPRESSANTS AND BRONCHODILATORS IN THE SWALLOWING OF OLDER ADULTS" <i>Mónica Yohana Perdomo Galindo, Edward Javier Ordóñez</i> . Universidad Santiago de Cali, Colombia.
PO-34	17:15-17:30	"TRENDS IN OPIOID USE IN A COHORT OF PATIENTS WITH RHEUMATOID ARTHRITIS" <i>Machado-Duque ME<sup>1,2</sup></i> , Ramirez-Valencia DM <sup>1,3</sup> , Murillo MM <sup>1,2</sup> , Machado-Alba JE <sup>1</sup> . <sup>1</sup> Grupo de Investigación en Farmacoepidemiología y Farmacovigilancia, Universidad Tecnológica de Pereira – Audifarma S.A, Pereira, Colombia. <sup>2</sup> Fundación Universitaria Autónoma de las Américas, Pereira, Colombia. <sup>3</sup> Anestesiología, Universidad de Caldas, Manizales, Colombia.
PO-35	17:30-17:45	"DRUGS WITH ANTICHOLINERGIC POTENTIAL AND RISK OF FALLS WITH HIP FRACTURE IN THE ELDERLY PATIENTS- A CASE-CONTROL STUDY" <i>Machado-Duque ME<sup>1,2</sup></i> , Castaño JP <sup>1</sup> , Medina-Morales DA <sup>1</sup> , Castro-Rodríguez A <sup>1</sup> , Gonzalez A <sup>1</sup> , Machado-Alba JE <sup>1</sup> . <sup>1</sup> Grupo de Investigación en Farmacoepidemiología y Farmacovigilancia, Universidad Tecnológica de Pereira – Audifarma S.A, Pereira, Colombia. <sup>2</sup> Fundación Universitaria Autónoma de las Américas, Pereira, Colombia.
	17:45-18:30	GENERAL DISCUSSION
SUNDAY, SEPTEMBER 29		
ROOM 1 "PARANINFO"		
PLENARY LECTURES		
COORDINATORS		<i>Octavio Piñeros</i> . MD, MSc. MBA, President of the Colombian Association of Pharmacology and the Latin American Association of Pharmacology (ALF). Universidad del Valle, Cali. Colombia. <i>René Delgado Hernández</i> . (PhD), Past President "Cuban Society of Pharmacology", Vice President, Latin American Association of Pharmacology. Institute of Pharmacy and Food (IFAL), Universidad de La Habana (UH), Havana, Cuba.
CP-14	08:30-09:00	"EMERGING STRATEGIES FOR NEUROPATHIC PAIN TREATMENT. BREAKING BARRIERS TO NOVEL ANALGESIC DRUGS DEVELOPMENT" <i>Bárbara Beatriz Garrido-Suárez</i> . MD. PhD Specialist in Anesthesiology. IASP Chapter Coordinator, Cuba. (International Association of Pain Studies), Institute of Marine Sciences (ICIMAR), Havana, Cuba.
CP-15	09:05-09:35	"PHARMACOGENETICS: REGULATORY CONSIDERATIONS. IMPLICATIONS FOR LATIN AMERICA" <i>Diadelis Ramirez Figueredo</i> . Biochemistry. PhD National Center for State Control of Medicines, Equipment and Medical Devices. Cuban Medicines Agency. (CECMED). Havana Cuba.
	09:40-10:00	COFFEE BREAK
	10:00-13:00	SYMPOSIA (S), ORAL COMUNICATIONS (CO) AND POSTERS ORALES (PO)



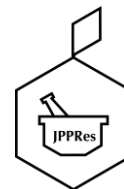
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ROOM "PARANINFO 1" SUNDAY, SEPTEMBER 29		
SYMPOSIUM 10: "PHARMACOEPIDEMOLOGY AND PHARMACOVIGILANCE"		
COORDINATORS		<p><u>Jorge Enrique Machado Alba</u>. MD, PhD. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.</p> <p><u>Maria Acelia Marrero Miragaya</u>. MD, PhD. President of the Cuban Society of Pharmacology. Project Coordinator. National Center for Clinical Trials (CENCEC), Havana, Cuba.</p>
CO-092	10:05-10:20	<p>"USE OF NON-VITAMIN K ANTAGONIST ORAL ANTICOAGULANTS IN PATIENTS WITH NON-VALVULAR ATRIAL FIBRILLATION IN COLOMBIA"</p> <p><u>Jorge Enrique Machado Alba</u>. MD, PhD. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.</p>
CO-093	10:25 - 10:40	<p>"CLINICAL CHARACTERISTICS AND RESOURCE USE OF SYSTEMIC LUPUS ERYTHEMATOSUS IN COLOMBIA"</p> <p><u>Machado-Alba JE</u>, Machado-Duque ME, Gaviria-Mendoza A, González A, Duarte-Rey. Pharmacoepidemiology and Pharmacovigilance Research Group, Universidad Tecnológica de Pereira -Audifarma S.A, Pereira, Colombia. Biomedicine, Autonomous Fundación Universitaria las Américas. Pereira, Colombia. GlaxoSmithKline, Bogotá, Colombia.</p>
CO-094	10:45-11:00	<p>POTENTIALLY INAPPROPRIATE PRESCRIPTIONS OF ANTICHOLINERGIC DRUGS IN PATIENTS WITH BENIGN PROSTATIC HYPERPLASIA</p> <p><u>Luis Fernando Valladales Restrepo</u>. MD. MSc. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.</p>
CO-095	11:05-11:20	<p>"IDENTIFICATION AND ANALYSIS OF ADVERSE DRUG REACTIONS (ADRs) TO ANTIRETROVIRALS IN PATIENTS WITH HIV/AIDS AND PREDICTION OF CAUSALITY USING BIOINFORMATIC TOOLS"</p> <p><u>Martín Luis Alvis Serrano</u>, Alvis M, González T, Durán M, Alvis A. Universidad de Cartagena, Colombia.</p>
CO-096	11:25-11:40	<p>"FACTORS RELATED TO EXCESSIVE POLYPHARMACY IN A COLOMBIAN POPULATION"</p> <p><u>Andrés Gaviria Mendoza</u>. Pharmacoepidemiology and Pharmacovigilance Research Group, Universidad Tecnológica de Pereira -Audifarma S.A. Pereira, Colombia.</p>
CO-097	11:45 -12:00	<p>"INSULIN PRICES IN COLOMBIA: A LONGITUDINAL ANALYSIS"</p> <p><u>Fabián A. Hernández</u><sup>1</sup>, Galvis MF<sup>1</sup>, Currea N<sup>1</sup>, Zapata JD<sup>1</sup>, Venegas J<sup>1</sup>, Vaca C<sup>2</sup>. <sup>1</sup>Universities Allied for Essential Medicines, Chapter Universidad Nacional de Colombia, Sede Bogotá. <sup>2</sup>Pharmacy Department, Universidad Nacional de Colombia, Sede Bogotá. Colombia.</p>
CO-098	12:05-12:20	<p>"ADVERSE EVENTS IN DENTAL PROCEDURES RELATED TO MEDICATION"</p> <p><u>Catalina Estrada González</u>, Pardo Herrera I. Universidad Santiago de Cali, Colombia.</p>
CO-099	12:25-12:40	<p>"PHARMACOLOGICAL TREATMENT AND INAPPROPRIATE PRESCRIPTIONS IN PATIENTS WITH ERECTILE DYSFUNCTION"</p> <p><u>Luis Fernando Valladales Restrepo</u>. MD. MSc. Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia.</p>
CO-100	12:45-13:00	<p>"SEROTONINERGIC SYNDROME (SS)"</p> <p><u>Clara Inés Manrique</u>. MD, Clinical Toxicologist. CES Medellin Colombia.</p>
CO-101	13:05-13:20	<p>"PHARMACOVIGILANCE AND PATIENT SAFETY"</p> <p><u>Daniel Sepúlveda Quintero</u>. Universidad Santiago de Cali, Colombia.</p>
CLOSURE CEREMONY	13:30-14:30	<p>CLOSURE CEREMONY. RAPPORTEUR AND AWARDS. PRESENTATION OF THE NEW ADDRESS OF THE COLOMBIAN ASSOCIATION OF PHARMACOLOGY (ACF) LATIN AMERICAN ASSOCIATION OF PHARMACOLOGY (ALF) PERIOD 2020-2021.</p>



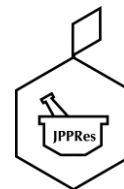
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PRESENTATION OF THE NEXT CITIES BARRANQUILLA CONGRESS - COLOMBIA AND SANTIAGO DE CHILE - CHILE LATINOAMERICAN CONGRESS		
ROOM 2 "AUDITORIO 401" SUNDAY, SEPTEMBER 29		
SYMPOSIUM 11: "SAFETY AND EFFECTIVENESS. BIOTECHNOLOGICAL IN DERMATOLOGY"		
COORDINATORS		<p><u>Celine Blanche</u> BSc, MSc I&amp;R Cosmetic Products. CB Consulting SAS. France.</p> <p><u>Rafael Enrique Campo Misas</u>. QF, MSc. President National College of Pharmaceutical Chemists. Valle del Cauca Regional Unit. Cali. Colombia.</p>
CO-103	10:05-11:10	<p>"STUDIES AND METHODS FOR THE EFFICACY EVALUATION OF DERMATOLOGICAL PRODUCTS"</p> <p><u>Celine Blanche</u>. BSc, MSc I&amp;R Cosmetic Products. CB Consulting SAS. France.</p>
CO-104	11:15-11:45	<p>"ASSESSMENT OF THE SAFETY OF DERMATOLOGICAL PRODUCTS"</p> <p><u>Celine Blanche</u>. BSc, MSc I&amp;R Cosmetic Products. CB Consulting SAS. France.</p>
CO-105	11:50-12:20	<p>"DERMATOCOSMETICS AND COSMECEUTICS. EXPORT AND REGULATIONS"</p> <p><u>Rafael Enrique Campo Misas</u>. QF, MSc. President National College of Pharmaceutical Chemists. Valle del Cauca Regional Unit. Cali. Colombia.</p>
CO-106	12:25-12:55	<p>"FACIAL BIOSTIMULATION WITH PLATELET RICH PLASMA ACTIVATED WITH OZONE RESOUND ON CELLULAR REDOX BALANCE, IMPROVES LIPOATROPHY AND QUALITY OF LIFE IN HIV PATIENTS"</p> <p><u>Lizette Gil del Valle</u>. PhD. Director, Cuban Society of Pharmacology, Institute of Tropical Medicine "Pedro Kouri", (IPK), Havana, Cuba.</p>
CLOSURE CEREMONY	13:30-14:30	<p>CLOSURE CEREMONY. RAPPORTEUR AND AWARDS. PRESENTATION OF THE NEW ADDRESS OF THE COLOMBIAN ASSOCIATION OF PHARMACOLOGY (ACF) LATIN AMERICAN ASSOCIATION OF PHARMACOLOGY (ALF) PERIOD 2020-2021. PRESENTATION OF THE NEXT CITIES BARRANQUILLA CONGRESS - COLOMBIA AND SANTIAGO DE CHILE - CHILE LATINOAMERICAN CONGRESS</p>
CLOSURE CEREMONY	13:30-14:30	<p>CLOSURE CEREMONY. RAPPORTEUR AND AWARDS. PRESENTATION OF THE NEW ADDRESS OF THE COLOMBIAN ASSOCIATION OF PHARMACOLOGY (ACF) LATIN AMERICAN ASSOCIATION OF PHARMACOLOGY (ALF) PERIOD 2020-2021. PRESENTATION OF THE NEXT CITIES BARRANQUILLA CONGRESS - COLOMBIA AND SANTIAGO DE CHILE - CHILE LATINOAMERICAN CONGRESS</p>
ROOM 3 "AUDITORIO 402" SUNDAY, SEPTEMBER 29		
SYMPOSIUM 12: "TEACHING IN PHARMACOLOGY: THE CHALLENGE OF INNOVATION"		
COORDINATORS		<p><u>Marian Hernández Colina</u>. PhD. Titular teacher. Government Board, Cuban Society of Pharmacology. Vice Chancellor. Universidad de La Habana, Cuba.</p> <p><u>Nancy Yodú Ferral</u>. President Section of Education, Cuban Society of Pharmacology, Professor of Pharmacology, Faculty of Medical Sciences "October 10". Medical University of Havana. Cuba.</p>
CO-107	10:05-10:25	<p>"ACADEMY AND SCIENTIFIC SOCIETY OF PHARMACOLOGY: LINKS, ACHIEVEMENTS AND CHALLENGES IN THE TEACHING OF PHARMACOLOGY IN CUBA"</p> <p><u>Nancy Yodú Ferral</u>. MD. MSc. Titular Professor. Faculty "October 10". Medical University of Havana, Cuba.</p>



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CO-108	10:30 - 10:50	<p>"IMMUNOPHARMACOLOGY: A VIEW FROM SCIENCE TO TEACHING"</p> <p><u>Marian Hernández Colina</u>. PhD. Titular Professor. Government Board, Cuban Society of Pharmacology. Vice Chancellor. Universidad de La Habana, Cuba.</p>
CO-109	10:55-11:25	<p>"THE WEB AS A RESOURCE FOR PHARMACOLOGY TEACHING AND ITS EDUCATION: LESSONS LEARNED"</p> <p><u>Andrés Quintero</u>. MD, MSc, PhD. Universidad Libre, Cali. Colombia.</p>
CO-110	11:30-11:45	<p>"FROM PHARMACOKINETICS TO PHARMACODYNAMICS, ARE WE READY FOR 3D SOFTWARE?"</p> <p><u>Luis Alberto Tafur B.</u> MD. MSc. Anesthesiology - Universidad del Valle Clinical Epidemiology - UFRO. Transplant Anesthesia - Hospit Clinic. Teaching, Universidad Libre Cali y Universidad Surcolombiana. Cali, Colombia.</p>
CO-111	11:50-12:05	<p>"THE TEACHING OF PHARMACEUTICAL SCIENCES IN CUBA. EXPERIENCES AND PROJECTIONS"</p> <p><u>Yania Suárez Pérez</u>. PharmSc. PhD. Institute of Pharmacy and Food (IFAL). Universidad de La Habana (UH), La Habana. Cuba.</p>
CO-112	12:10-12:25	<p>"INNOVATIONS FOR THE LEARNING OF PHARMACOLOGY"</p> <p><u>Ricardo A. Peña Silva</u>. M.D., Ph.D. Research Director, Associate Professor. Faculty of Medicine, Universidad de los Andes, Coombia.</p> <p><u>María Alejandra Larrarte González</u>. MD. Internal Medical Faculty of Medicine of the Universidad Andes. Research Assistant. Laboratory of Vascular Pharmacology. Universidad de los Andes, Bogotá. Colombia.</p>
CO-113	12:30 -12:45	<p>"IMPACT OF VIRTUAL LABORATORIES FOR BIOMEDICAL COURSES AT THE MEDICAL SCHOOL"</p> <p><u>María A. Larrarte-González</u>, Sierra A, Mantilla Rivas JO, Santamaría Rodríguez DF, Gómez Montero SM, Giraldo Villa AM, Akle V, Peña Silva RA. Universidad de los Andes, Bogotá, Colombia.</p>
CO-114	12:50-13:05	<p>"THE "MEMORY CLINICS" AS A COMPLEMENTARY TOOL FOR THE IMPROVEMENT OF MEMORIZATION SKILLS IN A PHARMACOLOGY COURSE"</p> <p><u>María Alejandra Larrarte-González</u>, Sierra A, Pena-Silva R. Universidad de Los Andes, Bogotá, Colombia.</p>
CLOSURE CEREMONY	13:30-14:30	<p>CLOSURE CEREMONY. RAPPORTEUR AND AWARDS. PRESENTATION OF THE NEW ADDRESS OF THE COLOMBIAN ASSOCIATION OF PHARMACOLOGY (ACF) LATIN AMERICAN ASSOCIATION OF PHARMACOLOGY (ALF) PERIOD 2020-2021. PRESENTATION OF THE NEXT CITIES BARRANQUILLA CONGRESS - COLOMBIA AND SANTIAGO DE CHILE - CHILE LATINOAMERICAN CONGRESS</p>





XVII Colombian Congress of Pharmacology and Therapeutics  
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(LATINFARMA 2019)  
DOI: <https://doi.org/10.5281/zenodo.3663082>  
Santiago de Cali, Colombia  
September 26-29, 2019



## SECTION OF RESEARCH AND AWARD WORK

### PHARMACOEPIDEMIOLOGY AND PHARMACOVIGILANCE

#### *Audifarma S.A. Award*

##### *First Position*

**PO-003: "PRESCRIPTION PATTERNS AND INDICATIONS OF FLUOROQUINOLONES IN A GROUP OF AMBULATORY PATIENTS IN COLOMBIA"**

Machado-Duque ME, Mercado K, Bernal MC, Uribe S, Machado-Alba JE. Pereira, Colombia.

##### *Second Position*

**CO-041: "ANTIPSYCHOTICS DRUGS DISPENSATION TO CHILDREN UNDER 15 YEARS DURING THE PERIOD 2014-2019 IN A PEDIATRIC REFERENCE HOSPITAL, MONTEVIDEO, URUGUAY"**

García J, Nan L, Giachetto G. Montevideo, Uruguay.

##### *Third Position*

**CO-090: "PROFILE OF ANTICOAGULANT USE IN HOSPITALIZED PATIENTS, PHARMACOLOGICAL INTERACTIONS AND ADVERSE REACTIONS IDENTIFIED"**

Vallejos A, Bello A, Domínguez M. Bogotá, Colombia.

##### *Fourth Position*

**PO-026: "PHARMACOLOGICAL TREATMENT OF FIBROMYALGIA"**

Pinzón D A, López JA. Bogota, Colombia.

##### *Fifth Position*

**PO-027: "PHARMACOVIGILANCE IN ANTIBIOTICS 2007-2017 IN A HOSPITAL OF HIGH LEVEL OF COMPLEXITY OF MEDELLIN COLOMBIA"**

Castaño Arias P, Angulo Castañeda N, González K, Duarte G, Galeano Y, López J, Jaramillo N, Rodríguez K, Oquendo H. Medellín, Colombia.



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## CLINICAL AND APPLIED PHARMACOLOGY

*Alfonso Matallana Award - Tecnoquimicas S.A.*

### *First Position*

**CO-026: "DEVELOPMENT AND SYNTHESIS OF NEW MOLECULES FOR THE TREATMENT OF DIABETES, METABOLIC SYNDROME AND INSULIN RESISTANCE"**

D'Vries R<sup>1</sup> Villamizar Delgado S, Porras LM, Piñeros O, Ellena J. Cali, Colombia.

### *Second Position*

**CO-016: "EVIDENCE IN PHARMACOGENOMIC IN PERUVIAN POPULATION: POLYMORPHISMS RELATED TO METABOLISM, TRANSPORT AND TARGET OF DRUGS"**

Salazar-Granara A, Tácuna AL, Sandoval J, Marcos P, Bianchi JP, Huaccho JJ, Valencia E, Araújo da Silva W, Lens L, Rodriguez A, Carhuallanqui JP, Urbano A, Barbosa-Coelho E. Lima, Perú.

### *Third Position*

**CO-106: "FACIAL BIOSTIMULATION WITH PLATELET RICH PLASMA ACTIVATED WITH OZONE RESOUND ON CELLULAR REDOX BALANCE, IMPROVES LIPOATROPHY AND QUALITY OF LIFE IN HIV PATIENTS"**

Gil L, Acosta-Suarez MA, Rabeiro-Martínez CL, Gravier R, Hernández González-Abreu María C, Font MR, Bermúdez Y, Rosell T, Hernández D, Duque M, Campos J, and cols. La Habana, Cuba.

### *Fourth Position*

**CO-065: "PREVALENCE OF PERIPHERAL NEUROPATHY ASSOCIATED WITH CANCER CHEMOTHERAPY IN FOUR ONCOLOGY CENTERS OF COLOMBIA, 2015-2016"**

Martínez JW, Sánchez-Naranjo JC, Londoño De Los Ríos PA, Isaza-Mejía CA, Sosa-Urrea JD, Martínez-Muñoz MA, López-Osorio JJ, Marín-Medina DS, Machado-Duque ME, Machado-Alba JE. Pereira, Colombia.

### *Fifth Position*

**CO-052: "ANTIBIOTIC CONSUMPTION IN HEALTH CARE INSTITUTIONS IN CALI BETWEEN 2013 AND 2018"**

Castro J, Saldarriaga E. Santiago de Cali, Colombia.



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## BASIC PHARMACOLOGY

*Enrique Núñez Olarte Award - Laboratorios Roche S.A.*

### *First Position*

#### **CO-075: "OUTER MEMBRANE VESICLES EXTRACTED FROM *NEISSERIA MENINGITIDIS* SEROGROUP X FOR PREVENTION OF MENINGOCOCCAL DISEASE IN AFRICA"**

Acevedo R, Zayas C, Gunnstein N, Fernández S, Cedre B, Aranguren Y, González H, Hernández M, Rosenqvist E, Naess L, Tunheim G, Cardoso D, García L. La Habana, Cuba.

### *Second Position*

#### **CO-027: TARGETING NEUROINFLAMMATION WITH JM-20, A NOVEL SYNTHETIC NEUROPROTECTIVE COMPOUND. A NEW APPROACH TO DEVELOPMENT THERAPIES FOR NEUROPATHIC PAIN**

Garrido-Suárez BB, Godoy J, Garrido G, Castro M, Spencer E, Valdés O, Merino N, Ochoa-Rodríguez E, Verdecia-Reyes Y, Ferreira SH, Piñeros O, Delgado R. La Habana, Cuba.

### *Third Position*

#### **CO-014: ANTIPARASITIC PROFILE OF ALSINOL, A PROMISING MOLECULE AGAINST PROTOZOAN HEMOPARASITES**

Arias MH, Quiliano M, Berthier D, Minet C, Chantal I, Valentin A, Garavito G, Aldana I, Deharo E. Bogotá DC, Colombia.

### *Fourth Position*

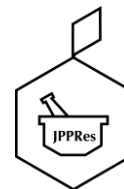
#### **CO-22: "DEVELOPMENT OF A RESEARCH STRATEGY FOR THE USE OF FRUIT WASTES FROM ATACAMA DESERT AS A SOURCE OF OBTAINING EXTRACTS, WITH ANTIOXIDANT AND HYPOGLYCEMIC ACTIVITY, THROUGH NON-CONVENTIONAL EXTRACTION TECHNIQUES"**

Garrido G, Valdés M, Pozo P, Díaz L, Benavente MJ, Bahamonde A, Durán HM, González-Tello CP, Chou WHF, Olivares GO, Sáez CJ, Carrasco M, Campusano CCA, Piñol P, Cortés P, Barraza FA, Medina MI, Garrido C, Briceño C, Pizarro L, Encina F, Sandoval CS, Muñoz MI, Cabrera GJ, Ossandón N, Valderrama P, Garrido M, Barraza M, Urquieta S, Palma MJ, Escobar P, Vega C, Fuentealba O, Gutiérrez NJ, Tapia CM, Valenzuela DA, Cortés N, González VJ, Nieto B, Alda M, Díaz M, Conley NE, Parra P, Yañez P, Figueroa V, Carvajal S, Veas K, Gospodnetic A, Villarroel J, Cifuentes F, Pérez B, Alucema A, Barriga A, Morón C. Antofagasta, Chile.

### *Fifth Position*

#### **CO-012: "RAPANONE, A NATURALLY OCCURRING BENZOQUINONE, INHIBITS MITOCHONDRIAL RESPIRATION AND INDUCES HEPG2 CELL DEATH"**

Pardo Andreu GL, Reis FHZ, González Durruthy M, Delgado Hernández R, D'Vries R, Vanden Berghe W, Alberichi LC. La Habana, Cuba.



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## PLENARY LECTURES (CP)

### CP-002: A NUTRI-EPIGENETIC PERSPECTIVE ON HEALTH AND “INFLAMM-AGING” DISEASE: CAN WE ADD HEALTHY YEARS TO OUR LIFE?

**Vanden Berghe W**

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Chronic inflammation promotes various life-threatening diseases, including cancer, neurological and cardiometabolic disorders. They are also considered “inflamm-aging” diseases because they become more common with older age. Due to the complex interplay between genetics, dietary lifestyle and environmental factors, some individuals remain healthy, whereas others start to suffer from “inflamm-aging” disorders at young age. Recently, the field of “epigenetics” has revolutionized our view on healthy aging. Besides genetic information encoded in the DNA nucleotide sequence, which allows synthesis of all functional protein and noncoding RNA molecules, chemical epigenetic instructions restrict expression in a cell type specific and time dependent fashion. Moreover, whereas genetic information does not change after birth, epigenetic instructions continuously anticipate to environmental factors (i.e. stress, nutrition, lifestyle, pollution) throughout life. Altogether, our health or disease state strongly relies on a delicate balance of genetic (“nature”) and epigenetic (“nurture”) information. Today, the dietary lifestyle is believed to play a crucial role in the development and/or prevention of age-related diseases by lifelong remodeling of our epigenomes. Most dietary phytochemicals and macro- and micronutrients trigger multiple epigenomic changes via oxidative stress and inflammatory signaling or regulation of metabolic pathways and mitochondrial bioenergetics. Interestingly, common epigenetic changes in cancer, cardiometabolic and neurodegenerative disease patients revealed a common “inflammaging” DNA methylation signature which might reflect age dependent shifts in blood immune-cell type distribution and immune cell infiltration in aging tissue. Experiments demonstrating increased longevity upon caloric restriction or a mimetic resveratrol diet have recently boosted nutri-epigenetic research to promote healthy aging by slowing down epigenetic “inflamm-aging”. Promises and challenges of nutri-epigenetic intervention studies in health and disease will be discussed.



## **CP-004: A MODEL OF DISCOVERY AND DEVELOPMENT OF PROBIOTICS PRODUCTS: ESTABLISHING A PARADIGM, EFFECTIVE BIOPROSPECTING, RELEVANT SCREENING AND SUCCESSFUL DEPLOYMENT**

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Within the past 10 years, the study of microbiomes has taken off, with significant contributions to human health, food and materials science and agricultural productivity. As a botanist, I have studied plant associated microbiomes to help me discover microbes with potential for probiotic use in agriculture. Beginning 9,000 years ago, maize was domesticated from wild grasses in Mexico (teosintes), bred into diverse varieties and moved to new soils throughout the Americas – such dramatic changes to the plant's genetics and growing environment likely resulted in the loss of endosymbionts. To help establish a bioprospecting paradigm for maize, I surveyed the bacterial endophytes that inhabit seeds of 14 diverse ancestral, ancient and modern *Zea* genotypes, as well as the microbiomes of some of these plants when grown on different soils that span the tropical-to-temperate migration route of maize. I found that root and rhizosphere populations of bacteria are primarily inherited from the seed, and that bacterial community composition of seeds correlates with plant genetics rather than growing environment, suggesting that as humans bred maize they have also inadvertently impacted its bacteriome – bioprospecting for endophytes in wild and ancient varieties of maize appears to be a good way to find different or lost components of the maize microbiome. Based on this approach, some examples of the beneficial microbes we discovered include the strongly plant growth promoting *Burkholderia phytofirmans* isolated from seeds from a giant Mexican landrace, root growth enhancing *Enterobacter asburiae* isolated from seeds of a wild variety of Nicaraguan swamp grass and the fungal biocontrol strain *Burkholderia gladioli* isolated from seeds of a Mexican desert popcorn. These successes attracted the attention of the venture capital firm, Flagship Pioneering who capitalized on them to found the plant microbiome company Indigo Agriculture which has expanded upon my bioprospecting paradigm with many patents and development of a highthroughput screening pipeline to allow discovery of revolutionary probiotics for plant agriculture. Aspects of the process needed to successfully develop a plant probiotic will be discussed.



## **CP-006: ETHNOPHARMACOLOGY WITH SOCIAL RESPONSIBILITY**

**Garavito G**

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Use of natural products for therapeutic purposes is as old as human civilization, which for a long time had only in them the tool for the treatment of diseases. Throughout history different societies have acquired and preserved the knowledge necessary to identify and treat diseases, this knowledge is transmitted by oral tradition from generation to generation, this set of knowledge uses and attitudes constitutes traditional knowledge.

Ethnopharmacology is the interdisciplinary scientific study of natural products related to the knowledge and practices that different cultures have used for purposes of diagnosis, prevention or cure of diseases. Ethnopharmacology involves two disciplinary approaches; ethnology related to the scientific approach to the culture or society of peoples and pharmacology related to the scientific study of remedies and their effect on living organisms, especially the biological effect of drugs as well as the identification, classification (biological and chemical) of materials of plant origin and their active components, including their effect on living organisms.

Recognizing the importance of traditional medicine and the valuation of the biological diversity of our countries and its possible applications in public health (and eventually in pharmaceutical); This conference seeks to encourage attendees interest in rescuing and documenting cultural heritage and from a critical point of view address issues related to ethnobiology, ethnomedicine, ethnopharmacology, biodiversity protection, access to genetic resources and traditional knowledge and fair and equitable distribution of benefits derived, as well as to share some research experiences in this field in Colombia and thus contribute to improving public health of the population.

## **CP-007: CARDIOVASCULAR RISK: PHARMACOLOGICAL PREVENTION**

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Cardiovascular diseases continue to be the number 1 cause of death worldwide, above cancer and respiratory diseases. Different pharmacological treatments have been developed in recent years to reduce the likelihood of new events in those patients who have already had a previous heart attack or have had a stroke. This conference will review the latest evidence about available therapies to reduce new events in patients with very high cardiovascular risk.



## CP-009: PHYTOMEDICINAL VERSUS PHARMACOLOGICAL TREATMENT OF CANCER: AN EPIGENETIC PERSPECTIVE

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Cancer is a leading cause of death worldwide, accounting for an estimated 9.6 million deaths in 2018. Cancer epigenetics is the study of epigenetic modifications to the DNA of cancer cells that do not involve a change in the nucleotide sequence. Recent advances in the field of epigenetics have shown that human cancer cells harbor global epigenetic abnormalities, in addition to numerous genetic alterations. These genetic and epigenetic alterations interact at all stages of cancer development, working together to promote cancer progression. These findings have led to a global initiative to understand the role of epigenetics in the initiation and propagation of cancer and therapy response. The fact that epigenetic aberrations, unlike genetic mutations, are potentially reversible and can be restored to their normal state by epigenetic therapy makes such initiatives promising and therapeutically relevant. Epigenetic alterations may be just as important, or even more important, than genetic mutations in a cell's transformation to cancer and therapy response.

Triple negative breast cancer (TNBC) is characterized by poor prognosis and a DNA hypomethylation profile. We found that the steroidal lactone Withaferin A (WA), isolated from the plant *Withania somnifera*, triggers active chromatin remodeling and elicits promising chemosensitising effects in triple negative breast cancer (BC) cells. Furthermore, we compared epigenetic reprogramming by a natural phytomedicine Withaferin A and the pharmacological epigenetic drug 5-aza-2'-deoxycytidine (DAC) in TNBC treatment. By Infinium HumanMethylation450 arrays, Epityper Mass array and CpG pyrosequencing, we determined genome-wide DNA methylation changes in weakly-metastatic and aggressive, metastatic BC cell lines treated with a pharmacologically relevant concentration of 700 nM WA. Furthermore, epigenetic changes in response to WA were crosscompared with genomewide methylation changes and clinical breast cancer patient characteristics in The Cancer Genome Atlas database. Opposite to the DNA hypomethylating agent 5-aza-2'-deoxycytidine (DAC), WA treatment of TNBC cells silences an epigenetic cancer network through gene-specific hypermethylation of tumor promoting genes including ADAM metalloproteinase domain 8 (ADAM8), urokinase-type plasminogen activator (PLAU), tumor necrosis factor (ligand) superfamily, member 12 (TNFSF12), and genes related to detoxification (glutathione S-transferase mu 1, GSTM1), or mitochondrial metabolism (malic enzyme 3, ME3). Remarkably, DNA hypermethylation of corresponding CpG sites in these genes correlates with receptor tyrosine-protein kinase erbB-2 amplification (HER2)/estrogen receptor (ER)/progesterone receptor (PR) positive status in primary BC tumors. Increased expression levels of JARID1B, promoter-specific loss of active H3K4me3 chromatin marks and gain of DNA methylation suggest that WA-specific gene silencing involves epigenetic reprogramming of HER2/ER/PR-dependent gene expression programs to suppress aggressive TNBC characteristics in favor of luminal BC hallmarks with an improved therapeutic sensitivity. In summary, WA may represent a novel class of epigenetic phytomedicine to overcome therapy resistance in TNBC.





## CP-010: NEW TRENDS IN THE QUALITY CONTROL OF VACCINES: ALTERNATIVE METHODS BASED ON 3RS AND BEYOND

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Vaccine quality control is crucial for the manufacturing, lot release and commercialization activities worldwide. However, the current process is by-design too slow and expensive because is based on large animal assays for assuring the potency and safety of these important biological products. The development of 3Rs alternative methods (Reduction, Refinement and Replacement) is a trend able to significantly reduce the releasing times and costs of the vaccine quality control processes in the next few years. Particularly, the replacement of the animals-based potency and toxicity assays by alternative procedures more relevant, fast, accurate, reproducible and cheap, including serology, direct antigen quantification, cell culture tests and the Consistency Approach, for just mentioning some of them, implies a paradigm shift, with undisputable ethical, logistical, economic, scientific and technical repercussions for ensuring the vaccine quality parameters. Theoretical basements, advantages and implementation levels of the alternatives methods as well as their main limitations are presented in this Paper.

**Keywords:** Alternative Methods, Quality Control, Vaccines.

## CP-013: EFFECTS OF THE HUMAN MICROBIOMA ON THE ADMINISTRATION OF MEDICINES: IS ANOTHER BRANCH OF PHARMACOLOGY NECESSARY?

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In an adult human body, typically it can be found ten times more microbial cells than all of the human cells that comprise it, due in large part to the very high density of microbes found in the intestinal tract (typically between  $10^{11}$  and  $10^{12}$  bacteria per milliliter of luminal content).

This microbial ecosystem has evolved along with *Homo sapiens* and serves numerous vital functions for its human host, including protection against pathogens, nutrient processing, stimulation of angiogenesis, storage and regulation of host adipose tissue. It is clear now that this list of bacteria present in the digestive tract is not yet complete and as this field of study expands, and new roles and increasingly intimate symbiotic relationships are discovered.

The bacterial population inhabiting the gastrointestinal tract composed of more than 100 trillion metabolically active cells differentiated in hundreds of filotypes with a bacterial metagenome 150 times larger than the human genome is called the intestinal microbiota. With this genetic and metabolic potential, intestinal microbioma is vital to the functioning of the human body. The intestinal microbiome is essential in the ability to extract energy from food as is the case with non-digestible polysaccharides from plants; It acts as a "bacterial buffer" limiting the access of pathogenic bacteria to the digestive tract, making it a fundamental member of the human immune system, making it crucial in the prevention of diseases during childhood, development and in adult life; It processes foods that the small intestine cannot, stimulates angiogenesis, produces energy through short-chain fatty acids, regulates fat deposits in the host and controls the stress response.

Studies based on genomic techniques have shown that intestinal flora can detect and adapt the environment in the gastrointestinal tract, by regulating genetic expression and certain post-transduction modifications of chemical substances that act in the digestive tract (autocrine secretion) and in organs outside it (paracrine secretion). These effects are mediated by a group of low molecular weight substances (cytokines, chemokines)



that are rapidly distributed throughout the body and interact with specific targets in tissues, organs and the entire body, so it can be concluded that the Effects of probiotic bacteria are systemic in nature. Many of these participate in genomic, epigenetic processes and throughout human metabolism regulating the expression of DNA throughout life.

Recently, traditional concepts in pharmacology and therapeutics have been challenged by reports describing reciprocal microbiome-xenobiotic interactions and a growing appreciation that microbial metabolites could exert their effects through receptor-mediated mechanisms. The patient's microbiome has an enormous impact on the metabolism of the drugs and the xenobiotic substances, since it manages to alter the results of the therapy and the toxicity of the medications.

So far in clinical practice, the effect of the microbiome on therapeutics, and the implications on the prognosis of treatments have not been taken into account. Intestinal ecophysiology can have consequences for all pharmacological aspects of medications.

#### CP-014: ANIMAL MODELS OF CHRONIC PAIN. ROLE IN THE STUDY OF EFFICACY OF NEW ANALGESIC COMPOUNDS

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**Introduction:** Chronic pain is a frequent condition, affecting around 20% of people worldwide. It has been recognized as pain that persists past normal healing time and hence lacks the acute warning function of physiological nociception. Particularly neuropathic pain (NP) and complex regional pain syndrome type 1 (CRPS-I) have remained a clinical challenge. Despite decades of extensive studies on its treatment and underlying mechanisms, a safer and more effective solution remains to be found. **Aims:** The present study reproduces sciatic nerve chronic constriction injury (CCI), a model of post-traumatic painful peripheral neuropathy, paclitaxel-induced painful peripheral neuropathy and post-ischemia pain (CPIP), a model of complex regional pain syndrome type I (CRPS-I), in rats. To examine the possible antiallodynic and anti-hypernociceptive effects of the potential new analgesic drugs. **Methodology:** All experimental procedures were carried out in male Sprague-Dawley rats in agreement with International Association Study of Pain (IASP) Guidelines for the Use of Animals in Research which are according with European regulations on animal protection (Directive 86/609) and/or the Guide for the Care and Use of Laboratory Animals. **Results:** These models in our experimental conditions provide important tools for the study of novel natural or synthetic analgesic compounds, analgesic combinations and novel strategies for improved efficacy of opioids. Particularly for the study of sympathetically maintained or/and independent pain, the use of emergent neuroprotective strategies for preventing and treating NP and for pre-clinical studies of analgesic drug interactions. Since *in-vivo* models, as integrated systems, are essential for the study of net overall activity that leads to the sensation of pain. **Conclusions:** Despite, the significant challenges for a successful clinical translation of results, the animal models of chronic pain have a place in "rational" analgesic drug development.



## CP-015: PHARMACOGENETICS AND HERBAL MEDICINES

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The science of pharmacogenomics has advanced significantly in the last five years, but it is still in infancy and is mostly used on research basis. The Pharmacogenomics helps identify interindividual variabilities in drug response (both toxicity and effectiveness). Due to the fast growing in the consumption of phytomedicines, it is necessary the investigation of mechanism of actions of these products with more rigor. The aim of this work is to present an updated report about this novel topic pharmacogenetic and its relation with herbal medicines'. The herbal medicines like synthetic drugs have been showed their bioactivation through cytochrome P-450, the main enzyme involved in the metabolism of xenobiotics. The main enzymes involved in the metabolism of phytomedicines, the advantages and disadvantages of bioactivation to metabolites less or more toxics are described as well as the pharmacodynamic interactions involving herbs. Moreover, the herbs which affect the P-glycoprotein activity *in vitro* will be showed. These studies strengthen and optimize the safety of herbal medicines. The hope for the future is that through personalized medicine, doctors and patients will be able to make better-informed choices about treatment. This treatment will avoid the adverse drug reaction to the medication and will improve the diagnosis diseases as well as the prevention and treatment of diseases.



## ORAL COMMUNICATIONS (CO)

### CO-001: FROM THE THEORY TO THE PRACTICE: LAW ENFORCEMENT FOR THE ORPHAN DISEASES

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In Colombia, it has been defined, among others, that an Orphan Disease is one whose prevalence is less than one in 5,000 inhabitants, which means that they are very rare and therefore, the interest in studying them is not the most appropriate, as in the whole world. This leads to a more difficult diagnosis and treatment, because health professionals are unaware of them and there is no chair for them in the country's universities. This is critical for patients who suffer from them and for their families since the vast majority of them are not diagnosed until 5 to 10 years after the beginning of symptoms and when this occurs, the disease has already progressed overmuch and has caused permanent effects. Most of these diseases are from genetic origin (80%), they are not curable but progressive, weakening the patient and it leads to death prematurely, but before this occurs, they have not only caused physical but psychological and social damages, they have deteriorated the family economy. The structure of the health system in Colombia revolves around economic profitability and the cost for the care of these patients is very high for intermediaries, which is why patients and their families have a greater burden, having to bear in addition to the disease, many delays in the authorizations of diagnostic tests and evaluations by specialists an additional barrier to improve their quality of life considerably affected. Based on the legislation for orphan diseases in the country, the *Hospital Universitario del Valle (HUV)* with the support of the Department's Government and in coherence with the social responsibility that strengthens it and additionally, being the largest provider of services from High level of complexity for the care of patients from lower social strata belonging to the Subsidized Regime, the directives have decided to turn it into a Reference Center for the care of patients with orphan diseases and to achieve this, the institution is complying with the extensive regulations and in the short to medium term, will be postulated to assist in a comprehensive way the patients, under an already designed model, which revolves around the patients and their families.



## CO-003: REPRESENTATION OF THE GENOMIC VARIABILITY OF THE MUCOPOLYSACCHARIDOSIS COMPLEX IN THE SOUTH-WEST OF COLOMBIA

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The Mucopolysaccharidosis (MPS) are lysosomal storage diseases that are characterized by excessive accumulation of glycosaminoglycan sulfate (GAGs) in the organs and tissues due to the alterations of the genes, which codify enzymes involved in the lysosomal degradation of the Mucopolysaccharides. Seven different types of MPS disorders are recognized (I, II, III, IV, VI, VII y IX) with eleven specific lysosomal enzyme deficiencies. MPS related information in Colombia is currently limited. No precise prevalence-incidence data is available. A descriptive research involving results obtained in the full genomic sequencing of 244 patients with different types of pathologies and not clinically diagnosed with MPS was carried out with the purpose of outlining a genomic variability of genes associated with the Mucopolysaccharidosis complex in the South-West of Colombia. Bioinformatics software was applied with the purpose of analyzing the clinic significance of the different varieties established and a population frequency of each of the varieties was concluded as well as an interaction network of the genes evidenced within the MPS complex was performed. 509 different gene MPS complex involved variants were evidenced of which 262 not previously reported variants. The most frequently reported genes were IDUA, GLB1 y GALNS, those involving MPS I, MPS IV A and MPS IVB accordingly. 9 pathogenesis involved varieties were found within the whole MPS complex, revealing pathogenesis varieties in the GALNS gene of 33.3%. The results of this research led to the determination of the genetic and allele frequencies of the MPS complex, which will alert the medical community and health authorities in regards to the presence of the variants of MPS involved genes of the population in order to identify clinical manifestations early and establish programs with the purpose of introducing early diagnosis programs since a specific treatment for several of those is currently available, connecting the importance of transdisciplinary handling in order to minimize morbidity and morbidity associated with this disease, including adequate generic related counseling approaching precision medicine. Keywords: Mucopolysaccharidosis complex, genomic variability, Variants, bioinformatics, precision medicine.

## CO-007: SEXUAL STEROID TREATMENT IN TURNER SYNDROME PATIENT

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Turner syndrome is characterized by alteration in chromosomes and with broad expression of them that trigger manifestations in various systems of the human body, especially the Endocrine. At the Gonadal level, they present primary gonad failure due to the absence of gonads or due to their early degeneration, which leads to an estrogen deficit in the prepubertal and pubertal stage or of instauration in the middle puberty stage. It is necessary to replace sex steroids in these patients to avoid the consequences on sexual characteristics, bone health and cardiovascular risk. The therapeutic strategies and sexual steroid presentations indicated in these patients will be discussed.



## CO-009: EPIGENETIC REGULATION IN NEUROLOGICAL DISEASES: CONSIDERATIONS FOR DEVELOPING NEW EPIGENETIC THERAPIES IN AD-DOWN SYNDROME

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Advances in the understanding of the epigenetic mechanisms that control gene expression in the central nervous system (CNS) and their role in some neuropathologies are opening the way towards a new therapeutic approach centering on reversing the epigenetic underpinnings of some neuropathologies by testing new molecules with inhibitory activities on histones modification enzymes and DNA methylation. In this conference, I do present a general landscape about the complexity of epigenetic processes and also the current knowledge for their involvement in CNS disorders, mainly in Down syndrome (DS) and AD. Using computational simulations with several bioinformatic tools, my research group have studied the expression profiles of genes encoding for histone methyltransferases and histone transacetylases in structures of brain cortex, hippocampus and cerebellar cortex of DS. With this purpose massive expression data were obtained from several databases of DNA microarray experiments which included gene expression in postmortem brain samples of DS and euploids controls. We studied epigenetic writers and erasers of histones H3 and H4, and also the 5'-met-CpG of gene promoters in brains structures of DS. The results of such approach, did lead to obtain a more detailed landscape of the complex chemical epigenetics modifications operating in DS brain. Moreover, open the road to evaluate the potential efficacy of some molecules as candidate to inhibit the chemical modifications of H3 and H4 histones would facilitate the management the specific epigenesis in the CNS. Finally, I do review the particular challenges of such approach as a new strategy to address the future of neuro-epigenetics through the development of improved evidence-based epigenetic therapeutics combining pharmacological mechanisms of epigenetic drugs and neurodegeneration as a process involved in some human neuropathologies.

**Keywords:** Human brain, Down syndrome, Histone modification enzymes, DNA methylation, Neuroepigenetics, Futured neuro-epigenetics drugs.





## CO-010: EVIDENCE IN PHARMACOGENOMICS IN PERUVIAN POPULATION: POLYMORPHISMS RELATED TO METABOLISM, TRANSPORT AND TARGET OF DRUGS<sup>i</sup>

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**Introduction:** Enzymes for drugs metabolism like isoforms of Cytochrome P450 (CYP), proteins for drug transport like organic cation transport (OCT) or efflux transporter protein such as P-glycoprotein, and pharmacological target like angiotensin converter enzyme (ACE) or angiotensin (AGT) can change its normal activity due to the presence of single nucleotide polymorphism (SNP) at the gene that encoded them. Also, it is known that Peruvian population have an 80% of Native American genetic influence. The objective was to determinate the presence of polymorphism related to the metabolism, transport and pharmacological target of drugs in Peruvian population.<sup>1</sup> **Methodology:** 540 volunteers were enrolled; these came from 22 departments located on the coast, the Andes and the Amazon. DNA were extracted from blood samples. The determinations for each polymorphism were made with TaqMan genotyping assays in a LightCycler 480-Thermocycler RT-PCR (Roche). It was set the following polymorphism: CYP2C9\*2(rs1799853), CYP2C9\*3(rs1057910), CYP2C8(rs1058932), CYP2C19\*2(rs4244285), CYP2C19\*3(rs4986893), CYP4A11(rs1126743), CYP4F2(rs2108622), OCT1(rs4709400), ABCB1(rs1045642, rs2032582, rs1128503), AGT(rs699), AGTR1(rs5186), ACE(rs4343) and NR3C2(rs5522).<sup>2</sup> **Results:** Hardy-Weinberg's equilibrium test ( $\chi^2$ ) determinate a p value > 0.05 for CYP2C9\*2, ABCB1 2677 G>T/A, AGT M235T, AGTR1 A1116C, ACE G2350A and OCT1 SLC22A1 polymorphisms. The other variants distribution has been influenced for the natural region Coast, Andean and Amazonian; also the presence of altitude modified the distribution of the frequency of the evaluated polymorphisms. Overall, the frequency range of the mutated alleles was 0.54 (CYP2C19\*3) - 96.48(CYP2C9\*2). **Conclusion:** In a group of Peruvian, it was shown a large variability in the evaluated polymorphisms, also, in some genes were observed an influence in their frequency distribution, by the natural region of origin and the presences of altitude. These results are important for to put in practice the pharmacogenomics in el Peru. **Acknowledgment:** To the authorities of Universidad de San Martín de Porres and Universidade de São Paulo for the support at running this project.

### References

1. Miranda, C; et al. (2011). Rev Chil Cardiol, 30(3), 218-224. DOI: 10.4067/S0718-85602011000300005
2. Bogdan, R; et al. (2012). Am J Psychiatry. 169. 515-22. DOI: 10.1176/appi.ajp.2011.11060855.

<sup>i</sup> The Scientific Articles Program Committee of the XVII Colombian Congress of Pharmacology and Therapeutics 2019 and the XXII Latin American Congress of Pharmacology 2019 (LATINFARMA 2019) recognizes this work with the SECOND POSITION in ALFONSO MATALLANA AWARD - TECNOQUIMICAS S.A. in the section of CLINICAL AND APPLIED PHARMACOLOGY.



## CO-012: RAPANONE, A NATURALLY OCCURRING BENZOQUINONE, INHIBITS MITOCHONDRIAL RESPIRATION AND INDUCES HEPG2 CELL DEATH<sup>ii</sup>

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**Introduction:** Rapanone is a natural occurring benzoquinone with several biological effects including unclear cytotoxic mechanisms. Its chemical structure is similar to that of coenzyme Q, the well-known mitochondrial electron transporter, suggesting that mitochondria could be involved in its cytotoxic mechanisms. **Aim:** Here we addressed if mitochondria are involved in the cytotoxicity of rapanone towards cancer cells. **Methodology:** Studies were performed in both hepatic carcinoma (HepG2) cells and primary rats' hepatocytes. Mitochondria isolated from rat liver were also used. In order to study the interaction between rapanone and the human mitochondrial respiratory complex III, an *in silico* mechanistic study based on molecular docking was performed. **Results:** In the HepG2, rapanone induced mitochondrial membrane potential dissipation, ATP depletion reactive oxygen species (ROS) generation, and phosphatidylserine externalization; this later event is indicative of apoptosis induction. In primary culture of hepatocytes, rapanone showed cytotoxicity, only from concentrations higher than 75  $\mu$ M. Loading of isolated mitochondria with rapanone caused inhibition of phosphorylating respiration and uncoupled oxygen consumption in organelles incubated with the complex I substrates glutamate and malate or the complex II substrate succinate, the latter recovered by TMPD/ascorbate. Rapanone also dissipated mitochondrial membrane potential, released  $\text{Ca}^{2+}$  from  $\text{Ca}^{2+}$ -loaded mitochondria, increased ROS generation, increased membrane fluidity and depleted ATP. Further analysis demonstrated that rapanone inhibited decylbenzilquinol-induced cytochrome c reduction, identifying complex III as the site of inhibition by this agent. Computational docking results of rapanone to cytochrome *bc1* complex from the human sources found spontaneous thermodynamic processes for the quinone- $\text{Q}_o$  and  $\text{Q}_i$  binding interactions, supporting the experimental *in vitro* assays. **Conclusion:** Collectively, these observations suggest that rapanone impairs mitochondrial respiration by inhibiting electron transport chain at Complex III and promotes mitochondrial dysfunction. This property is potentially involved in rapanone toxicity on cancer cells.

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## CO-013: MANGIFERIN: PRECLINICAL ANTIANGIOGENIC AND ANTITUMORAL ACTIONS OF A NATURAL GLUCOSYLXANTHONE: PRESENT RESEARCH RESULTS AND FUTURE DRUGS DEVELOPMENT

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**Introduction:** An update is made on the research done on mangiferin, a natural glucosylxanthone reported in the contemporary herbal scientific literature, which has been the object of several studies in Cuba since the 1990s, based on the fact that it was found as a major bioactive ingredient of an aqueous extract obtained from the bark of the mango tree (*Mangifera indica* L.) marketed in Cuba under the trademark Vimang. The main preclinical phytochemical and pharmacological investigations developed with the total extract and with mangiferin are reflected, starting by the demonstration of its powerful antioxidant effect, as well as anti-inflammatory, analgesic, immunomodulatory and antitumor actions. Particular depth is achieved in the demonstration of the antitumor action of isolated mangiferin; with a preclinical research strategy that goes from the traditional tests of cytotoxicity, proliferation and angiogenesis *in vitro*, to studies using experimental models *in vivo*. Considering the reduced initial reports of cytotoxic activity for this molecule and the fact that it was proposed by ethnomedical studies that patients with some types of oncological processes; and the fact of these patients reported marked improvement; Our research team decided to explore the activity of this versatile molecule on other mechanisms involved in tumor pathophysiology, this is why the studies of tumor angiogenesis began.

**Methodology:** *In vitro* studies were carried out using primary cultures and lines of endothelial origin. In addition, *in vivo* experiments of tumor angiogenesis; subcutaneous ectopic tumor and induced pulmonary metastasis; using tumor lines of colon and melanoma. All these studies were accompanied by molecular analysis of expression and genetic modulation in cells and tissues from the most advanced molecular technologies available for these purposes. In that sense, in each experimental protocol, we proceeded to the isolation, purification and amplification of the total RNA of cells and tissues, its analysis by RT-q-PCR techniques; microarray and RNAseq and the corresponding bioinformatic processing of the results (IPA-Ingenuity Pathway Analysis). **Results:** Finally, the results provide new findings in the antitumor action of mangiferin and its mechanisms of action, as well as its potential future adjuvant actions in oncological therapy; with a significant antiangiogenic activity, reporting the marked regulation of genes related to cell proliferation, apoptosis, migration, invasion and metastasis of tumor cells. In addition, the results of these studies suggest an immunomodulatory action in the tumor microenvironment, with effects on cytokines; chemokines, angiokines and other immunological factors related to the development and spread of cancer. **Conclusions:** This research provides important preclinical findings that support the possible use of mangiferin in clinical studies as a potential adjuvant of antitumor therapy. **Acknowledgments:** This research was possible with the special financial contribution of two VLIR UOS projects Nr. ZEIN2011PR383 (concluded) and ZEIN2016PR418 (current process) from Flemish Belgium VLIR collaboration program and the Project of Institute of Food and Pharmacy, Havana University.



## CO-014: ANTIPARASITIC PROFILE OF ALSINOL, A PROMISING MOLECULE AGAINST PROTOZOAN HEMOPARASITES<sup>iii</sup>

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**Introduction:** Control and elimination of malaria, Neglected Infectious Diseases (NIDs) and other emerging diseases are fundamental to achieve at least seven of 17 UNDP's Sustainable Development Goals; nevertheless, drugs to treat these diseases are limited. We report herein the pharmacological activity of alsinol (ASN), a new arylamino alcohol derivative, against *Babesia*, *Plasmodium* and *Trypanosoma*. **Methodology:** Alsinol was synthesized at and provided by the Faculty of Pharmacy of the Universidad de Navarra. ASN was evaluated *in vitro*, against *P. falciparum* W2 gametocytes stages, *Babesia divergens* and *Trypanosoma brucei brucei*. ASN was also evaluated *in vivo* against *P. berghei* in mice, respecting Colombian legislation on the use and care of laboratory animals (N° 008430). The IC<sub>50</sub>'s were estimated from a dose-response model using regression analysis. (ANOVA with p 0.05). **Results:** *In vitro*, ASN inhibits gametocytogenesis (IC<sub>50</sub> = 3.75 µM) and mature *P. falciparum* gametocytes (IC<sub>50</sub> = 1.23 µM) while primaquine (control drug) inhibits 75% of gametocytogenesis and 100% of mature gametocytes at 22 µM. ASN and imodocarb dipropionate inhibit parasitic proliferation of *B. divergens* with IC<sub>50</sub> = 34.0 ± 5 µM and 3.8 ± 01 µM, respectively. ASN (10 µg/ml) and Diminazene aceturate (Veriben®) (1.5 µg/ml) inhibit 100% mobility of *T. b. brucei*. *In vivo* the ED<sub>50</sub> of ASN and chloroquine (CQ), against *P. berghei*, were 17.4mg/kg/day and 2.4mg/kg/day respectively. **Conclusion:** The usefulness of molecules with antimalarial activity for the treatment of other infections caused by protozoa has gained great relevance in the last decade; Alsinol is a potent antiplasmodial agent active against sexual and asexual stages of *P. falciparum*, making it a potential tool for the control and elimination of malaria by blocking the disease transmission cycle. Like CQ and artemisinin, ASN showed promising *in vitro* activity against *Babesia* and *Trypanosoma*. **Acknowledgment:** MH Arias is grateful to Departamento Administrativo de Ciencia, Tecnología e Innovación (Colciencias) for their PhD scholarship (Convocatoria 647, Doctorados Nacionales 2014) and this work was supported by the Vicedecanatura de Investigación, Facultad de Ciencias, Universidad Nacional de Colombia.

**Keywords:** *P. falciparum* gametocytes; Malaria; *Babesia*; *Trypanosoma*.

### References

1. Garrido Suarez BB, et al. (2018). Front. Pharmacol. 9:1119. DOI: 10.3389/fphar.2018.01119.
2. Quiliano, M., et al. (2018). European Journal of Medicinal Chemistry, 152, 489. DOI: 10.1016/j.ejmech.2018.04.038

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## CO-015: ANTIOXIDANT SUPPLEMENTATION EFFECTS IN AIDS PATIENTS WITH DELAYED DIAGNOSIS OF HIV: AN OPEN RANDOMIZED CONTROLLED TRIAL

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**Introduction:** Acquired immune deficiency syndrome (aids) constitutes a global health problem. During antiretroviral therapy (ART) oxidative stress status points out the need for antioxidants in these patients indeed pre or post exposition to ART. **Methodology:** In an open randomized control trial, 80 aids delayed diagnosis patients whose received prescription of ART were selected to be covered under Hospital-IPK monitoring consults. Patients received Spirel® tablets (200 mg) or Vimang® extract (300 mg) three times a day plus ART during 12 months. The baseline assessment and the final follow-up of the patients who meet the inclusion criteria consider doing some lab tests to determine the absolute count of CD4 + T lymphocyte, viral load, chemical, hematological and seven plasma redox indexes. **Results:** Final variables values were compared with the baseline value and between groups. The incidence of opportunistic infection and adverse reactions were identified during the follow-up. Also, quality of life questionnaires were assessed at pre and post study period in both groups. There were significant differences regarding positive change in five redox indexes in both groups compared baseline ( $p < 0.05$ ). No significant difference was found in the hematological and biochemical indexes at the end of the study. Quality of life improvement was demonstrated related the use of antioxidants concomitant to ART. Patient survival was 50 percent higher in both group respect historical group. **Conclusion:** Antioxidant beneficial effect was demonstrated, without any toxic influence during the twelve months-study.





## CO-016: FUNCTIONAL FOODS AND INGREDIENTS

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When visiting any supermarket, it is possible to observe countless new food products, which on their labels promote a series of claims related to well-being and health. These products are the so-called functional foods (foods or nutraceuticals, fortified, enriched, added, supplemented, etc.) that, in addition to nutritional properties, also have therapeutic benefits [1-3].

By reviewing consumption trends, it is observed that the number of buyers of this type of food increase every day. According to Technomic (<https://www.technomic.com>), 78% of consumers made a great effort to get more vitamins in their diet and 57% tried to consume more products with special nutritional ingredients. However, many consumers are unaware of the scientific basis for the development of these products or the studies that support their effectiveness. At present, the information offered by advertising campaigns has become the "knowledge" or "popular wisdom" of most buyers. The detail used by some companies to offer miraculous foods.

Functional foods are natural or processed foods that, being part of a varied diet and consumed in adequate amounts and on a regular basis, in addition to nourishing, have bioactive components that help normal physiological functions and/or that contribute to reducing or preventing the disease risk [4]. There are several ways to classify them: by their biological function (antioxidants, anticancer, antiglycemic, antibacterial, antimicrobial, anti-inflammatory, hypocholesterolemic, osteogenic, etc.), by their chemical structure (macronutrients, micronutrients, vitamins and minerals, phytochemicals, food fiber, etc.) or by its nature (microorganisms). Some examples are [5]:

**FATTY ACIDS** (e.g., omega 3), which reduce the risk of cardiovascular disease and the development of tumors, as well as the symptoms of menopause (e.g., eggs, sea products).

**ANTIOXIDANTS** (vitamins C and E, carotenes, flavonoids, and polyphenols), which reduce the risk of cardiovascular diseases and the development of tumors (e.g., juices and soft drinks).

**PHYTOCHEMISTRY** (phytosterols, isoflavones, and lignin), which reduce cholesterol levels and menopausal symptoms (e.g., margarine).

**VITAMINS and MINERALS** (vitamins B6, B12, D and K, folic acid, calcium, magnesium, zinc, etc.), which reduce the risk of cardiovascular diseases and osteoporosis and strengthen the immune system (e.g., dairy products and bakery).

**PREBIOTICS** (fructooligosaccharides, glucooligosaccharides, inulin, etc.), which favor the growth of beneficial intestinal bacteria (e.g., vegetables, fruits, whole grains).

**PROBIOTICS** (lactobacilli and bifidobacteria), which improve bowel function (e.g., yogurts).

Another category of functional foods is the related with those genetically modified to be agronomically and nutritionally improved, obtained from one organism to which genes from another were incorporated to produce the desired characteristic. At present, foods from transgenic plants such as corn, barley or soybeans (soybeans) have a greater presence. For example, an interesting development is the one carried out in Colombia by CIAT (International Center for Tropical Agriculture) with the varieties of corn FNC - 32AC and FNC - 31AC, white and yellow, respectively, which have a higher content of essential amino acids such as tryptophan and lysine that the body needs to form protein.

The new trends in consumption have not only influenced the search for new properties in food but also in the packaging, labeling requirements and detail of product content, presentations, sizes, shapes, uses, among other features, that allow them greater durability, presentation quality and gain space in an increasingly demanding market.





However, it is important that consumers understand some things about these new developments:

- The actual biochemical effectiveness of some of these products has not always been easily proven or has not been supported by any serious scientific evidence.
- Functional foods do not cure or prevent themselves and are not essential in the diet; A healthy person who follows a balanced diet already ingests all the nutrients he needs, without resorting to this new category of food.
- Food can be considered functional if it is demonstrated that, in addition to having an adequate nutritional effect, it beneficially affects one or several functions of the organism, so that it contributes to improving health and well-being or reducing the risk of disease.
- Functional foods are still foods and must demonstrate their effects in the amounts considered normal for consumption in the diet.

Additionally, consumers are unprotected, as there is a regulatory vacuum. The development of new products does not go hand in hand with efficiency in the creation of policies that regulate them. National governments should urgently address issues such as consumer information, classification of food products, the effectiveness of the functionality of new foods, etc., to prevent consumers from being deceived with false information [6, 7].

#### References

1. Saarela M. Functional foods: concept to product. 2nd ed. Oxford, UK; Philadelphia, PA: Woodhead Pub.; 2011. xxix, 640 pp.
2. Aluko RE. Functional foods and nutraceuticals. New York, NY: Springer; 2012. xii, 155 pp.
3. Nelson DL. Functional foods: sources, health effects, and future perspectives: Nova Science Publishers, Incorporated; 2017. xi, 316 pp.
4. Ashwell M. Concepts of Functional Foods Belgium: International Life Sciences Institute; 2002. 45 p.
5. Wildman REC. Handbook of nutraceuticals and functional foods. Boca Raton, FL: CRC Press; 2016. 560 pp.
6. Bagchi D, Lau F, Ghosh DK. Biotechnology in functional foods and nutraceuticals. Boca Raton: CRC Press; 2010. xviii, 573 pp.
7. Bagchi D. Nutraceutical and functional food regulations in the United States and around the world. Second edition. ed: Academic Press; 2008. xxxv, 554 pp.



## CO-017: MEDICAL CANNABIS: THE PLANT THAT RELIEVES?

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Cannabis has been used for many years for medicinal purposes by different Eastern cultures in principle, being introduced in the West by William O'Shaughnessy in the 19th century. In recent years, advances have been made both in the pharmacological knowledge of cannabis (discovery of endogenous receptors and ligands) and in its indications and therapeutic benefits, such as management of chronic and oncological pain, nausea and vomiting secondary to chemotherapy and appetite stimulation in patients with pathologies such as cancer and AIDS. In this way, medical cannabis has become an alternative for the control of some diseases in patients whose traditional therapies do not offer the desired result, thus overcoming the stigma of being a plant that only offers social problems and addictive complications and behavioral.

## CO-018: ADVANCES IN BIOLOGICAL EFFECTS OF THE PERUVIAN “CHUCHUHUASI” MAYTENUS MACROCARPA (RUIZ & PAV.) BRIQ: ANALGESIC DOSE-RESPONSE AND ANTIDEPRESSIVE/NEUROLEPTIC EFFECT

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**Introduction:** *Maytenus macrocarpa* (Ruiz & Pav.) Briq. (MM), is used as an analgesic to hallucinogenic plant, among others uses. Previous studies of the leaves confirmed an anti-inflammatory property and an antidepressant/neuroleptic effect. The objective was to explore the dose-response analgesic effect of the leaves and bark; and to determine the antidepressant/neuroleptic activity of the isolated flavonoids and alkaloids. **Methodology:** MM was collected in Madre de Dios (Sur-east, Peru) and deposited at the Herbarium Vargas CUZ (3547/3653). It was used 256 female BALB/c mice. The analgesic activity was explored by the Writhing (WT) and Hot plate test (HPT). The antidepressant/neuroleptic effect was determined by the swim-forced test (SFT). The USMP-FMH approved the study. The data are presented as mean and SD; ANOVA and correlation test were applied. Statistical significance was established (IC95%,  $p < 0.05$ ). GraphadPrism V5.0 was used. **Results:** The latency period in the WT demonstrated differences between leaves and bark, with a tendency a more prolongation by the bark (ANOVA,  $p < 0.05$ ). In the WT was observed differences between leaves and bark and suggest a better analgesic activity of the leaves (ANOVA test,  $p < 0.05$ ), also, dose-response effect was presented ( $r = 0.4149$ , IC 0.2249 - 0.5744,  $p < 0.05$ ). In the HPT were observed the antinociceptive effect for bark and leaves, and better effect from the leaves, likewise was shown dose-response for the two, (ANOVA,  $p < 0.05$ ,  $r = 0.4149$ , IC 0.2249 - 0.5744,  $p < 0.05$ ). The SFT demonstrated the neuroleptic effect of the alkaloids and flavonoids, and more potency activity by the alkaloids and flavonoids from the leaves (ANOVA,  $p < 0.05$ ). **Conclusion:** MM bark is traditionally used like medicine; this study demonstrated the peripheral and central analgesic activity of the bark and the leaves; likewise, the study probed the neuroleptic effect of the alkaloids and flavonoids. The leaves of MM shown better effects. **Acknowledgment:** To the Dean of the Facultad de Medicina Humana de la

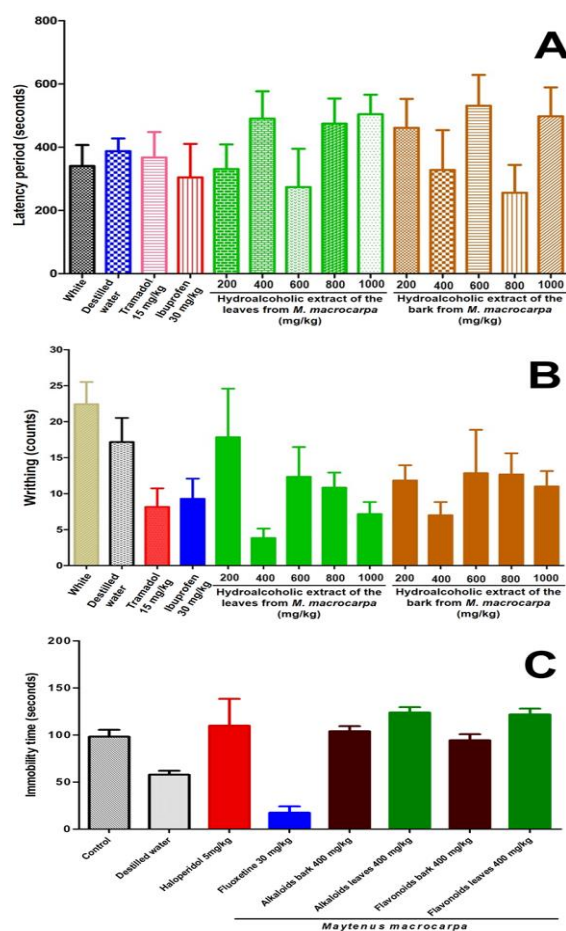


Universidad de San Martín de Porres, Dr. Frank Lizaraso Caparó. To the Past and currently Director of the Instituto de Investigación Dr. Benjamín Castañeda Castañeda and Dr. Frank Lizaraso Soto.

#### References

- 1.- Luján-Carpio E, et al. Anti-inflammatory and neurobehavioral effects of the leaves from *Maytenus macrocarpa* (Ruiz and Pavón) Briquet in mice. Pharmacogn J. 2019;11(1): 75-80.
- 2.- Tácuna-Calderón AL, et al. Antidepressant and antipsychotic-like activity of the ethanolic extract of the leaves of *Maytenus macrocarpa*. Pharmacogn J. 2018;10(6)Suppl: s33-s37.

**Figura 1.- Analgesic and antidepressant/neuroleptic effect from leaves and bark from *Maytenus macrocarpa* (Chuchuhuasi)**



**Panel A:** Outcome of the latency period in the writhing test; these results demonstrated differences in the appear the contortions between leaves and bark from *M. macrocarpa*, it's validated by the one way ANOVA test that shown a  $p < 0.05$ . **Panel B:** Outcome of the abdominal contortions in the writhing test; these demonstrated differences in the number of abdominal contortions between leaves and bark from *M. macrocarpa*, and suggest a better analgesic activity of the leaves in front of the bark, it's validated by the one way ANOVA test that shown a  $p < 0.05$ , also, the paired test shown differences into doses in the leaves groups and bark groups, and, in addition, It was shown dose response, that it is validated by the Pearson correlation coefficient whom shown  $r = 0.4149$ , IC (0.2249 - 0.5744) and a  $p < 0.05$ . **Panel C:** Outcome of the immobility time form the swim-forced test; this demonstrated differences between alkaloids and flavonoids from the *M. macrocarpa*, it's validated by the one way ANOVA test that shown a  $p < 0.05$ ; also, it is shown differences between leaves and bark, and tendency to neuroleptic, and also more potency activity by the alkaloids and flavonoids from the leaves.



**Table 1.- Antinociceptive effect of the leaves and bark from *Maytenus macrocarpa* (Chuchuhuasi) in the hot plate test**

Dosis	Minuto 0	Minuto 0	Minuto 30	Minuto 30	Minuto 60	Minuto 60	Minuto 90	Minuto 90	Minuto 120	Minuto 120
Blanco	15.0 ± 3.23	15.0 ± 3.23	12.6 ± 5.07	12.6 ± 5.07	13.0 ± 3.61	13.0 ± 3.61	14.6 ± 2.50	14.6 ± 2.50	15.89 ± 3.30	15.89 ± 3.30
Placebo	14.61 ± 2.87	14.61 ± 2.87	15.2 ± 2.82	15.2 ± 2.82	14.8 ± 4.55	14.8 ± 4.55	14.2 ± 3.37	14.2 ± 3.37	16.89 ± 2.57	16.89 ± 2.57
Tramadol	13.64 ± 4.15	13.64 ± 4.15	35.8 ± 9.21	35.8 ± 9.21	33.1 ± 9.67	33.1 ± 9.67	34.6 ± 8.98	34.6 ± 8.98	34.79 ± 8.94	34.79 ± 8.94
200 mg/kg	14.61 ± 2.60	12.21 ± 4.61	19.3 ± 5.26	27.5 ± 8.82	24.6 ± 7.72	29.8 ± 9.46	34.7 ± 8.57	29.3 ± 9.36	34.5 ± 8.58	28.73 ± 8.76
400 mg/kg	12.21 ± 3.74	15.47 ± 3.92	31.4 ± 9.96	32.6 ± 8.72	32.1 ± 8.94	32.7 ± 9.38	31.4 ± 8.94	37.7 ± 8.75	31.06 ± 8.87	36.25 ± 9.56
600 mg/kg	14.53 ± 4.16	12.76 ± 4.15	32.7 ± 9.67	26.7 ± 10.1	38.3 ± 8.34	33.5 ± 10.9	39.2 ± 9.02	31.8 ± 10.5	42.55 ± 4.75	35.85 ± 8.84
800 mg/kg	14.29 ± 3.31	14.21 ± 3.85	24.3 ± 6.7	27.2 ± 5.22	40.1 ± 7.31	35.4 ± 9.41	36.6 ± 9.54	38.3 ± 7.54	36.99 ± 8.5	35.56 ± 8.4
1000 mg/kg	12.08 ± 4.64	12.57 ± 3.8	28.3 ± 8.22	25.3 ± 8.3	29.4 ± 8.37	28.8 ± 8.42	31.1 ± 8.47	37.0 ± 7.9	37.15 ± 9.64	34.0 ± 9.21

The Green column are the outcomes of the hydroalcoholic extract of the leaves from *M. macrocarpa*, the one way ANOVA test shown a p < 0.05, also, the Pearson correlation coefficient whom shown red 4149, IC (0.2249 - 0.5744) and a p < 0.05, thus it is demonstrated the antinociceptive activity of the leaves and dose-response mechanism. Brown column are the results of the bark from *M. macrocarpa*, the one way ANOVA test shown a p < 0.05, thus it is demonstrated the antinociceptive activity of the bark.



## CO-019: VASCULAR INTERACTIONS OF THE MAIN METABOLITES ISOLATED FROM *CROTON SCHIEDEANUS* "ALMIZCLILLO"

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**Introduction:** Combination therapy is an effective therapeutic strategy in clinical practice when the agents improve the pharmacological response and allow to reduce the doses and the risk of potential adverse effects. With this therapeutic approach, new therapeutic alternatives are researched to reduce the current notable impact of arterial hypertension on public health. Natural sources could provide active principles that could interact in a synergistic way and offer new pharmacological options of combination therapy. *Croton schiedeanus*, a traditionally specie used in Colombia for antihypertensive purposes<sup>1</sup>, has major metabolites such as 3,7-Di-O-methylquercetin (DMQ) and 3,7,4'-Tri-O methylquercetin (ayanin), agents which vasorelaxant profile is linked at least in part to the nitric oxide/guanylate cyclase pathway, however their possible synergistic interaction had not been studied until the date. **Methodology:** The vasodilator effect obtained with ayanin was examined in absence and presence of increasing concentrations of DMQ in Wistar and SHR (Spontaneously hypertensive rat) rat isolated aortic rings previously contracted with phenylephrine Sigma Aldrich. Concentration response curves were obtained, and data were analyzed throw sigmoidal fitting regression. Results were treated in GraphPad Prism version 6.01 and Combeneft<sup>2</sup>. The concentration - effect of these flavonoids was compared with the ethanolic extract from the arterial parts of *C. schiedeanus*, as well as their behavior in the presence of nitric oxide inhibitor L-NAME (N Omega-Nitro-L- arginine methyl ester) and guanylate cyclase inhibitor methylene blue, both from Sigma Aldrich. **Results:** DMQ at the higher concentrations evaluated increased the vasorelaxant effect of ayanin in potency and efficacy in Wistar as well as SHR isolated aorta rings. That response is attenuated but not reverted when the nitric oxide/cyclic guanosine monophosphate pathway is inhibited. **Conclusion:** Appropriate combination of DMQ and ayanin results in a vasodilator interaction of synergistic type effect that could be useful for therapeutic purposes.

### References

1. Torres M.; et al. (2012). Revista Colombiana de Ciencias Químico-Farmacéuticas. 41(1):36-49.
2. Veroli G. D.; et al. (2016). Bioinformatics. 32:2866-2868. DOI: 10.1093/bioinformatics/btw230.



## CO-020: CLINICAL TRIAL IN NATURAL PRODUCTS. GOLDEN RULES ABOUT MEDICINAL PLANT

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Currently, products are based on the chemical and biological diversity derived from plants with medicinal properties, but future products may be in-licensed from other sources. An overview is given of various strategies aimed at clinical trial of natural products, with particular emphasis on some design important. The increment in the use of the natural therapies and especially of the herbal medications it should take to that, so many those that indicate it, as those that elaborate it market, as well as the responsible ones in regulating their use, increase the demands, and this way to arrive to the consumers or patients completing three basic elements, effectiveness, security and quality. It makes necessary the application of the methodology of clinical rehearsal to guarantee the quality, security and effectiveness for this medication type. It is carried out an analysis of the why it becomes necessary to subject to clinical rehearsals the medicinal plant that at the present time are marketing without the regulatory demand necessary. We emphasized the need of strict quality control measures including clinical trials, toxicity studies, and detailed composition and dosage display, before launching a new drug.

**Keywords:** design, clinical trial, medicinal plant.

## CO-021: REGULATORY FRAMEWORK OF TRADITIONAL, COMPLEMENTARY AND INTEGRATIVE MEDICINE IN CUBA

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In the last decade, there has been a global upsurge in the use of traditional medicine and complementary and alternative medicine in both developed and developing countries. This is one of the main reasons for reinforcing the surveillance of the safety, efficacy and quality control of traditional medicine, complementary and alternative medicines. This work describes important aspects about the art state of the regulatory status of herbal medicines. Besides that, data related with the countries involved in the World Health Organization (WHO) program for traditional medicine will be showed. Besides that, it *shows* the characteristics of the traditional medicine in Cuba and the main requirements for the registering of herbal medicinal products in Cuba. The market and the main challenges are analysed in the investigation of the phytomedicines as well as the tendencies in the growth of this attractive sector. The strategies for the development of herbal medicinal products in Cuba are showed as well as some of the interactions between natural and synthetic drugs in Cuba as a part of Pharmacovigilance Program. Drug Regulatory Authorities should ensure the quality, safety and efficacy of traditional medicines.





## CO-022: DEVELOPMENT OF A RESEARCH STRATEGY FOR THE USE OF FRUIT WASTES FROM ATACAMA DESERT AS A SOURCE OF OBTAINING EXTRACTS, WITH ANTIOXIDANT AND HYPOGLYCEMIC ACTIVITY, THROUGH NON-CONVENTIONAL EXTRACTION TECHNIQUES<sup>iv</sup>

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**Introduction:** The ecological and economic problems caused by waste from the agriculture and food industry, mainly the industrial processing of fruits, can be minimized using these residues in order to obtain products of high added value. It has been reported that phenolic substances are compounds present in the fruit waste and that these exhibit antioxidant activity. Several studies have already been carried out on the antioxidant activity in food systems of fruit waste, but few have demonstrated hypoglycemic activity. The development of this activity depends on the concentration of polyphenols in the mixture of chemical components comprising the extract. Moreover, this concentration will depend on the extraction technique used. Recently, it has been shown that the non-conventional methods of extraction, such as ultrasound (UAE) and microwave (MAE), are very useful for obtaining higher yields of polyphenols with higher antioxidant activity, which could have also better hypoglycemic activity. Taking into account the above findings, the wastes (pomace, peels and seeds) of fruits (lemon, orange, tangelo, olive, mango, avocado, and guava) growing up in Northern of Chile were used for determinations of total phenolic and flavonoid and the characterization and quantification of these phenolic compounds. Also, it was carried out the evaluation of antioxidant and hypoglycemic activities. **Methodology:** The extracts from fruit waste were obtained by means of Soxhlet, UAE and MAE. In all of cases, the plant material was extracted with different solvents (water, ethanol or their mixtures). For MAE and UAE, samples were extracted in these solvents being carried at different potencies, temperatures and times or different sonication frequencies, temperatures and times; respectively by mean of experimental designs for response surface methodology. To compare the effectiveness of different extraction methods the yield and the total of phenolic and flavonoid compounds by means of the Folin-Ciocalteu/Fast Blue and AlCl<sub>3</sub> methods, respectively were performed. Moreover, to characterize the obtained phenolic compounds was used the HPLC-UV-ESI-MS analysis after the validated method HPLC-DAD. The evaluation of the antioxidant activity of the extracts was performed by ABTS, DPPH, FRAP, CUPRAC and ORAC assays and the hypoglycemic activity was tested by alpha-amylase and alpha-glucosidase inhibitions. **Results:** The extracts, obtained through unconventional methods, had similar or higher amounts of phenols and flavonoids as well as antioxidant and hypoglycemic activities compared to Soxhlet. In this way, its efficiency in obtaining these compounds was improved due to the shorter production time (5-45 min) compared to Soxhlet extraction (4-8 h). In this manner, the mango seed and tegument extracts of the avocado seed obtained by MAE were highlighted with the highest activities tested.

<sup>iv</sup> The Scientific Articles Program Committee of the XVII Colombian Congress of Pharmacology and Therapeutics 2019 and the XXII Latin American Congress of Pharmacology 2019 (LATINFARMA 2019) recognizes this work with the FOURTH POSITION in ENRIQUE NÚÑEZ OLARTE AWARD - LABORATORIOS ROCHE S.A. in the section of BASIC PHARMACOLOGY.



**Conclusion:** This research added value by becoming an ecologically sustainable study to be useful in the decision making both regional and small farmers for sustainable development of the products in this place. Moreover, the Northern of Chile where grow the fruits that constitute the material in this study reports high levels of solar radiation throughout of the year due to geographical location what typically receives high levels of UV irradiance during more than six consecutive months/year. Taking into account these geographical features, also supported by the efficiency of extraction techniques such as ultrasound and microwave, this study found extracts with potent antioxidant and hypoglycemic activities. This work is the result of the FONDECYT 1130601 project and the interaction of 38 undergraduate thesis students, 5 students in training, 8 academics and 3 institutions. **Acknowledgment:** This study has been funded by FONDECYT Project N° 1130601.

### CO-023: EFFECT OF THE VEGETABLE OIL EXTRACTED FROM *ANNONNA CHERIMOLA* SEEDS ON THE RELEASE OF MATRIX METALLOPROTEINASE-9 GRANULES IN HUMAN NEUTROPHILS

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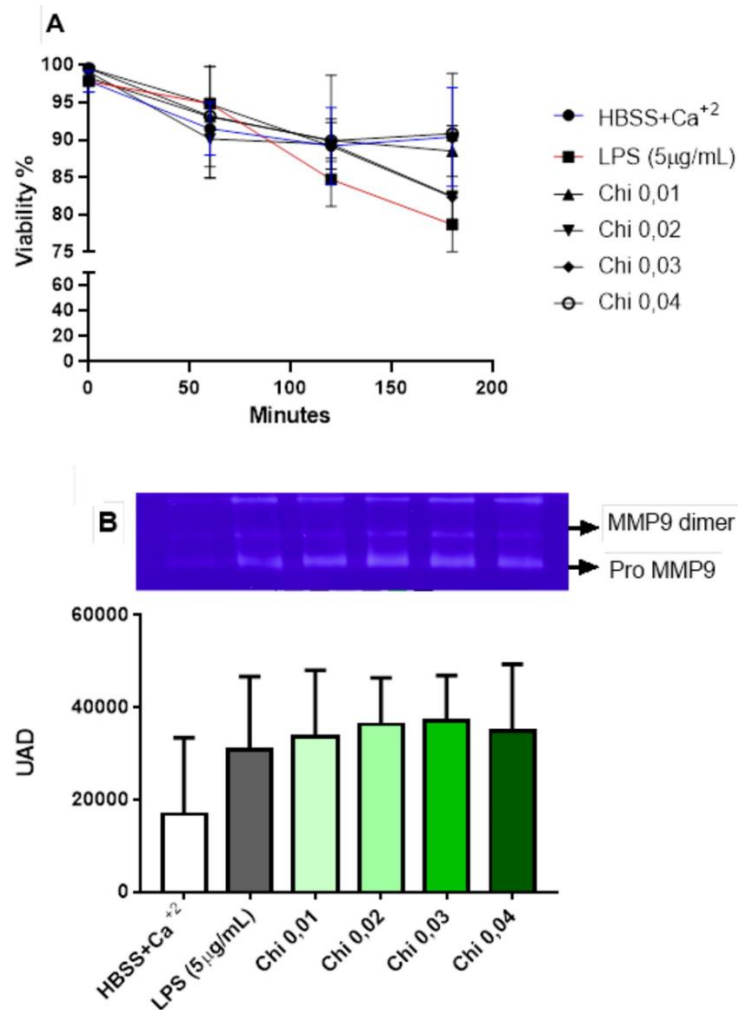
**Introduction:** Noncommunicable chronic diseases represent a high cost for the health system. Their pathogenesis involves chronic inflammation generated by a deregulated neutrophil function, which increases, among others, the release of substances like Matrix Metalloproteinase 9 (MMP-9). This enzyme allows the neutrophils to cross the endothelium and reach the inflammation site in order to begin its resolution. Natural products have been traditionally used for the management of the inflammatory process, an example of those being *Anonaceae* extracts. In this study, we evaluated the effect of the vegetable oil (VO) extracted from *Annona cherimola* (chirimoya) seeds on the release of MMP-9 in human neutrophils (PMNs). We also analyzed whether this extract has a cytotoxic effect on PMNs. **Methodology:** Experimental quantitative study. The VO was obtained from seeds via extraction with supercritical fluids. We ruled out the cytotoxic effect through the determination of the viability percentage, using the trypan blue exclusion assay during 3 hours. We isolated neutrophils from peripheric human blood using the Percoll gradient technique and determined their viability and purity (>90%). We carried out a stimulation with different VO dilutions at 37°C for 15 min., using negative (HBSSCa<sup>2+</sup>) and positive (5 mg/ml LPS) controls. Then, the cultures were subjected to centrifugation in order to obtain the supernatant and 10 µl were used for zymography in 7,5% polyacrylamide gels enriched with 0,2% gelatin. Gels were digitalized and analyzed with ImageJ® software. The statistical analysis was conducted using licensed GraphPad 8.0. **Results:** None of the trials showed a cytotoxic effect on the neutrophils, which had an average viability higher than 78% during the 3-hour period employed in all assays (fig. 1A). We observed an increase in the release of MMP-9 in the neutrophils stimulated with different VO dilutions (fig. 1B). This result suggests a possible “priming” effect, which is a mechanism by which quiescent PMNs reach a pre-activation stage that allows them to generate a more powerful response once a microbicidal activity is required. To our knowledge, there are no current studies reporting on the effects of this oil on the MMP-9 release. However, there are studies showing the effect of other *Anonaceae* on the release of granules from neutrophils<sup>1,2</sup>. **Conclusion:** The increase in the MMP-9 release induced by the analyzed VO highlights the need of more comprehensive studies



to demonstrate its potential pharmaceutical use in the treatment of diseases associated with inflammatory processes. **Acknowledgment:** This project is financed by the Investigations System of the University of Nariño.

#### References

1. Quílez, A.M.; et al. (2018). J Ethnopharmacol. 225:244-270. DOI: 10.1016/j.jep.2018.06.014.
2. Tundis, R.; et al. (2017). Ann N Y Acad Sci. 1398(1):30-36. DOI: 10.1111/nyas.13339.





## CO-024: NEUROPROTECTIVE ACTION OF MAURITIA FLEXUOSA OIL (AGUAJE) IN AN EXPERIMENTAL MODEL OF EPILEPSY

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**Introduction:** Investigations have demonstrated that a rich diet based on fatty acids such as omega 3 and 6 have anti-inflammatory, anticonvulsant and neuroprotective effects. *Mauritia flexuosa* (MF) is a fruit from the rain forest in Peru and consumed in other countries as Brazil. Furthermore, it contains high levels of isoflavonoids,  $\beta$ -carotene and tocopherol. The main objective was to determine the protective action of *Mauritia flexuosa* oil on pentylenetetrazole-induced seizures in albino mice. **Methodology:** Gas Chromatography-FD was assessed in order to determine the percentage of omegas in *Mauretia flexuosa* oil. Thirty male Balb/c albino mice of 8 weeks of age were purchased from the National Institute of Health (Lima-Peru). The animals were divided into 5 groups of 8 animals each one. Group I: Control; PTZ (pentylenetetrazole 80 mg / kg, s.c.). II: PTZ + diazepam (1 mg / kg; s.c.). Group III, IV, V: PTZ + MF oil at single doses of 250, 500, 1000 mg / kg respectively orally. *Mauritia flexuosa* oil was administered 30 minutes before induction of seizures by PTZ. Next, various parameters such as latency, seizure frequency, duration and score were scored according to Racine scale. The program Graph Pad Prism v.4 was used for statistical analysis. **Results:** The analysis by gas chromatography showed; palmitic acid: (C16: 0)  $10.60 \pm 0.06\%$ , stearic acid (C18: 0):  $4.40 \pm 0.01\%$ , oleic acid (C18: 1):  $21.10 \pm 0.02\%$ , linoleic acid (C18: 2):  $50.36 \pm 0.01\%$ ,  $\alpha$ -linolenic acid (C18: 3):  $12.00 \pm 0.02\%$ , vaccenic acid (C18: 7):  $1.30 \pm 0.005\%$ . The experimental group treated with *Mauritia flexuosa* oil at maximum dose of 1000 mg/kg showed better results in response to PTZ induced seizure; low levels of seizures, frequency and duration ( $P < 0.001$ ; ANOVA,  $P < 0.001$  post-hoc Tukey test). **Conclusion:** It is concluded that *Mauritia flexuosa* oil presented anticonvulsant effect at the highest doses tested being very similar to diazepam. The main mechanism could be by reducing free radical and improving GABA levels in the brain. **Acknowledgment:** The authors thank Universidad Nacional Mayor de San Marcos for helping to support this research.



## CO-025: POTENTIAL FRACTION OF PENTACYCLIC TRITERPENES OF SPECIES *C. ANGUSTIFOLIA* AND *TELENITIDE* AS INHIBITOR OF 11 BETA - HYDROXIESTEROID DEHYDROGENASE *IN VITRO*

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**Introduction:** The enzyme 11 $\beta$ -Hydroxysteroid dehydrogenase type 1 (11 $\beta$ -HSD1) is responsible for the production of intracellular cortisol which, in excess, triggers in patient's metabolic syndrome, and mellitus diabetes. Therefore, the objective of this project is to evaluate *in vitro* the inhibitory effect of chemical fractions (TP pentacyclic triterpenes) that are obtained from the leaves and roots of endemic plants of the Andean region<sup>1</sup>, *Cecropia telenitida* and *angustifolia*, as a phytotherapeutic alternative. **Methodology:** The enzymatic reaction was standardized, mixing commercial human liver microsomes, NADPH as cofactor, cortisone as substrate. The extracts obtained were resuspended in DMSO and evaluated at 1 and 50 ppm (1%v/v) in triplicate. A positive inhibition control with carbenoxolone (CBX) was included. To quantify the cortisol produced, a commercial kit based on time-resolved fluorescence (HTRF®), a competitive immunoassay, was used. The percent inhibition of 11 $\beta$ -HSD1 generated by the chemical fractions was calculated by ec. 1.

$$\% \text{ Inhibition} = 100 \left( 1 - \frac{\text{Cortisol with extract} - \text{Cortisol basal}}{\text{Cortisol rxn} - \text{Cortisol basal}} \right) \text{ ec. 1}$$

**Results:** Having a higher percent inhibition for the leaf extract of *C. angustifolia* (CA), its chemical fractionation was performed, from which 16 fractions were obtained to evaluate at 50 ppm (Fig. 1). In addition, a greater effect on leaves was proven because it is the main synthesizing organ of the plant and with a high content of TP.

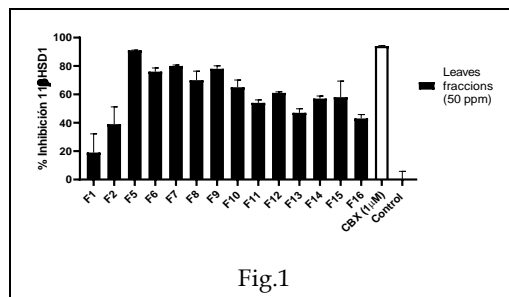


Fig.1

**Conclusions:** A higher percent inhibition from the enzymatic activity of 11 $\beta$ -HSD1 (74%) was obtained with CA leaf extract at 50 ppm, therefore, by fractioning it, 91% inhibition was obtained in F5. This supports the use of leaf extracts from Colombian endemic plant as a phytotherapeutic alternative for metabolic complications, and its possible evaluation *in vivo*.

### Reference

1. Mosquera C.; et al. (2018). Molecules. 23, 1444. DOI:10.3390/molecules23061444.



## CO-026: DEVELOPMENT AND SYNTHESIS OF NEW MOLECULES FOR THE TREATMENT OF DIABETES, METABOLIC SYNDROME AND INSULIN RESISTANCE<sup>v</sup>

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**Introduction:** About 100 million people all over the world have type II diabetes (NIDDM), that is characterized by hyperglycemia due to the excessive production of liver glucose and resistance to peripheral insulin, from which the root causes are still unknown. This disease is linked to metabolic syndrome as well as cardiovascular and renal problems that increase the morbidity and mortality of people suffering from it. Obesity is also linked to an increase in the incidence and prevalence of type II diabetes and some types of cancer. The incidence of diabetes is increasing and affects between 8% and 12% of the obese population over 40 years old. Considering this problem and a lack of pharmaceutical options, this work focuses on the development of new complexes based on biguanidine ligands and transition metals, to propose new therapeutic alternatives. **Methodology:** For obtaining the new metal-drug complexes, a synthetic methodology was performed based on reflux process. The characterization of the complexes was done by infrared and UV-Vis spectroscopy, single crystal X ray diffraction and TGA-DSC analysis. **Results:** A series of coordination compounds of Cu(II), Ni(II) and Co(II), with a type of biguanide (known commercially as Metformin Hydrochloride) have been synthesized and characterized by means of spectroscopic techniques (FT-IR, UV / VIS), X-ray diffraction techniques and thermal analysis. For all the compounds, single crystals available for single-crystal X-ray diffraction were obtained. In the first place, it was obtained an octahedral cobalt compound with formula  $[\text{Co}(\text{C}_4\text{H}_{11}\text{N}_5)_3](\text{Cl})_2 \cdot n(\text{H}_2\text{O})$  that crystallizes in the monoclinic space group C2/c. The nickel compound crystallizes in a monoclinic space group P2<sub>1</sub>/n with formula  $[\text{Ni}(\text{C}_4\text{H}_{11}\text{N}_5)_2]\text{Cl} \cdot \text{H}_2\text{O}$ . Finally, the copper compound crystallizes in the monoclinic space group C2/c with a formula  $[\text{Co}(\text{C}_4\text{H}_{12}\text{N}_5)_3]\text{Cl}_2 \cdot n\text{H}_2\text{O}$ . The obtained compounds were evaluated by means of biological tests in order to clarify their actions by physiopathological mechanisms that intervene in the control of appetite, the increase in body weight and other associated metabolic factors. **Conclusion:** A synthetic study was carried out to obtain a series of new coordination compounds from biguanidine ligand and different metal cations as  $\text{Co}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Zn}^{2+}$  and  $\text{Bi}^{3+}$ . Three new compounds were completely characterized, and they were reported for first time. The reported compounds are potential for the treatment of hyperglycemia, including type II diabetes (DMNDI) and/or type I diabetes (DMDI) in a therapeutically effective dose. **Acknowledgment:** The authors acknowledge to the Dirección General de Investigaciones from the Universidad Santiago de Cali (DGI-USC) for the support with the grant 445-621118-146 and Oficina de Transferencia de Tecnología (OTRI-USC) for the support in the provisional patent submitted to United State Patent and Trademark Office (USPTO) with code US62884597.

### References

1. Varol M. (2016). J. Appl. Pharm. 8(1), 1000e107. DOI: 10.4172/1920-4159.1000e107.
2. Álvarez Salazar Y. (2011). Rev Cubana Farm. 157-158.

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## CO-027: TARGETING NEUROINFLAMMATION WITH JM-20, A NOVEL SYNTHETIC NEUROPROTECTIVE COMPOUND. A NEW APPROACH TO DEVELOPMENT THERAPIES FOR NEUROPATHIC PAIN<sup>vi</sup>

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**Background:** Alternate innovative strategies targeting neuroprotection and particularly neuroinflammation to treating neuropathic pain (NP) have been introduced. JM-20 is a novel molecule composed by 1,5-benzodiazepine fused to dihydropyridine moiety based on a multimodal drug design paradigm for cerebrovascular disease, which possesses a GABAergic activity and anti-oxidant, anti-inflammatory, anti-apoptotic, mitoprotective and anti-excitotoxic effects, suggesting its possible impact on molecular targets in neuropathic pain mechanisms. The present study focuses in unifying some evidences around anti-hypernociceptive effect of JM-20, hypothesizing about its mechanisms of action. **Methodology:** This compound was studied in formalin test 5%. In addition, the effect of JM-20 on migration events during the inflammatory process was evaluated by intravital microscopy in carrageenan (CA)-induced peritonitis to explore its possible peripheral anti-inflammatory activity in rodents. Subsequently, the studies in clinical animal models of neuropathic pain [chronic constriction injury of sciatic nerve model (CCI) and painful peripheral neuropathy produced by the chemotherapeutic agent, paclitaxel (CIPN)] were conducted. **Results:** JM-20 (20 mg/kg, p.o) reduced *in vivo* neutrophil migration, leukocyte rolling and adhesion to the mesenteric microcirculation. Additionally, plasma extravasation and tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) production in peritoneal fluid decreased in treated animals. JM-20 (10-40 mg/kg, p.o.) reduced the mean of cumulative licking/biting (sec/5 min) exclusivity in the tonic phase of formalin test in a flumazenyl sensitive manner. Repeated oral administration of JM-20 (20 mg/kg, p.o.), prevented the mechano-hypernociception on ipsilateral paw during the severity peak at 7 and 14 days post-CCI and mechano-allodynia at 14 days. This molecule also attenuated CCI-induced Wallerian degeneration related changes, as Schwann cell proliferation, macrophage infiltration and the axonal degeneration. A significant protection from demyelination determined by luxol fast blue staining was observed. Also, JM-20 decreases the matrix metalloproteinase-9 (MMP-9) expression and interleukin-1 beta (IL-1 $\beta$ ) downstream release in spinal cord, which are implicated in hyperalgesia. This compound could mediate its antinociceptive effect by means of L-arginine-nitric oxide (NO)-cGMP-sensitive K<sub>ATP</sub> channel pathway which also exerts a neuroprotective effect via survival-promoting. In CIPN model using preventive and therapeutic paradigms, JM-20 shows anti-allodynic and anti-hyperalgesic effects related to the reduction of cutaneous

<sup>vi</sup> The Scientific Articles Program Committee of the XVII Colombian Congress of Pharmacology and Therapeutics 2019 and the XXII Latin American Congress of Pharmacology 2019 (LATINFARMA 2019) recognizes this work with the SECOND POSITION in ENRIQUE NÚÑEZ OLARTE AWARD - LABORATORIOS ROCHE S.A. in the section of BASIC PHARMACOLOGY.



*Langerhans* cells. **Conclusions:** JM-20 compound decreases NP manifestations in rats that could have clinical relevance. This effect could be mediated, at least in part, by its anti-inflammatory mechanisms.

## CO-028: MULTI-TARGETING EFFECTS OF JM-20 AT MITOCHONDRIA LEVEL AS A PROMISING APPROACH TO PROTECT THE BRAIN FROM ISCHEMIC DAMAGE

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**Introduction:** Treatment options for stroke remain limited despite the fact that many key pathophysiological mechanisms of cerebral ischemia have been identified in recent years. Drugs that individually target such mechanisms failed to improve clinical outcomes after stroke, likely due to a multiplicity of mechanisms involved in the cascades leading to neuronal damage after ischemia. However, drugs that target multiple etiologies of neuronal damage provided a remarkable benefit in preclinical studies. Based on a multimodal drug design strategy for neuroprotection, we have synthesized a multifunctional hybrid molecule (JM-20) having a 1,4-dihydropyridine moiety fused to a benzodiazepine ring. **Methodology:** In this overview we revised our main published results on the neuroprotective and neurorestorative activity of JM-20 against multiple brain targets. **Results:** JM-20 seems to protect brain from ischemic damage by a multifunctional mode of action interfering with at least five elements of the ischemic cascade: 1-antiexcitotoxic, 2-anticalcic, 3-antioxidant, 4-antiapoptotic, and 5- anti-inflammatory. We realized that the main neuroprotective mechanism of JM-20 that could make a difference from the rest of unsuccessful drugs is its ability to act multifunctionally at mitochondrial level. JM-20 seems to modulate several mitochondrial-centered pathological events following an ischemic insult: The Inhibition of Ca<sup>2+</sup> uptake, the reactive oxygen species generation, the mitochondrial permeability transition pore occurrence, the cytochrome c release, and caspase3 activation, the inhibition of F<sub>0</sub>F<sub>1</sub> hydrolase activity, the activation of mito-ATP sensitive K<sup>+</sup> channels, and the induction of mitochondrial biogenesis. **Conclusion:** The multifunctional mito-protective actions of JM-20 increase the possibility to therapeutically reach not only the mitochondria from the different cells type into the neurovascular unit, but also the dissimilar organelles subpopulations inside neural cells. The diverse pharmacological properties and several pathological targets of JM-20 at mitochondrial level make this drug unique, and potential valuable for therapeutic strategy against brain ischemia.



## CO-031: DRUGS DESIGN ASSISTED BY COMPUTATIONAL TOOLS

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It is universally acknowledged that the pharmacological activity of some drugs depends on the established interactions with the targets and the inhibited metabolic pathways of the phenomenon under investigation. In the present conference, we are going to explore some *in silico* strategies that could assist the research of compounds with prospective pharmacological activity. In order to organize the wide spectrum of computational methods for the drug design it is important to bring up the question of what type of data we have, what type of conclusion we want to postulate and what kind of computational methods could help us in the hypothesis of the first stages of the process of drug design and in the same manner it is mandatory to incorporate experimental and clinical data. We are going to learn how structural properties of the compounds could help in the prediction of some pharmacokinetic properties such as ADME (Absorption, Digestion, Metabolism and Excretion) and other physicochemical and pharmacodynamics parameters to know if the compounds would comply with the prototype of being a possible drug. How automated molecular couplings (**Molecular Docking**) with proteins reported in different diseases and biochemical imbalances in humans could help in the research of hits compounds. In the meantime, the biochemical aspects are overmuch important, the incorporation of Protein-protein interaction maps could help to understand in more wide-ranging view of the processes in which the compounds would be involved and the modulated metabolic pathways with the proteins inhibited by docking molecular. All is part of the strategy that we can construct in order to answer the initial question.

## CO-032: ANTI-AGING MEDICINE: MYTHS AND REALITIES

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The elderly population has been increasing significantly for several decades, facing the various health problems that arise has become a challenge of modern medicine, this has led to a growing interest in anti-aging medicine with the aim of delay the changes associated with it, leading to a compression of morbidity, impacting beyond the phenotypic and cosmetic aspect. Multiple strategies such as hormone replacement, alternative and complementary medicine, herbal therapies, vitamins and non-pharmacological measures have been used. The evidence for the clinical use of the different strategies is limited and the recommendations are limited to the use of them in those who present specific pathologies, without the existence so far, the recommendation of the use of these in all the elderly.



### CO-033: A REQUIEM TO PANACEA

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We are currently aware of the demographic change that shows that aging has grown in recent years and also the projections anticipate the need to understand aging in the context of morbidity and mortality. This because the pluri-pathology is more frequent in older adults, the character of the disease is usually degenerative, and confers on the patient the need to use medications as part of the treatment of these health conditions.

The aspects to be presented in this conference show the changes that aging, in a physiological way, produce in pharmacokinetics and pharmacodynamics and the complexity in the management of drugs in this age group to try to reduce the possibility of mistakes in use of medications.

### CO-034: POLYPHARMACY AND GERIATRIC SYNDROMES

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Polypharmacy is defined as the consumption of more than five medications simultaneously and is related to the high prevalence of chronic diseases in the geriatric population. It is the main factor for the development of adverse drug reactions, since it increases the likelihood of side effects, overdose and drug interactions, as well as increasing the possibility of non-adherence, complicating therapy monitoring and increasing care costs in health.

Its characteristics include use of contraindicated and non-indicated medications, duplication of medications, inappropriate dosage and use of medications for the management of drug reactions. The latter constitutes what is known as the prescription cascade.

The doctor has an important role to prevent polypharmacy and drug abuse in the elderly. Among its actions to consider are:

Start with non-pharmacological management.

Perform during each appropriate consultation pharmacological history that includes presentation, dose and frequency of administration of medications consumed by the elderly, to avoid repeated prescriptions.

Know the pharmacology of prescribed medications.

Start drug therapy with the least number of medications, at low doses and increase progressively.

Avoid symptomatic management.

Avoid prescribing medications recently released, since most clinical studies are conducted in young people.

Provide education to the patient and his family that allows to obtain greater adherence to treatment, reduce medication errors and optimize pharmacological action.

On the other hand, atypical presentations of ADR are common in the elderly, mainly in the form of geriatric syndromes: delirium, cognitive impairment, depression, instability and falls, urinary retention and sphincter incontinence, constipation or diarrhea and parkinsonism. Functional decline is also frequent.



## CO-035: EVERYTHING IS SEEN IN THE MOUTH: ORAL MANIFESTATIONS OF ADVERSE DRUG REACTIONS

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The oral cavity is fundamental in the performance of many essential functions for human beings, such as food, communication, expression of affection, among others, all of the utmost importance in the well-being of the elderly. It can be said that some situations related to the aging process, such as functional dependence, physical frailty, comorbidity, polymedication - polypharmacy, cognitive impairment, as well as caregiver dependence, constitute difficulties in maintaining oral hygiene and are risk factors for the development of oral disorders such as tooth decay, gum and mucous membranes diseases. Geriatric patients are particularly susceptible to adverse reactions of medications, which can affect the mouth and associated structures. In addition, chronic administration may lead to another series of manifestations in the oral cavity (1).

Adverse Drug Reactions - ADR - are defined, according to the World Health Organization - WHO - as "any harmful reaction or unintended harmful effect that appears after the administration of a drug at doses normally used in humans for prophylaxis, diagnosis or treatment or to modify physiological functions" (2) (3) (4).

The SABE Colombia Survey that offers updated information on people 60 years of age and older in Colombia investigated the current consumption of some types of medication, the consumption of homeopathic and sedative products in the last 30 days, and the voluntary suspension during the last year (5). The results show that 72.3% reported the use of medications, with this percentage being higher in women, in the urban area and in the upper stratum. On homeopathic products, the reported consumption is 35.8% in older Colombian people. The average consumption per person in the community is three medications (95% CI 2.0 - 4.5) and between 55.8% and 90% use at least one medication per day. (6).

Although drugs are the most powerful therapeutic tool, we have available to improve the population's quality of life, their use is not without adverse effects. Today there are many polymedicated patients, making difficult to pinpoint the precise cause of drug adverse effects, which increase exponentially when more than 4 drugs are combined.

These adverse reactions can be reflected in various organs or systems of the body, with the oral cavity and its associated structures being some of them. The adverse effects that occur in this area are very heterogeneous, both because of the tissue in which they manifest themselves and because of the clinical repercussion they have for the patient.

There are a large number of drugs that can lead to numerous adverse effects in the oral cavity. The most frequent are xerostomia, taste disturbances, gingival enlargement and mucositis caused by cancer treatment.

The most frequent adverse effects that occur in the oral cavity can be classified as follows:

1. Alterations in the salivary glands:

Xerostomia / Hyposialia.

Sialorrhea / Ptialism.

Swelling, inflammation and pain.

2. Taste changes:

Hypogeusia

Dysgeusia

Ageusia.



3. Mucosal alterations:

Oral ulcerations or chemical burns.

Chemotherapy mucositis

Lichenoid reactions

Erythema multiforme

Pemphigus.

4. Pigmentations:

Dental stains (yellowish, gray, brown, green, black, white, purple)

Pigments of the oral mucosa.

Hairy tongue.

5. Gingival enlargements (lobed and firm papillary and vestibular masses).

6. Halitosis

7. Osteonecrosis.

8. Necrotizing sialometaplasia.

9. Opportunistic infections.

10. Hemorrhagic diathesis.

It is important that the clinician has a complete medical history of the medications the patient consumes, including prescription drugs, over-the-counter drugs and dietary supplements so that he/she can prevent, diagnose and treat the adverse effects of the oral cavity individually. (7)

**References**

1. Marín DJ, Fundamentos de Medicina – Geriatria, Capt 42. 2006.
2. OMS 15 abr. 2014.
3. Ocampo JM, Fundamentos de Medicina – Geriatria, Capt 22. 2006.
4. Homero gac e. Polypharmacy and morbidity in elderly people. Rev. Med. Clin. Condes - 2012; 23.
5. SABE COLOMBIA: Minsalud, Colciencias, Univalle, UCaldas (2016) Encuesta SABE Colombia: Situacion de salud, bienestar y envejecimiento en Colombia.
6. Mendez F, Calzada MT, Corchuelo J et al. SABE Colombia: Survey on Health, Well-Being, and Aging in Colombia – Study Design and Protocol. Current Gerontology and Geriatrics Research 2016: Article ID 7910205. 2016.





## CO-036: RATIONAL USE OF ANTIBIOTICS IN THE ELDERLY

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The elderly population is increasing worldwide and by 2050 it's expected that over 2 billion will be aged 60 years and older. The elderly may be at increased risk of bacterial infections in comparison with younger adults, in relation not only to ageing per se, but also to multiple underlying predisposing diseases. The most frequent bacterial infections in this subpopulation are urinary tract infections, pneumonia and skin and soft tissue infections.

It has been shown that the use of antimicrobial agents is quite remarkable among elderly patients, especially among those who are institutionalized.

Appropriate management of antibiotics is mandatory nowadays due to the worrisome increase of bacterial resistance rates worldwide. However, finding the right balance between efficacy, safety and tolerability when using antimicrobials in this patient population is quite difficult for a number of reasons. Ageing is characterized by significant changes in body tissue composition and by a progressive physiological decline of several organ functions.

Additionally, the rather frequent presence of comorbidities in the elderly may require multiple drug coprescriptions. Polypharmacy, in turn, may favor drug-drug interactions and potentially inappropriate prescriptions. Noteworthy, the use of some antimicrobials may be associated with severe adverse events in this population, especially when in presence of co-medications and/or of co-morbidities.

The question is more difficult in patients with severely reduced quality of life or in patients with terminal dementia. The considerations here are two-fold: reduced benefit and increased cost. Such patients gain less from antibiotic treatment proportional to the decline in functional capacity, cognitive function and quality of life. As such patients are frequently exposed to the healthcare system, they are more likely to carry multidrug-resistant bacteria, necessitating broader-spectrum empirical antibiotic treatment with higher ecological costs.

## CO-037: SHOULD WE ALL TAKE PILLS TO LOWER OUR CARDIOVASCULAR RISK?

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Demographic and social changes coupled with medical technology have impacted the epidemiological profile, with a greater weight on the morbidity and mortality of chronic diseases such as cardiovascular events.

The most important cardiovascular risk factors are summarized in Table 1.

**Table 1.** Cardiovascular risk factors.

Obesity	High blood pressure	Lipid factors	Stress and emotional distress
Hyperglycemia	Smoking	Sedentary	Nutritional factors
Structural factors (poverty)	Inflammation and endothelial dysfunction	Pro-coagulant states	

The risk factors that are constituted as quantifiable physiological variables, without susceptible of specific interventions that seek their control in order to reduce the probability of a cardiovascular event.



The variables most associated with the development of atherogenesis are lipid factors, high blood pressure, smoking and hyperglycemia. However, the causality of cardiovascular events is complex, with which all variables interact in a non-deterministic or unidirectional way. We will start, initially, to analyze each of them.

### **Lipid factors**

The greatest emphasis on reducing cardiovascular risk has been in the levels of total cholesterol and currently LDL cholesterol. All existing guidelines recommend the measurement of total cholesterol levels, HDL and LDL in all people around the age of 45. The dominant concept says that there is a linear relationship between total and LDL cholesterol levels and the probability of cardiovascular event, in the same way as a dose-response relationship in its reduction with pharmacological strategies, especially statins. For several years the strategy has been considered among the lowest minors, not only in secondary prevention but also in primary prevention. If we exclusively consider age, practically all human beings will at some time have criteria for starting statins. Even the idea of the goal of zero LDL is becoming popular.

On the other hand, it should be considered that it is questioned that the causality criteria between cholesterol levels and atherogenesis can be met. Likewise, the difference between the reduction of relative risk and absolute risk and the balance between risks (adverse events) v. Benefits of treatments should be taken into account. Not forgetting that we believe that there is a weakness of the evidence in primary prevention in patients with "low" cholesterol levels and with treatments other than statins.

### **Antiplatelet therapy**

Until this year, the recommendations of the guidelines of the US and Europe differed considerably. The former were more flexible for the use of acetylsalicylic acid (ASA) in primary prevention, while the latter banned it. With the evidence of the studies published in the last year, where the magnitude of the protective effect was minimal or non-existent, however the increase in the risk of bleeding was significant, there is a consensus towards considering that the prescription of ASA in primary prevention is almost never justify.

### **Interventions in elevated blood pressure**

There is a clear dose-response relationship between the level of blood pressure and cardiovascular risk. Blood pressure levels for diagnosis and initiation of treatment have been reduced over the years and treatment goals are becoming more stringent. However, the benefit of looking for people without white organ damage or underlying cardiovascular disease to have blood pressure levels below 140/90 mmHg is not clear.

### **Hyperglycemia interventions**

Diabetes mellitus has a clear and strong association with cardiovascular risk. However, the start of antidiabetic therapy with altered values is not clear.

### **The poly-pill**

All of the above has led us to think that the combination of several of the medications that have demonstrated the modification of each of the risk factors is a viable strategy with a high population impact. In the last 17 years different combinations have been studied. But all the studies are of short follow-up and measure the impact on those values, but it is not reduction of events.

### **Conclusions**

- All treatment has adverse effects.
- Individual risk is all or nothing.
- The probability of a cardiocerebral - nephrovascular event does not depend on a single variable.
- The impact on total mortality will always be questionable, given that mortality will remain stubbornly 100%.



## CO-038: ASSOCIATION BETWEEN THE USE OF BENZODIAZEPINES AND OPIOIDS WITH THE RISK OF FALLS AND HIP FRACTURES IN OLDER ADULTS

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**Introduction:** To determine the association between the use of opioids and benzodiazepines and the risk of falls with hip fracture in populations older than 65 years in Colombia. **Methodology:** A case-control study with patients older than 65 years with diagnosis of hip fracture. Two controls were obtained per case. The drugs dispensed in the previous 30 days were identified. Sociodemographic, diagnostic, pharmacological (opioids and benzodiazepines), and polypharmacy variables were analyzed. A logistic regression model was used to analyze the risk of fall with hip fracture while using these drugs. **Results:** We included 287 patients with hip fractures and 574 controls. There was a female predominance (72.1%) and a mean age of  $82.4 \pm 8.0$  years. Of the patients, 12.7% had been prescribed with opioids and 4.2% with benzodiazepines in the previous month. The adjusted multivariate analysis found that using opioids (OR:4.49; 95%CI:2.72–7.42) and benzodiazepines (OR:3.73; 95%CI:1.60–8.70) in the month prior to the event was significantly associated with a greater probability of suffering a fall with hip fracture. **Conclusion:** People who are taking opioids and benzodiazepines have increased risk for hip fracture in Colombia. Strategies to educate physicians regarding the pharmacology of older adults should be strengthened.

### References

1. Berdot S, Bertrand M, Dartigues JF, Fourrier A, Tavernier B, Ritchie K, et al. Inappropriate medication use and risk of falls--a prospective study in a large community-dwelling elderly cohort. *BMC Geriatr.* 2009; 9:30.
2. Aizenberg D, Weizman A, Weiss A, Akopian M, Amitai M, Beloosesky Y. The Association in Elderly Hospitalized Patients, Between Psychotropic Drugs and Hip Fractures Resulting from Falls. *Exp Aging Res.* 2015; 41(5):546-555.



## CO-039: POLYPHARMACY IN THE ELDERLY: NURSE ROLE

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**Introduction:** The aging is associated to molecular and cellular damage that, with the pass of the time, gradually reduce the physiological reserve and increase the risk of multiple illnesses, principally the no transmittable ones such the cardiophatic, the cerebrovascular accidents, the chronic breathing illnesses, cancer, among others. Therefore, this population face the use of several medicaments (Polypharmacy) been exposed to pharmacologic interactions and harmful secondary effects. The challenge for the health system is to provide in this population safe and accessible medicaments, having in mind that these patients may have alter organs that harm the absorption, distribution and excretion of medicaments. Therefore, the role of nurses both in the hospital and house environment is to make sure of the use of the medicine by the side of the user, through educative intervention and identification of pharmacologic interactions. The objective of this revision was to keep a record of the nurse caring of the elderly patient with polypharmacy. **Methodology:** A bibliographic revision was done, based on the role of the nurse in relation to the patient with polypharmacy. Secondary documental sources were used. The inclusion criteria: documents from the year 2012 and on, articles with keywords such as polypharmacy, elderly, nurse care. There were revised 120 documents in total. 20 of them were selected for the analysis. It was done an analysis and synthesis of documents, and the relationship among then was analyzed. The obtained information allowed the summary of the more important elements for the generalization and conclusions. **Results:** Polypharmacy in the elder patient is every time more frequent, Cruz y et al, (Brazil, 2017:3) found that the polypharmacy was presented in 54% of the interviewed people with an average of 4 medicaments. (1) It is required from the nurse a role aimed to the prevention of adverse events and the medicament interaction, Palacios (Cantabria, 2017:12) says that the nursing function in vital and fundamental to build health habits in the elderly and for the prevention of health problems and as well as for guaranteeing adherence to the treatment. (2) The nurse should educate and orientated the patient in three aspects: know the medication, instruction of the medicament (when and where to take it), and how to obtain it. Moreno, et al (México, 2013:18) concludes that the deficit in the management of the medication in elderly patients requires from the nurse professionals the need to develop effective interventions aimed to strengthen an adequate management of the medication. (3) The prevention of polypharmacy has a fundamental role when remarks healthy habits in the patient, explaining the elderly or to the person in charge of their caring ways of soften the pain or health problems without the need of a medicament. (4) The patient should be oriented through healthy life style such as exercise, diet, and the accomplishment of medic controls to prevent comorbidity. **Conclusion:** Nurses in their direct caring role have the opportunity of identifying adverse effects and interactions with the medicaments. Their role in the polypharmacy is the education of the patient and the prevention of it.

### References

- 1- da Cruz HL, da Cruz Mota FK, Ulhôa Araújo L, Cotta Bodevan E, Stuckert Seixas SR. La utilidad de la historia clínicas: factores asociados a los errores demedicación en la enfermedad crónica. Rev. Latino-Am. Enfermagem 2017; 25: e2967.
- 2- Palacios R. Polimedición en los ancianos y el papel de enfermería. [Tesis]. Cantabria (E): Universidad de Cantabria; 2017. 20 p.
- 3- Moreno Monsiváis MG, Garza Fernández L, Interrial Guzmán MG. Manejo de la medicación en el adulto mayor al alta hospitalaria. Cienc. enferm. 2013; 19(3): 11-20. DOI: 10.4067/S0717-95532013000300002.



## CO-041: ANTIPSYCHOTICS DRUGS DISPENSATION TO CHILDREN UNDER 15 YEARS DURING THE PERIOD 2014–2019 IN A PEDIATRIC REFERENCE HOSPITAL, MONTEVIDEO, URUGUAY<sup>vii</sup>

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**Introduction:** Mental health problems represent an increasing prevalence morbidity in children and adolescents. In this context, it is necessary to characterize the use of antipsychotic drugs to evaluate strategies that contribute to their rational use. The objective of the present study is to characterize the dispensing profile of antipsychotic drugs in a pediatric reference hospital. The time period of the study was: August 1<sup>st</sup>, 2014 – July 31<sup>st</sup>, 2019 (5 years). **Methodology:** A descriptive and retrospective study of the dispensed antipsychotic drugs was performed in the Centro Hospitalario Pereira Rossell, in which frequency and characteristics (prescription origin, age, drug, prescribed daily dose) are measured. The data was obtained through WebFarma's pharmaceutical computer system. The studied drugs were: Aripiprazole (Arip), Haloperidol (Hal), Levomepromazine (Lev), Quetiapine (Quet), Risperidone (Risp) and Olanzapine (Olanz). **Results:** During the studied period 15,323 prescriptions were detected which lead to the dispensation of 23,918 medications to 2,754 patients. The increase on the number of patients treated with each drug across these 5 years was of: Arip 779%, Olanz 50%, Hal 40%, Lev 21%, Quet 8% y Risp -3%. It was found that 14% of Quet and Risp dispensations were done to patients in non-authorized ages by the FDA or EMA, Olanz 10%, Arip 4%, Hal y Lev 2%. In the 5 years the prescribed daily doses (PDDs) decreased for Risp -77%, Arip -53%, Olanz -41%, Quet -19%, Lev -3%, only Hal increased 39%. 69% of all prescriptions came from the psychiatric service, 6% neuropsychiatric, 4% pediatric clinics. The most dispensed presentations were: Quet 25 mg tablets, Lev 25 mg tablets, Risp oral drops 1 mg/ml, Risp 1 mg tablets, and in the last period Arip 10 mg tablets. The use of olanzapine is insignificant. **Conclusion:** The dispensation of antipsychotic drugs in Uruguay's pediatric reference hospital grew during the last 5 years. 15% of the dispensations were done to patients in non-authorized ages by the FDA or EMA. During the studied period, PDDs remained stable in almost every case, where 75% of the prescriptions were done by a specialized service.

**Keywords:** Antipsychotics drugs; Drug utilization; Pediatrics.

<sup>vii</sup> The Scientific Articles Program Committee of the XVII Colombian Congress of Pharmacology and Therapeutics 2019 and the XXII Latin American Congress of Pharmacology 2019 (LATINFARMA 2019) recognizes this work with the SECOND POSITION in AUDIFARMA S.A. AWARD in the section of PHARMACOEPIDEMIOLOGY AND PHARMACOVIGILANCE.



## CO-042: ANALYSIS OF SECONDARY PREVENTION MEASURES IMPLEMENTED IN PATIENTS WITH A HISTORY OF ACUTE CORONARY SYNDROME

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**Introduction:** To determine the pharmacological measures implemented for secondary prevention in patients with acute coronary syndrome in order to identify whether the implemented management corresponds to recommended clinical practice guidelines and to intervene in those cases where incomplete treatments are found. **Methodology:** A pre- and post-quasi-experimental study was performed in patients with acute coronary syndrome who were affiliated with the Colombian health system. The patients were monitored for one year from the occurrence of acute coronary syndrome, and all dispensed medications were reviewed. For those patients in whom a lack of a prescription ( $\beta$ -blockers + renin-angiotensin-aldosterone system inhibitors (RAASi) + dual antiaggregation + statin) was identified, an intervention was performed with their treating physicians, showing the analysis of each case, the missing medication, and the evidence supporting the recommendation. The results were measured three months later. **Results:** A total of 829 patients with acute coronary syndrome who underwent percutaneous coronary intervention (90.1%) or coronary bypass (9.9%) were identified. The mean age was  $63.8 \pm 10.6$  years and 73.1% were men. The recommended pharmacological therapy was completed in 729 patients (87.9% of cases). The intervention performed on the remaining 100 patients was able to add the missing drug in 23.0% of the cases. Statistical analysis showed no significant differences with the drug that should have been initiated nor with the success of the intervention. **Conclusion:** The majority of patients with acute coronary syndrome are adequately treated after percutaneous intervention with medications recommended by the guidelines. Limited success in the adjustment of the management acute coronary syndrome was achieved following the recommendations given to the responsible physicians.

### References

- 1- Hamood H, Hamood R, Green MS, Almog R. Effect of adherence to evidence-based therapy after acute myocardial infarction on all-cause mortality. *Pharmacoepidemiol Drug Saf.* 2015;24(10):1093-104.
- 2- Nabel EG, Braunwald E. A tale of coronary artery disease and myocardial infarction. *N Engl J Med.* 2012;366(1):54-63.





## CO-043: PRIOR USE OF MEDICATION FOR PRIMARY PREVENTION IN A GROUP OF COLOMBIAN PATIENTS WITH CORONARY SYNDROME

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**Introduction:** Cardiovascular disease, especially coronary disease, represents one of the main causes of morbidity and mortality. The objective was to determine the drug prescription profile for primary cardiovascular prevention prior to a first acute coronary syndrome event. **Methodology:** Cross-sectional study. The population consisted of patients affiliated to the Colombian Health System, of any sex and age, with a diagnosis of a first episode of acute coronary syndrome that occurred during the period of 2015 to 2016. Sociodemographic, clinical and pharmacological variables were evaluated from clinical records. The cardiovascular risk score prior to the event was calculated and the need for the use of statins and aspirin in primary prevention was defined according to the recommendations of clinical practice guidelines (Colombian dyslipidemia guidelines and United States Preventive Services Task Force guide for aspirin in primary prevention). **Results:** We reviewed the clinical records of 322 patients with a mean age of 61.9±10.8 years, 77.3% (n=249) were men. The most frequent comorbidities were dyslipidemia (n=207, 64.3%), arterial hypertension (n=202, 62.7%) and diabetes mellitus (n=97, 30.1%); 22.0% of the patients were obese, and 33.5% were smokers. The median 10-year risk according to the Framingham risk score was 21.4%, and it was 16.3% according to the American Heart Association. There were 179 patients (84.8%) who needed statins (175 of high intensity, 97.8%), and 88 (27.3%) required aspirin as a primary prevention; however, 56 of these patients (31.3%) did not receive any statins, 127 (72.6%) did not receive the high intensity statin they needed and 38 (43.2%) lack aspirin. Conversely, 61 patients were prescribed aspirin without indication. **Conclusion:** Real-life data show that among a group of patients with high cardiovascular risk, a low proportion were receiving medications for primary prevention necessary to reduce their risk and finally suffered an acute coronary event.

**Keywords:** Acute Coronary Syndrome; Hydroxymethylglutaryl-CoA Reductase Inhibitors; Primary Prevention.



## CO-044: TRANSMISSION BLOCKING STRATEGIES FOR VECTOR-BORNE DISEASES

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**Introduction:** The ectoparasite are able for the transmission of a major diversity of microorganisms that cause disease that affect animals and human, in most of the cases can lead to death. Comprehend of biology of the transmitted viruses, bacteria and protozoans by this kind of insects, as well as understanding the physiopathology of these transmission infectious diseases are ones of the goals of government institutions of health around the world. Mainly with purpose of identifying targets for its intervention. **Objective:** To identify studies related with transmission blocking strategies of vector-borne diseases. **Methodology:** Here in, we have used scientific databases (PubMed, Web of Science, and EMBASE) using keywords related to the diseases, parasite, and vector of records published since January 1985 to 2019. **Results:** Nowadays, Insecticides products are considered the best strategy to interrupt inoculation of pathogens of borne vector infectious diseases due to that kill the transmitter insect. However, state of the art technologies that are being used to identify of potential candidates for anti-vectors vaccines that could be used in humans or animals sound are promising to reduce the increasing insecticide resistant. In addition, of others ecological approach transmission blocking, using fish species, plant and microorganisms. Moreover, of those that use biotechnological tools as transgenic vectors, among others. The study of the interrelationship between vectors, hosts and pathogens including mechanisms of transmission will strengthen the knowledge that leads to the identification of biological targets in the development of medicines and vaccines for the control of vector-borne diseases. **Conclusion:** Successful of new pharmacological strategies to transmission blocking, would depend in particular of effective action against to infective pathogens forms and some physiological structures of vector that dismiss the passage of microorganisms to new hosts.



## **CO-045: STATINS IN POLYMERIC NANOSUSPENSION ASSOCIATE TO SMALL PEPTIDES PROTECT NEURONAL CULTURES FROM OXYGEN-GLUCOSE DEPRIVATION (OGD) MODEL**

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The development of new systems of drug delivery such as Polymer-Based Nanoparticles (NPs), should increase the diffusion across the neuronal membranes of many pharmaceutical compounds. Some polymers as Poly (Lactic-Co-Glycolic Acid) (PLGA) are biodegradable and inert and could be used to protect statins and other molecules that need to spread through the hematoencephalic barrier (BBB). Additionally, the new nanotechnology-based drug delivery systems require a small peptide as a cellular transport mechanism. The purpose of this study was to determine the neuroprotective efficiency of Atorvastatin (ATV) encapsulated using PLGA and HIV-TAT (small peptide) NPs. We prepared a biodegradable NPs based on PLGA with Polyethylene Glycol (PEG) and HIV-TAT. The biological activity and neuroprotective effects of PLGA-PEG-HIV-TAT/ATV were evaluated to compare NPs with and without ATV using a human neuronal cell line (SH-SY5Y), next we evaluated the neuroprotective effects of the full complex, in comparison with ATV free suspension using a cellular model of brain stroke with Oxygen-Glucose Deprivation (OGD). Initially, the internalization and colocalization within the inner compartments of neuroblastoma cells (SH-SY5Y), and the toxicity and efficiency were determined. Moreover, the ability of the polymer complex to prevent toxicity and death of cells in the OGD model at different concentrations (1, 10, 100, 1000  $\mu$ M) was examined. The data showed that the NPs could cross the cell membrane, being detected in the cytoplasm as early as 4 h after administration and decreasing through 24 h. NPs did not present toxicity at the concentrations tested, with or without ATV loading. ATV-loaded NPs increased cell viability (85-95%) and had no significant cytotoxic effect. These results showed that NPs could be used as an alternative neuroprotective strategy to deliver compounds such as statins, and are promising nanosystems for the treatment of some neurological disorders while they improve the passage of statins across the BBB.



## CO-046: SWITCHING OF BIOLOGICAL PRODUCTS IN THE TREATMENT OF PSORIASIS IN COLOMBIA

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**Introduction:** Psoriasis is a chronic, genetically determined inflammatory skin disease, characterized by rounded, dry and scaly erythematous patches. It affects approximately 1-3% of the general population and can deteriorate the quality of life in severe forms. Conventional treatments (retinoids, methotrexate or cyclosporine) are limited by toxicity. Biological medications are effective in the treatment of psoriasis, they are indicated as the second therapeutic line; but they are not exempt from therapeutic failure (30%) and adverse reactions. Patients with suboptimal response or adverse effects are switched to other biological products; however, relatively few studies have examined the effectiveness of switching biological products in these situations. Switching generates uncertainty in the treatment of psoriasis with biotechnology, due to the lack of knowledge of potential emerging events associated with this practice. **Objective:** To describe switching of biological therapy in the treatment of Colombian patients with psoriasis. **Methodology:** With a retrospective design, there were reviewed the prescription and dispensing of biotechnological medications to patients with psoriasis who come from the population covered by a drug dispensing company of the health system, for 5 years (2012-2017). Three sources were considered: The medical records, the drug dispensing database of the logistics operator that served the population, and the pharmaco-vigilance records of the logistics operator. There were analyzed the reports of adverse reactions, the medications for concomitant psoriasis, and the causes of switching. In addition, there were described the geographic distribution of the patients, and the Charlson comorbidity index as an indirect indicator of polypharmacy. **Results:** From a population of 6.5 million, it was determined that 114 patients with psoriasis who received biotechnological drugs in that period. Of the 114 psoriasis patients who received biotechnological medications, 35% (40 patients) were women aged  $53.1 \pm 3$  years. The majority of the population live at altitudes not higher than 2000 meters above sea level. 24.5% of patients had Charlson comorbidity rates greater than 4, which predicts a significant decrease in life expectancy and possible polypharmacy. 4 The therapeutic adhesion, measured by pharmaceutical dispensing, was 69%. It was found switching in 61 (53.5%) cases, mostly due to changes in pharmaceutical presentation, without switching the molecule or the brand. Therapeutic failure is the second cause; but it can be the one that can generate multiple switching in a single patient. There were no serious adverse effects in this population; however, there was an increase in reports of adverse events, compared to patients who did not undergo a change in biotechnology. **Conclusion:** Switching was not a relevant phenomenon in the occurrence of adverse events in this population; however, due to the high frequency during the biotechnology prescription, it should be considered in the causality analysis of emerging adverse events. The increased availability of new biotechnological and biosimilar molecules will increase the frequency of the phenomenon and will require greater attention in pharmacovigilance.

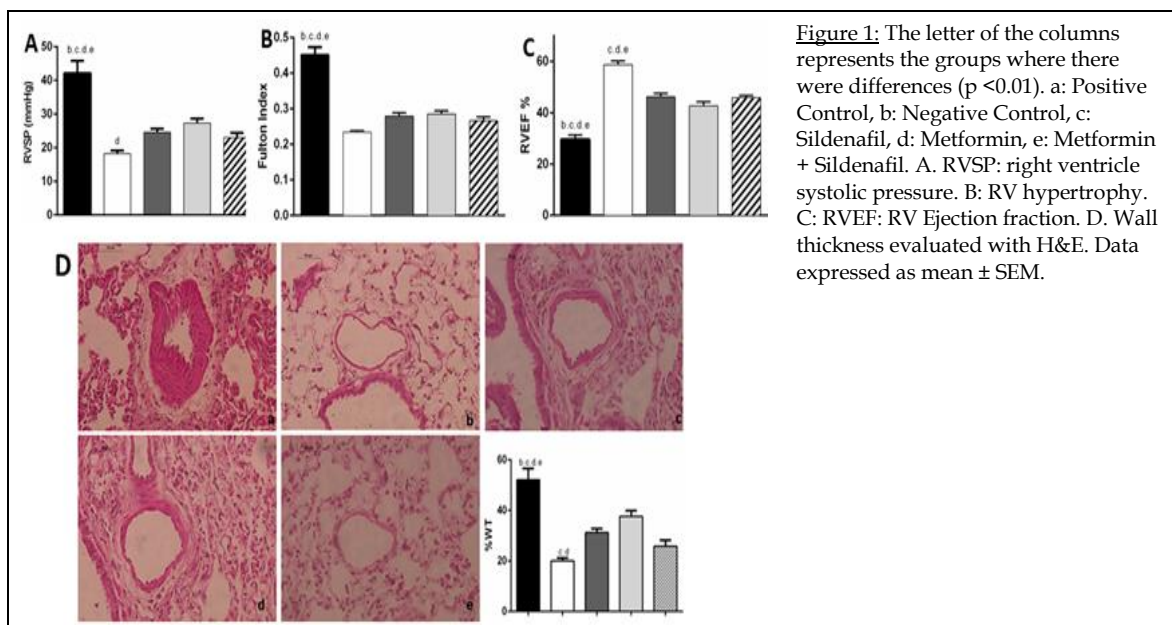


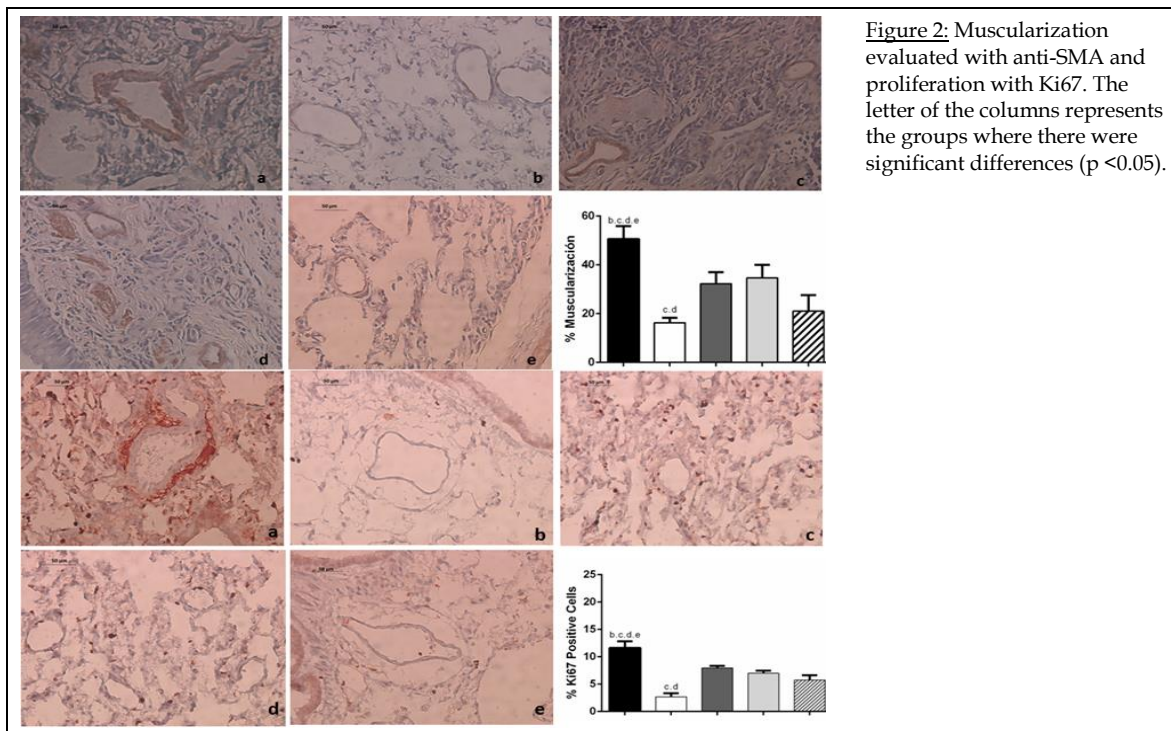
## CO-047: DOES METFORMIN POTENTIATE THE EFFECT OF SILDENAFIL IN THE TREATMENT OF EXPERIMENTAL PULMONARY HYPERTENSION?

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**Introduction:** Research indicates that Metformin has potential effects in the treatment of pulmonary hypertension (PH)(1). The current treatment in the initial stage is Sildenafil (2), however, there are no reports assessing their action in combined use. **Aim:** To evaluate the synergism between metformin and sildenafil in an PH model. **Methodology:** A monocrotaline PH model (30 mg/kg)(3) was used in rats, three treatments were compared: metformin (100 mg/kg), sildenafil (30 mg/kg) and combined therapy (60 days orally); with two control groups (positive and negative). Right ventricle systolic pressure (RVSP), hypertrophy and ejection fraction were estimated. By immunohistochemistry, muscularization and proliferation was assessed. In addition, toxicity was evaluated. **Results:** Therapeutic schemes reduced cardiac remodeling and vascular hypertrophy (Figure 1). The combined treatment was superior to monotherapy reducing muscularization and proliferation (Figure 2). Regarding toxicity, no differences were found in liver protein and enzyme levels. **Conclusion:** The combined therapy was superior to monotherapy; this result was comparable to the negative control group.





#### References

1. Dean A., et al. Hyp. 2016;68(2):446-454.
2. Vonk Noordegraaf A., et al. Eur Respir Rev. 2016;25(139):4-11.
3. Maarman G., et al. Pulm Circ. 2013.





## CO-048: DRUG UTILIZATION STUDY IN THE EMERGENCY DEPARTMENT OF A HIGH COMPLEXITY HOSPITAL

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**Introduction:** The most of interventions and medical treatments are associated with the use of medications; however, their use implies risks<sup>1</sup>, therefore, decisions that improve the use of medicines requires information that concludes relevant aspects of their use. So, considering the positive impact of DUS on the rational use of medicines and the complexity of HES; a DUS was advanced in the HES of a third level hospital whose results provided information about the characteristics of the use of medications and the prevalence of preventable situations which would facilitate decision-making for the implementation of practices that stimulate the safe and rational use of medications. **Methodology:** Descriptive cross-sectional observational study with retrospective compilation of information. It was reviewed 312 CH during the first 24 hours after the patient admission to HES where ADR, DTF, DI, ME and contraindications were identified. For the discrete quantitative variables, the central tendency and dispersion measures were estimated according to the probabilistic distribution, the qualitative variables were described in percentages. **Results:** It was recognized the use of 179 active ingredients in HES, that were prescribed 2091 times, where the most prescribed medications belong to group B with 23.86%, followed by group C medications with 22.48%. The medicines indications that were prescribed found justification in the CH in 94% of the occasions and the remaining percentage corresponded to the prescription without any justification of omeprazole mostly; it was recognized 7 ADR anticoagulation above all and 23 DTF were recorded. In total, 647 potential DI were documented of which 0.77% were contraindicated, 48.69% were important and 36% DI were avoidable according to clinical concept. It was described 90 ME were related with wrong doses mostly and in 149 CH were found 363 contraindications where 7.44% were absolute. **Conclusion:** The most prescribed medications correspond to the pathologies prevalent in HES. The most frequent ADR was hemorrhage; most of the DTF were categorized as possibly associated with the inappropriate use of the medication; the highest proportion of potential DI were categorized as important; the most frequent ME was wrong dose; the most frequent absolute contraindications were hyponatremia and hypotension. This study identified preventable problems related with medications, which will allow to do interventions to improve the use of medications in the hospital emergency department.

**Abbreviations:** DUS: Drug Utilization Study; HES: Hospital Emergency Service; MRP: Medication related problems; ADR: Adverse Drug Reaction; DTF: Drug Therapeutic Failures; DI: Drug Interaction, ME: Medication Error; CH Clinic History

### Reference

1. Parejo. I.S., et al. (2005). Health problems related to medications in a hospital emergency department. Med Clin (Barc) 124(7):250-5.



## CO-049: DRUG REPURPOSING IN PULMONARY HYPERTENSION, A PROMISING THERAPEUTIC STRATEGY

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Pulmonary hypertension (PH) is a disease that affects mainly to children and young adults, characterized by progressive vascular remodeling that causes overload to the right ventricle, and if not treated in time, can lead to early death. Although its incidence is low, the costs to the health system are extremely high. In the United States, in patients with functional class II and III, the total costs of care range from US \$ 30,000 to US \$ 90,000 including outpatient and hospital management per patient per year. (1) When impairment to functional class IV, total handling costs reach US \$ 351,282.60 per year; For a patient with PH, 5 patients with end-stage renal disease could be covered. (2, 3). An economic strategy to look for promising molecules is the "Drug Repurposing", which consists in identifying new uses of drugs approved or under investigation and that are outside the original indication. (4, 5) This strategy offers different advantages over the development of a completely new drug. First, the risk of failure is low, because the safety of the recycled medicine has been sufficiently tested in preclinical models and in humans. Second, the investigation time of the medication is reduced; and third, the time will vary greatly depending on the phase and development of the proposed drug (6). With this strategy the approval of Sildenafil (7) was achieved in indication of pulmonary hypertension. In addition, medications such as Chloroquine (8), Tacrolimus (9) and Mycophenolate (10) among others, are being studied in clinical and preclinical phases. (11) It is necessary to find new candidates and review challenges that allow to reach relevant opportunities and solutions for the treatment of PH.

### References

1. Chen YF, Jowett S, Barton P, Malottki K, Hyde C, Gibbs JS, et al. Clinical and cost-effectiveness of epoprostenol, iloprost, bosentan, sitaxentan and sildenafil for pulmonary arterial hypertension within their licensed indications: a systematic review and economic evaluation. *Health Technol Assess.* 2009;13(49):1-320.
2. Londoño D, Villaquirán C, Dueñas R, Gómez E, Coral P. Determinación de los costos directos e indirectos en hipertensión pulmonar en Colombia. *Revista Colombiana de Neumología.* 2015;25(3):145-56.
3. Statistics | The Kidney Project | UCSF: U.S. Renal Data System, USRDS 2018 Annual Data Report: Atlas of End-Stage Renal Disease in the United States, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD.; 2019 [Available from: <https://pharm.ucsf.edu/kidney/need/statistics>]
4. Pushpakom S, Iorio F, Eyers PA, Escott KJ, Hopper S, Wells A, et al. Drug repurposing: progress, challenges and recommendations. *Nat Rev Drug Discov.* 2018.
5. Ashburn TT, Thor KB. Drug repositioning: identifying and developing new uses for existing drugs. *Nat Rev Drug Discov.* 2004;3(8):673-83.
6. Breckenridge A, Jacob R. Overcoming the legal and regulatory barriers to drug repurposing. *Nature Reviews Drug Discovery.* 2018;18(1):1.
7. Barnett CF, Machado RF. Sildenafil in the treatment of pulmonary hypertension. *Vasc Health Risk Manag.* 2006;2(4):411-22.
8. Wu K, Zhang Q, Wu X, Lu W, Tang H, Liang Z, et al. Chloroquine is a potent pulmonary vasodilator that attenuates hypoxia-induced pulmonary hypertension. *Br J Pharmacol.* 2017;174(22):4155-72.
9. Spiekeroetter E, Sung YK, Sudheendra D, Scott V, Del Rosario P, Bill M, et al. Randomised placebo-controlled safety and tolerability trial of FK506 (tacrolimus) for pulmonary arterial hypertension. *Eur Respir J.* 2017;50(3).
10. Zhang YF, Zheng Y. The effects of mycophenolate mofetil on cytokines and their receptors in pulmonary arterial hypertension in rats. *Scand J Rheumatol.* 2015;44(5):412-5.
11. Grinnan D, Trankle C, Andruska A, Bloom B, Spiekeroetter E. Drug repositioning in pulmonary arterial hypertension: challenges and opportunities. *Pulm Circ.* 2019;9(1):2045894019832226.



## CO-050: TABLET SPLITTING, RIGHT OR WRONG PRACTICE?

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In drug therapy, in hospital or ambulatory care, national or international, splitting tablets into two halves is a very common practice. This is done for various purposes among which are: to reach a concentration not commercially available and titration of the pharmacotherapy to evaluate concentration-tolerance. In any setting the following questions arise: do the halves weight the same? And if the concentration that the patient takes it is not enough or more than enough? A therapeutic failure could be expected if the potency is not enough or a toxic effect if it is more than enough. Not only the two equally weighting halves should be considered, there are also other situations that may affect the remaining concentration in one of those halves, such as the instrument with which the tablet is split and the person who does the splitting. All of these have an impact on the success or failure of the drug therapy.

## CO-051: MYCOBACTERIUM TUBERCULOSIS AFTER IN VITRO EXPOSURE TO ISONIAZID

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Since 1952, Isoniazid (INH) -one of the most potent drugs to treat Tuberculosis (TB) - is used as a first-line treatment option. However, the appearance of INH resistant cases started the same year this drug was introduced in medical practice, limiting the hope of many TB patients. Previous studies have demonstrated that protein members of the FAS II pathway, polyketide synthesis, the cytochrome complex, and ATP synthase are altered after *Mycobacterium tuberculosis* (*Mtb*) exposure to INH. This information contributes to better elucidate INH mechanism of action and resistance acquisition. We explored the proteome changes of *Mtb* after *in vitro* exposure to sub-lethal concentrations of INH using liquid chromatography coupled with tandem mass spectrometry and validated through western blot analysis. The results obtained were found through the pair comparisons of *Mtb* strains accounting for the genetic background and phenotypic profile in regard to INH, reducing possible confounding factors. After a Benjamini-Hochberg correction ( $Q=20\%$ ), we identified a total of 42 proteins that were commonly altered in *Mtb* strains after INH exposure; most of them at the membrane localization. Among those, we highlight ribosomal (such RplQ and RpsK), biosynthetic and energetic pathways-related proteins (such BirA and NuoE respectively) that increased after exposure to INH. Conversely, lipoproteins (such as LppX, LipN, PstS1, LpqH), proteins related with the INH mechanism of action (KatG, InhA and AcpM) as well as an ABC transporter (GlnQ) exhibited a decreased level after the exposure to the drug. This study not only confirm previous findings regarding proteins altered after INH exposure in *Mtb* (such as those in FAS II, and energy metabolism), but also helps to identify additional metabolic pathways that can be targeted to supplement anti-TB therapy and combat *Mtb* strains with tolerance to INH. Additionally, this analysis provides a discrimination of the sub-cellular localization of the altered proteins.



## CO-052: ANTIBIOTIC CONSUMPTION IN HEALTH CARE INSTITUTIONS IN CALI BETWEEN 2013 AND 2018<sup>viii</sup>

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**Introduction:** Antibiotic consumption is associated with microbial resistance (1), which is why the National Health Institute (NHI) included it as an event of interest within public health (2). The goal of this study was to determine antibiotic consumption in Health Care Providing Institutions (HCPI) in Santiago de Cali. **Methodology:** Retrospective study on the consumption of Meropenem, Imipenem, Piperacillin-Tazobactam, Ceftriaxone and Ciprofloxacin from 2013 to 2018, by HCPI that report to the National System of Vigilance in Public Health (NSVPH), with the methodology of the Defined Daily Dose per 100 bed-days (2,3). As an inclusion criterion, it was established that the gave at least 9 reports during the year, with 10 HCSPI fitting this criterion. The averages for consumption were estimated, the difference between the last two years (2017 and 2018) was calculated and Student t-test for means was applied with its statistical significance ( $p < 0.05$ ), with Stata software. The endemic range was drafted with the average methodology (4). **Results:** The average of the total antibiotic consumption was higher in the Intensive Care Unit (ICU) than in the inpatient area. Meropenem was the most consumed antibiotic in the inpatient area and in the ICU, similarly to other studies (5,6). Ceftriaxone and Imipenem were more consumed in the inpatient area, while Meropenem, Piperacillin-Tazobactam and Vancomycin were more consumed in the ICU. After comparing the results with the ones from the report from the NSVPH (10), it was found that the consumption totals scored below the 75<sup>th</sup> percentile, except in the inpatient area for Meropenem and for Piperacillin-Tazobactam. The difference in consumption between 2017 and 2018 shows that in the inpatient area the antibiotic with the highest number of HCPI with differences, was Ciprofloxacin, whereas, in the ICU, it was Piperacillin-Tazobactam. There was a reduction in the consumption of most antibiotics in the inpatient area (except Ceftriaxone) and in the ICU (except one institution for Piperacillin-Tazobactam). A study in the ICU of institutions in Colombia found an increase in the resistance to Meropenem (7), which is the most consumed antibiotic in this study. The endemic channel for Meropenem (most consumed antibiotic), in the ICU (service of highest consumption), in the institution with the highest consumption indicates that consumption so far this year (2019) is in the “safety zone”. **Conclusion:** Endemic channel will be an instrument for monitoring antibiotic consumption, generating alerts so that the Health Secretariat can take measures such as trainings (8), adherence to guidelines (9), monitoring resistance (10) and prescription of antibiotics of restricted use (8,11,12), etc. HCPI that didn't report will be called upon to do so. This study presents a model for vigilance over antibiotic consumption that can be utilized nationwide.

### References

1. Bell BG, et al. (2014). A systematic review and meta-analysis of the effects of mastication on sustained attention. *BMC Infect Dis*;14(13):1-25.
2. Barrero GI, et al. (2017). Protocolo de vigilancia en Salud Pública-Consumo de Antibióticos en el ámbito hospitalario.
3. WHO. (2014). DDD definition and general consideration. [Internet]. Vol. 2014, WHO Collaborating Centre for Drug Statistics Methodology (WHOCC).
4. Bortman M. (1999) Elaboración de corredores o canales endémicos mediante planillas de cálculo. *Rev Panam Salud Pública*. 5(1):1-8.
5. Guzman et al. Análisis de usos y resistencia a antibióticos en una UCI de Montería, Colombia. *Rev Med Risaralda*. 2018; 24(2):75-80.
6. Domínguez I, et al. (2016). Evaluación del consumo de antimicrobianos en 15 hospitales chilenos: Resultados de un trabajo colaborativo, 2013. *Rev Chil infectología*. 2016; 33(3):307-12.

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7. Hernández Gómez C, et al. Evolución de la resistencia antimicrobiana de bacilos Gram negativos en unidades de cuidados intensivos en Colombia. *Biomédica*. 2013;34(Supl 1):91-100.
8. Bao L, et al. Significant reduction of antibiotic consumption and patients' costs after an action plan in China, 2010-2014. *PLoS One*. 2015; 10(3):2010-4. DOI: 10.1371/journal.pone.0118868
9. Pallares CJ, Martínez E. Implementation of a regulated antibiotic use program in two medical-surgical intensive units care in a third level mayor teaching hospital in Colombia. *Infectio*. 2012; 16(4):192-8.
10. Cui D, et al. Use of and microbial resistance to antibiotics in China: a path to reducing antimicrobial resistance. *J Int Med Res*. 2017; 45(6):1768-78.
11. Lawes T, et al. Effects of national antibiotic stewardship and infection control strategies on hospital-associated and community-associated methicillin-resistant *Staphylococcus aureus* infections across a region of Scotland: A non-linear time-series study. *Lancet Infect Dis*. 2015; 15(12):1438-49.
12. Boyles TH, et al. Antibiotic stewardship ward rounds and a dedicated prescription chart reduce antibiotic consumption and pharmacy costs without affecting inpatient mortality or re-admission rates. *PLoS One*. 2013; 8(12):1-8.

### **CO-053: GRE FACTORS REGULATE THE EXPRESSION OF BIOFILM IN *SALMONELLA ENTERICA* SEROVAR *TYPHIMURIUM***

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Enteric *Salmonella* serovar *Typhimurium* is one of the main enteric pathogens that cause salmonellosis in the human being. This disease is considered to be a problem of public health and it is characterized by the presence of diarrhea, fever, threw up and abdominal pain in the patient. This bacterium has the capacity to form biofilm, phenotype that allows it to spread providing resistance to disinfectants, environmental stress, antibiotics, and host cell immune system which regulatory protein is CsgD. The Gre factor were described in Typhimurium as anti-pause factors during the transition, allowing to repair breaks caused by setbacks of ARN polymerase. This study describes a viable role of the Gre factors in the possibility of formation of biofilm *Salmonella*.



## CO-054: PROTOTYPING OF NATURAL INGREDIENTS

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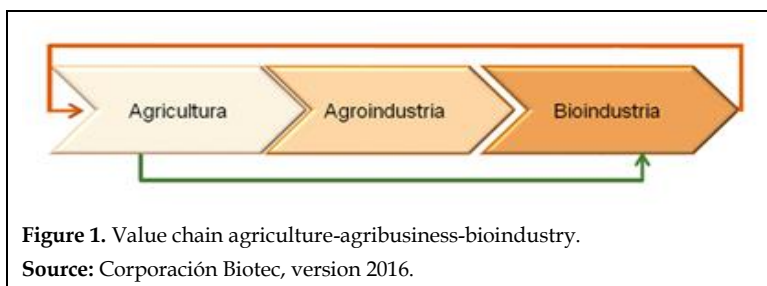
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Corporación Biotec (CB) is a research center of the National STI System of Colombia, with renewed recognition by Colciencias through Resolution No. 369 of April 19, 2018. By a special agreement, CB has its headquarters in CIAT, via Cali-Palmira, since 1999. The mission of CB, in its current institutional stage, (2016), is to build and optimize BIO frontier research and innovation capabilities, which contribute to the agricultural reconversion and the acceleration of bio-business in sustainable agricultural systems of high benefit, to live better (1).

CB has participated as the Regional Pacific Node in Research and Innovation (I&I) in Natural Ingredients (NI). BC, together with a group of companies and regional entities, has worked in an I&I collective in NI. The project "Strengthening of the R&D capacities for the production of natural ingredients from residual Biomass. Palmira, Valle del Cauca, the West" was prioritized by the PAED of Valle de Cauca in 2016, and approved on March 1, 2017, at the OCAD of the SGR CTI.

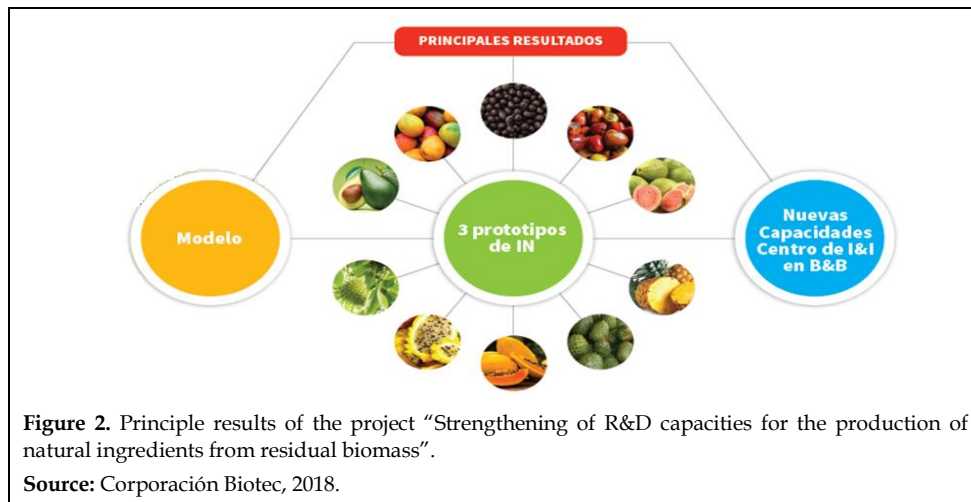
According to the task outlined by CB, the production of NI as an I&I strategy in BC links the concept of "agricultural conversion to living better", providing knowledge and innovation to the productive chain in sustainable agricultural systems of high benefit. In this context, the NI has taken greater importance in global demand. Valle del Cauca has an advantage due to its agro diversity and derived agroindustry. Therefore, it could optimize its resources and capabilities by generating an offer of innovation and high quality NI (Figure 1).



Once this framework of opportunity is identified, it is observed, however, that Valle del Cauca does not take advantage to promote the potential of its agro-industrial resources, the resulting residual biomass, and its research and innovative capabilities to generate a supply of local NIs of a world-class differentiating and innovative character. Valle del Cauca has the necessary volumes, quality, and standardization to sustainably contribute to optimize the competitiveness of the productive chains of the cosmetic and cleaning, as well as the food and nutrition industries in the national and international market (2).

As part of the development of the research project in which CB works, it is intended the development and application of an inclusive, sustainable, competitive and replicable model for the production of World-class Natural Ingredients (NI) of a differentiating and innovative nature from residual biomass in Valle del Cauca. The above, taking as reference the development of 3 NI prototypes, simultaneously providing new capabilities in the region in a line of research and investment and use of local NI. The following chart reveals the development of bases for the Center for Research and Innovation in Biosciences and Bio industry (I&I Center in B&B), see Figure 2.





Currently, CB is developing the 3 selected NI prototypes; Standardized extract of soursop (*Annona muricata*) leaves rich in acetogenins, Pineapple (*Ananas comosus*) peel essential oil, Pulp powder and chontaduro (*Bactris gasipaes*) peel. The objective of this second activity is to develop the scientific-technical work package aimed at obtaining the RB's NI from extraction to industrial scaling.

The different processes include the method of collection and adaptation of plant extracts to the development of methods at the industrial pilot level that allow the extraction of active ingredients and their subsequent use at the industrial level. These processes are part of the work package described within the objective. The development of NI includes national and international regulations, with the objective not only to satisfy the national market and replace some imports but also to have an exportable offer.

**Acknowledgment:** The authors declare no conflict of interest. The authors would like to thank the Gobernación del Valle del Cauca for the resources to develop research. Biotec Corporation for the development of this project.

#### References

1. Resumen corporativo. Corporación Biotec en el Sistema Regional y Nacional de Ciencia, Tecnología e Innovación-CTI de Colombia. Cali: CB, 2019.
2. Afiche proyecto IN SGR CTI. Fortalecimiento de las capacidades de I+D+i para la producción de ingredientes naturales a partir de biomasa residual. CB, 2019.
3. Corporación Biotec, Cámara de Comercio de Cali, Universidad del Valle. Investigación e innovación para el desarrollo de ingredientes naturales para la seguridad alimentaria y nutricional, la Salud Pública y la cosmética y aseo. (Comisión de Competitividad del Valle del Cauca. Agricultores/fruticultores, agroindustriales/procesadores, Grupos de I&I en IN. Proyecto priorizado en el PAED-Valle del Cauca). Cali: CB, CCC, UV; 2016.
4. Corporación Biotec, Universidad del Valle. Desarrollo del proyecto IN SGR CTI. Cali: CB, UV; 2018.



## CO-055: ANTIBIOTIC THERAPY IN ODONTOGENIC INFECTIONS

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Odontogenic infections are one of the most frequent causes of dentistry consultation. In the last decade, they have increased their frequency, severity and the possibility of hospitalization. Its treatment includes the possibility of antibiotic therapy. The polymicrobial microbiota associated with these infections are related to the oral environment, which is considered as a unique complex of microenvironments, where aerobic and anaerobic bacteria are abundant and flow through the saliva, and are attached as biofilm to the various oral structures. The treatment of odontogenic infections is oriented to the management of the cause as quickly as possible. In certain apical abscesses, this can be done without the need for antibiotics; but in other cases, they should be prescribed. The choice of antibiotic is considered empirical, and it is based on scientific evidence until the result of a culture and an antibiogram is obtained. Selective antibiotics for apical infections include amoxicillin, amoxicillin-clavulanic acid, cefalexin, clindamycin, azithromycin, ciprofloxacin, moxifloxacin, metronidazole, and doxycycline. On the other hand, for orofacial abscesses, it is included parenteral antibiotics, penicillin, oxacillin, ampicillin-sulbactam, clindamycin and metronidazole. In all cases, it is very important to promote good oral hygiene and prescribe an antiseptic mouthwash such as povidone iodine, chlorhexidine or benzamine. Recent studies show that dentists have prescribed 10% of antibiotic prescriptions in the United States. Ignorance of the origin and pathophysiology of odontogenic infections can lead to errors in the formulation of antibiotics, either by poor dosage or simply by formulation when they are not required. The role of the dentist in the prudent use of these antimicrobials is essential to reduce bacterial resistance to these medications and thus contribute to the WHO campaign against the appropriate use of antibiotics.



## CO-056: PRESCRIPTION INDICATION ANALYSIS OF ANTHELMINTICS IN A SAMPLE IN A SAMPLE OF COLOMBIAN PATIENTS

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**Introduction:** intestinal parasitosis (IP) continues to be a public health problem in low and middle-income countries. In Colombia, prevalence of IP by helminths has been found up to 30%. In clinical practice, antiparasitic drugs are occasionally formulated empirically, with the subsequent possibility of making an inappropriate prescription. The main objective of this study was to carry out a prescription indication analysis of ant parasitic drugs in a sample of Colombian patients. **Methodology:** A descriptive, cross-sectional study was conducted. A total of 381 medical records of patients who had an antiparasitic drug with and anthelmintic spectrum were reviewed in order to determine the prevalence of inadequate prescription (lack of symptoms and signs, or at least not mention in the medical history, or lack of IP diagnosis). The data was analyzed with SPSS version 23.0 for Windows. **Results:** Of the 381 records reviewed, 50.9% (n = 194) corresponded to women and 67.4% were under 18 years. The median age for the sample was 10 years (interquartile range: 4-26 years). Diagnosis of IP was found in 114 (29.9%) of all clinical histories and only 4.2% (n= 16) of those patients had microbiological confirmation. The most commonly used medication was albendazole, representing 70.4% of the formulations. The prescription was considered inappropriate in 69.8% (n= 266) of the cases (lacked symptoms or diagnosis suggestive of IP). A total of 280 patients were using comedications (73.5%), mainly with nutritional supplements and / or vitamins (n = 130, 34.1%), corticosteroids (n = 49, 12.9%), antifungals (n = 44, 11.5%), and antihistamines (n = 44, 11.5%). The co-prescription of nutritional supplements or vitamins was associated with an increased probability of receiving an inappropriate prescription of anthelmintic drugs (OR = 2.25; 95% CI: 1.26-4.03). **Conclusion:** Albendazole is the most commonly used anthelmintic. A high proportion of patients lacked a clinical record of symptoms or diagnoses that justify the use of anthelmintics, which may indicate an inappropriate prescription problem.

**Keywords:** Antiparasitic Agents; Anthelmintics; Intestinal Diseases, Parasitic.

### References

- 1- Rodríguez A; et al. (2015). Rev Univ y Salud;17(1):112-20.
- 2- Idris OA, et al; (2019). Heliyon; 5 (1): e01161.



## CO-059: MARINE ORGANISMS: SOURCES FOR THE DEVELOPMENT OF NEW ANTITUMOR DRUGS IN THE POST-GENOMIC ERA

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**Introduction:** The advances of genomics and proteomics have changed the scenario of the search and development of new drugs. Chemical combinatory has not been able to supply the structural versatility of natural products and, given the need to solve the health problems of the humanity, attention has once again focused on natural entities, today in light of the development of new technologies. The oceans present a biodiversity superior to that of the earth, however, their exploration towards the search for new active compounds has hardly begun. **Methods:** In the present work, evidence is discussed about the development of drugs from macro and microorganisms of marine sources, the perspectives of the use of new technologies and their impacts. An overview of the preclinical and clinical development of the most promising candidates is presented, with special interest in products obtained from organisms that inhabit the Caribbean Sea. **Results:** The studies show the anti-tumor and anti-metastatic effects of the extracts and compounds, predominating polyphenols and sulfated polysaccharides. The mechanisms involved include activation of macrophages, induction of apoptosis, prevention or repair of oxidative damage to DNA, modulation of the cell cycle and proliferation, among others. In 2007, the European Medicines Agency approved the commercialization of the compound Yondelis (trabectedin or ET-743), the first natural marine compound introduced in the treatment of cancer. Currently, more than 88 entities are under clinical studies (Phase I-III). Different extracts are found in researching from the Caribbean Sea, which stands out as a valuable source of potential candidates, sea grasses metabolites, compounds isolated from invertebrates and microorganisms associated to macro organisms. **Conclusions:** The marine flora is rich in chemical entities for obtaining new antitumor drugs with application in the management and control of cancer, however, despite the number of organisms studied it is necessary to continue introducing the use of new technologies in biopharmaceutical development of marine antitumor agents, that allows to obtaining more safe and effective candidates.



## CO-062: SURGICAL AND ONCOLOGICAL OUTCOMES OF THERAPIES FOR EARLY STAGE INVASIVE UTERINE CERVICAL CANCER

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There is a lack of reported evidence about side effects and sequelae of therapies for early stage invasive uterine cervical cancer. In this retrospective, single cohort analysis we described the surgical and oncological outcomes of 60 patients with disease stage IB to IIB, who were treated from 2009 to 2013 at Pius Hospital Oldenburg, Germany. After surgical staging, 25% of cases were upstaged. 32% of cases underwent radical surgery, 64% received adjuvant or neoadjuvant therapy. 57% achieved complete tumor reduction after neoadjuvant therapy. Adverse events such as ureteral lesions (9%), hematological, renal and electrolytic toxicities (25%) occurred mostly after neoadjuvant chemoradiation. 25% of cases recurred and 22% died within the first three years after treatment, mainly after neoadjuvant chemoradiation, yielding a 5-years overall survival rate of 78%. We conclude that Neo-adjuvant chemoradiation achieves a good antitumor efficacy but lead to a moderate rate of adverse events.

## CO-063: OBJECTIVE RESPONSE RATE IN MULTIPLE MYELOMA PATIENTS ACCORDING TO FIRST-LINE THERAPY REGIMEN

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**Introduction:** Multiple Myeloma (MM) is a hematologic malignancy that arises from plasma cells. It accounts to 10-15% of all hematologic malignancies and approximately 1% of all cancer cases<sup>1</sup>. MM manifests as a systemic disease that develops secondary to the organ protein deposition that follows paraproteinemia<sup>2</sup>. Anemia, hypercalcemia, renal failure and bone lesions are the typical clinical features<sup>3</sup>. MM treatment is variable as many first-line regimens have proved to be of benefit. The main goal during MM treatment is to achieve an Objective Response (OR), measured in different clinical and descriptive studies as the OR Rate (ORR)<sup>4</sup>. An ORR is any response depth that is partial or better, this includes very good partial response, complete response and complete stringent response. The depth of response has been clinically correlated with survival<sup>5</sup>. In the last decade, multiple drugs have been developed for MM, however, many of them are not yet approved for use in Colombia and most of them are way more expensive than the ones available already. **Methodology:** We performed a descriptive retrospective study. Clinical records of 124 patients were reviewed in order to extract the needed data for end-point calculation. ORR was calculated as a proportion of patients achieving partial or a better response to first-line therapy. The Kaplan-Meier estimator was used to calculate the whole cohort five year overall survival (5y-OS). **Results:** ORR was achieved in 75.8% of patients regarding of the first-line therapy



received. 56% of patients achieved partial response and just 1 patient achieved complete response with negative minimal residual disease. At 60 months 68.9% of patients were still alive (**Figure 1**) and the average follow-up period was 21 months. Approximately 60% of patients were given a triplet therapy with bortezomib, glucocorticoids and an alkylating/immunomodulatory drug. 89.5% of patients on VTD (Bortezomib + Thalidomide + Dexamethasone), achieved an OR, 81% of patients on CyBorD (Cyclophosphamide + Bortezomib + Dexamethasone) also achieved OR but only 63% of patients on other first-line regimens achieved OR. **Conclusion:** as a general conclusion, common and cheap first-line regimens showed to be of very benefit in patients with MM. Even though many new drugs have been developed recently, affordable medicines remain very cost-effective. Triplet regimens with glucocorticoids, bortezomib and an alkylating/immunomodulatory drug are widely used and are related with good and deep responses. Future studies must be performed after the implementation of new drugs in our MM treatment arsenal.

**Keywords:** multiple myeloma, objective response, induction therapy.

#### References

1. Jaramillo F; et al. (2018). Rev Colomb Cancerol 22(4):138-42, DOI: 10.1016/j.rccan.2018.10.001.
2. Palumbo A; et al. (2011). N Engl J Med 364:1046-1060 DOI: 10.1056/NEJMra1011442.
3. Gerecke C; et al. (2016). Dtsch Arztebl Int. Jul; 113(27-28): 470-476.
4. Kumar S; et al. (2016). Lancet Oncol. Aug;17(8):e328-e346. DOI: 10.1016/S1470-2045(16)30206-6.
5. Avigan D; et al, (2014). N Engl J Med 371:961-962 DOI: 10.1056/NEJMe1407442

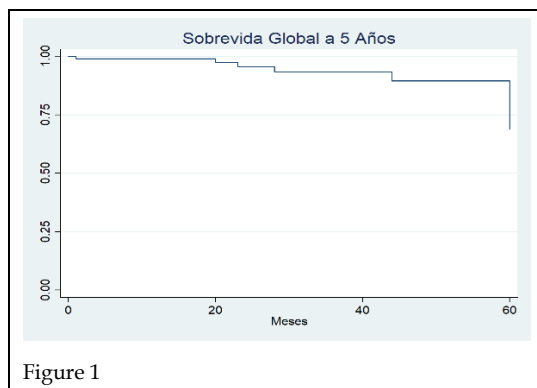


Figure 1





## CO-064: ORAL ADVERSE REACTIONS OF CHEMOTHERAPEUTIC DRUGS AT A CANCER INSTITUTION IN BARRANQUILLA-COLOMBIA 2019

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**Introduction:** Chemotherapy is commonly the treatment for the control of most cancers, having positive effects on the quality of life of sick subjects and improving their survival. At the same time, these pharmacological alternatives give rise to adverse reactions in the oral cavity, highly symptomatic, sudden, and difficult to manage which generate a state of discomfort, reducing the ability of nutrition, phonation and physiological mechanisms of the mouth as the first portion of the digestive tube. The cytotoxicity of the mucousoral epithelium does not provide optimal health conditions, increasing the risk of more severe infections and complications that can lead to death. Barranquilla, being a coastal city, with a tropical climate and with characteristic genetic, social and cultural elements, which is the product of miscegenation since the Spanish colonization and having been a recipient of European and Middle Eastern migrants, determines a different type of population, which makes it necessary to have an exclusive and independent population registry of the adverse reactions of these chemotherapeutic drugs, the objective of this work is to describe and characterize the oral adverse reactions of cancer patients under chemotherapeutic treatment of an oncological health institution in the Barranquilla city.

**Methodology:** Descriptive cross-sectional study with an epidemiological approach. With a population of 635 cancer patients in the city of Barranquilla, selected by a non-probabilistic sampling at convenience, with a total of the sample of 170 patients from a single cancer health institution. Inclusion criteria were taken into account: Patients older than 18 years with a diagnosis of cancer, patients who signed the consent informing, patients who were not in the terminal phase of the cancer disease, patients who were treated only with chemotherapy treatment and patients in optimal cognitive and cognitive conditions. The exclusion criteria were: Patients with other comorbidities, such as: autoimmune diseases, arterial hypertension, diabetes or suffering from systemic conditions, other criteria were; patients who did not approve their participation in the study and who did not sign the informed consent and finally, patients who were treated stomatologically in a period of one month. Ethical considerations based on resolution 008430 of 1993 of the Colombian Ministry of Health and the Helsinki Treaty for research on human beings with minimal exposure risk were taken into account. Patients under study were clinically evaluated by stomatological examination of their oral cavity during 50% of their chemotherapeutic therapies. For the present investigation, sociodemographic variables, oncological diagnosis, type and mode of chemotherapy, presence of adverse effects in the oral cavity were taken into account. The results were recorded in a primary source called clinical history, secondarily in a Microsoft Excel workbook version 2013, to obtain descriptive statistics: frequencies, percentages, SD, average, mode, median. Finally, statistical analysis was applied for statistical association of variables with  $\chi^2$  and simple ANOVA using Statgraphics centurion XVIII. **Results:** the most frequent age was between 51 and 70 years, more frequently the female sex in 72.9%. Most of the subjects studied came from outside of Barranquilla. The frequency of cancer was led by leukemia in 25.3%, followed by breast cancer in 24.1% and cervical cancer in 22.9%. In men the most frequent cancer was prostate in 12.9. An average of 1.14 injuries per subject under study and a period prevalence of 1.1%. anous candidiasis being the most frequent, in 19.4% (n = 33). In order of frequency, odontalgia was followed in 18.8% (n = 32), pale mucous membranes in 14.1% (n = 24) and xerostomia in 10.0% (n = 17), between others. Regarding the relationship of the distribution of lesions or adverse events in the oral cavity, the mode and type of chemotherapy established to the subjects under study; monotherapy and polychemotherapy were able to show that there were statistically significant values with values of  $p < 0.05$  in most cases. **Conclusion:** presence of oral lesions was observed in different frequencies and distributions in all types of cancers found, the most common being oral candidiasis. The relationship between the presence of chemotherapeutic drug treatment and the presence of adverse events in the oral cavity was observed.



## References

1. Laurence L., et al. (2018). Gilman, Goodman y Gilman. The pharmacological basis of therapeutics. 13 ed.1165.
2. Rang H, et al. (2016). Rang and Dale Farmacology. 8 ed. 2016:676
3. Brennan M, et al. (2018) Impact of Oral Side Effects from Conditioning Therapy Before Hematopoietic Stem Cell Transplantation: Protocol for a Multicenter Study. JMIR Res Protoc. Apr 23; 7(4):e103. DOI: 10.2196/resprot.8982.
4. Yogi V, et al. (2005) Induction followed with concurrent chemo radiotherapy in advanced head & neck cancer. J Cancer Res Ther 2005; 1:198-203.
5. Migliorati CA, et al. (2018) Bisphosphonate-associated osteonecrosis: a long- term complication of bisphosphonate treatment. Lancet Oncol; 7:508-14.

## CO-065: PREVALENCE OF PERIPHERAL NEUROPATHY ASSOCIATED WITH CANCER CHEMOTHERAPY IN FOUR ONCOLOGY CENTERS OF COLOMBIA, 2015-2016<sup>ix</sup>

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**Introduction:** Chemotherapy-induced peripheral neuropathy is a common adverse reaction in a variety of medications frequently used for a great number of cancer treatments (1). This condition consists of mainly sensory-type symptoms, motor components and autonomic changes. Reported prevalence ranges from 30% to 68%, after the completion of chemotherapy in non-Latin American people with different populations and socioeconomic levels. The objective of the present study was to determine the prevalence of Chemotherapy-induced peripheral neuropathy in a Colombian population. **Methodology:** A real-world evidence cross-sectional retrospective study was performed in all patients from oncological clinical centers in Colombia, which received pharmacological therapy for any cancer between January 2015 and December 2016, with taxanes (paclitaxel, docetaxel), alkylators (oxaliplatin), proteasome inhibitors (bortezomib), and epothilone B analogs (ixabepilone). **Results:** A total of 1,551 patients in four cities were included, and 11,280 doses were applied; predominantly females (n=1,094, 70.5% of patients), with a mean age of 57.0±13.0 years old. Paclitaxel was the most commonly prescribed drug (n=788, 50.8%). Chemotherapy-induced peripheral neuropathy was developed in 48.9% of paclitaxel, 58.5% of oxaliplatin, 50.5% of docetaxel, 43.7% of bortezomib and 95.2% of ixabepilone patients. Thirty-three patients were treated with two of these medications simultaneously. **Conclusion:** Chemotherapy-induced peripheral neuropathy is a frequent adverse reaction to daily cancer therapy in Colombian patients managed with taxanes, alkylators, proteasome inhibitors, and epothilone B analogs. Hence, it is necessary to establish more successful diagnostic methods and incorporate validated scales in the routine evaluation of all patients receiving these medications in our environment.

## References

- 1- Tzatha E, et al. (2016) Oncology. 30(3):240-244.
- 2- Seretny M, et al. (2014) Pain. 155(12):2461-2470. DOI: 10.1016/j.pain.2014.09.020

<sup>ix</sup> The Scientific Articles Program Committee of the XVII Colombian Congress of Pharmacology and Therapeutics 2019 and the XXII Latin American Congress of Pharmacology 2019 (LATINFARMA 2019) recognizes this work with the FOURTH POSITION in ALFONSO MATA LLANA AWARD - TECNOQUIMICAS S.A. in the section of CLINICAL AND APPLIED PHARMACOLOGY.



## CO-066: EVALUATION OF THE EXPRESSION OF KV10.1 AND P53 IN SIHA CELLS DURING THE GENERATION OF CISPLATIN RESISTANCE

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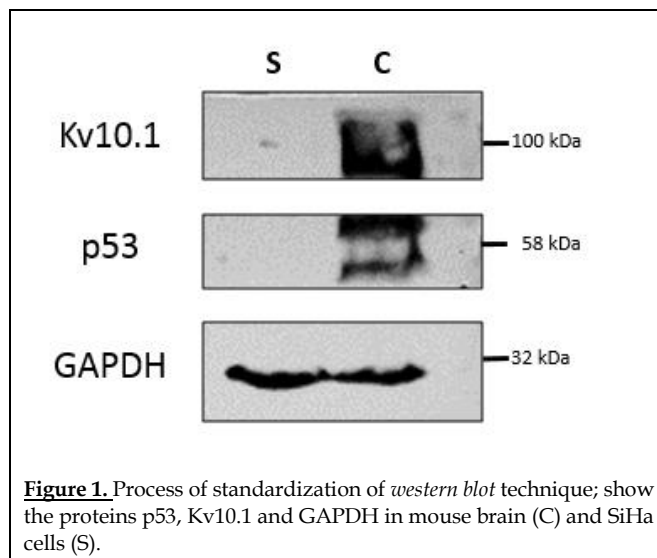
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**Introduction:** Cervical cancer is one of the pathologies with a highest incidence in women, in Colombia approximately 4,460 new cases are reported every year; of which 1,860 end in death (1) and its treatment includes the use of cisplatin; however, therapeutic resistance to this drug limits the success of the treatment. To deal with this problem, it is of great interest to find new targets that allow evidence of the development of resistance in the cells and thus make a therapeutic change. So far, Kv10.1 and p53 proteins have been proposed as biomarkers of malignancy and resistance in several types of cancer, in addition, it has been found that the expression of Kv 10.1 is controlled by the protein p53 (2), but it is unknown how the expression of these proteins vary during the development of cisplatin resistance. Given that, in more than 70% of tissues and tumor cells of different origin, the Kv10.1 and p53 proteins are overexpressed and they are a direct determinant of cisplatin chemosensitivity; It is important to evaluate the expression changes of these proteins during the development of resistance to contribute to the knowledge about the mechanisms of response of the cells to the drug. The objective of this work is to evaluate the expression of the p53 and Kv10.1 proteins in the SiHa cervical cancer cell line during cisplatin resistance, for this, the cell line is maintained at increasing doses of the drug until its resistance and protein expression are evaluated at each stage. **Methodology:** The SiHa cell line was donated by the National Cancer Institute of Colombia, and these were grown in DMEM medium supplemented with 10% fetal bovine serum and 1% penicillin and streptomycin, resistance generation was performed with exposure to increasing doses of cisplatin (0.05, 0.1, 0.3, 0.5, 1 and 2 µg/ml), the dose changes were made once the confluence of the cells reached 80%. Followed this, the cells that were resistant to the different concentrations underwent the protein extraction process to subsequently evaluate the expression of Kv10.1 and p53 protein by Western blot and finally perform a quantitative analysis analyzing the density of the band obtained in the different samples. **Results:** During the establishment of the cisplatin-resistant cell line, morphological changes such as the appearance of granules, thickening and lengthening of the membranes were evident; that granules may be due to the binding of cisplatin to molecules other than DNA, such as enzymes and thiol-containing proteins, and when this binding occurs, it depletes intracellular antioxidant reserves, promoting oxidative stress and reducing the availability of reactive cisplatin (3, 4). The standardization process of the Western blot technique was performed, where the proteins of interest have been evidenced in mouse brain control cells (Figure 1). From this moment it is expected to analyze the total protein extracts from the cells resistant to the different doses of cisplatin and it is expected to observe an overexpression of the Kv10.1 and p53 proteins during the resistance generation process, simulating the process that occurs in patients treated with this chemo drug. **Conclusion:** Based on the increase in the expression of proteins that are expected to be obtained in cervical cancer cell samples resistant to the different doses of cisplatin, it is expected to conclude the potential of Kv10.1 and p53 proteins as biomarkers and propose the evaluation of these as an alternative that allows to know the development of resistance to the chemo drug used in conventional therapies to rethink patient care strategies and at the same time improve their treatment and quality of life. Regarding the Disclosure of Conflict of Interest, it is stated that there are no relationships that could be perceived as potential conflicts of interest by the authors of this project.

### References

1. Pardo C, Cendales R (2015) Incidencia, mortalidad y prevalencia de cáncer en Colombia 2007-2011.
2. Ouadid-Ahidouch H, et al. (2016) Kv10.1 K<sup>+</sup> channel: from physiology to cancer. *Eur J Physiol* 468(5):751-762.
3. Galluzi L, et al. (2012). Molecular mechanisms of cisplatin resistance. *Oncogene* 31, 1869-1883.
4. Minervini T, et al. (2019). Fate of cisplatin and its main hydrolysed forms in the presence of thiolates: a comprehensive computational and experimental study. *Metallomics*. DOI: 10.1039/c8mt00371h



## CO-067: OUTER MEMBRANE VESICLES: A PLATFORM FOR DEVELOPMENT OF ADJUVANT AND VACCINE FORMULATIONS

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Vaccines based on outer membrane vesicles (OMV) were developed more than 20 years ago against *Neisseria meningitidis* serogroup B. These nano-sized structures exhibit remarkable potential for immunomodulation and delivery of meningococcal antigens or unrelated antigens formulated with the vesicles. This work reviews different applications of OMV in Research and Development (R&D). A Good Manufacturing Practice (GMP) process was developed by Finlay Vaccine Institute to produce OMV from *N. meningitidis* serogroup B (dOMVB) using detergent extraction technology. Subsequently, OMV from *N. meningitidis*, serogroup A (dOMVA), serogroup W (dOMVW), and serogroup X (dOMVX) were obtained using this technology. More recently, the extraction process was also applied effectively to obtain OMV on a research scale from *Vibrio cholerae* (dOMVC), *Bordetella pertussis* (dOMVBP), *Mycobacterium smegmatis* (dOMVSM), and BCG (dOMVBCG). The immunogenicity of this OMVs was evaluated for specific antibody induction, and by functional bactericidal and challenge assays in mice to demonstrate their protective potential. Finally, adjuvant effect of dOMVB was evaluated with combined antigens from herpes virus type 2 glycoprotein, ovalbumin, allergens, glycolipids, etc. In conclusion, OMV and derived particles (cochleates and vssp) are proving to be more versatile than first conceived and remains an important technology for development of adjuvants and vaccine candidates.



## CO-068: TECHNOLOGICAL CHALLENGES FOR THE DEVELOPMENT OF A PLATFORM FOR THE PRODUCTION OF BIOSIMILARS IN COLOMBIA

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According to the WHO Global Cancer Observatory, in 2018, 101,893 cases were registered in Colombia, of which 47,876 were men and 54,017 women. Those who suffer most from Colombians are breast cancer with 13.1%, and prostate cancer 17,712. The mortality rate for this disease is still very high in the country, with a total of 46,057. Because between the costs; those of biotechnological drugs represent the most burdensome burden and because Colombia has one of the lowest availability of this type of drugs, accessibility to cancer treatment for low-income patients is also limited. Biosimilars represent a current solution for access to high-cost biotechnological molecules, because they have a biological activity comparable to their reference drugs and are more cost effective; They have the potential to improve accessibility to treatment for patients and provide alternatives for decision makers. Two aspects present a favorable panorama for the development of the corresponding biosimilars: The expiration of patents for several oncological biological products and the validity of Decree 1782 of 2004, through which Colombia implemented a shortened route for the approval of biosimilars. However, despite the opportunities, the challenges for the development of these drugs and their effective use in patients persist, including the technical, economic and political challenges that developers must face to implement production.

## CO-070: ADVERSE REACTIONS ASSOCIATED WITH THE USE OF BIOTECHNOLOGICAL DRUGS IN COLOMBIA

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**Introduction:** There is an important growth in the production and use of biotechnological drugs for different morbidities, which have generated advances in therapeutics, but have been associated with important adverse drug reactions (ADRs), some of which are serious (1,2). The objective was to determine the adverse effects related to the use of biotechnological drugs in patients affiliated with the Health System of Colombia between the years 2014-2018. **Methodology:** A retrospective study based on a database of ADR reports from Audifarma SA, the main institutional dispenser of medicines in the country, to approximately 6.5 million patients. Patient information was taken with complete reports and medications were analyzed according to Anatomical Therapeutic Chemical Classification, severity, type of RAM, affected organ and probability according to causality analysis. **Results:** Reports of 3010 of ADR were identified in five years of follow-up, with the antineoplastic and immunomodulatory agents being the most frequently reported (n=2199, 73.1%), followed by the biological ones for the respiratory system (n=349, 11.6%), the musculoskeletal system (n=129, 4.3%) and of the alimentary tract and metabolism (n=119, 4.0%). The drugs with the highest number of reports were adalimumab (n=376, 12.5%), rituximab (n=345, 11.5%), omalizumab (n=341, 11.3%), etanercept (n=285, 9.5%), abatacept (n=259, 8.6%), tocilizumab (n=215, 7.1%) and golimumab (n=210, 7.0%) of cases. 40.6% were classified as possible, 25.8% probable, 4.5% definitive and 1.8% therapeutic failures. In 54.7%, it was determined that they were not serious, 11.9% mild, 12.4% moderate, 15.2% serious and 1.1% lethal. According to the type of reaction, 50.4% were type A (associated with the mechanism of action), 15.0% type B, but 29.3% were not classified. **Conclusion:** Biotechnological drugs are less frequently used than synthetic medicines, but more frequently they





are associated with serious and lethal ADRs. It is necessary to increase the reporting and follow-up of ADRs associated with this group of drugs to improve the quality of care, providing greater security to patients.

#### References

- 1- Machado et al. Rev Panam Salud Publica. 2012;31(4):283-9.
- 2- Machado et al. Biomedica. 2016;36(1):59-66. DOI: 10.7705/biomedica.v36i1.2781.

### CO-071: PERTUSSIS CONTEXT AND THE NEED OF A NEW GENERATION OF VACCINES

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Despite wide vaccination coverage with efficacious vaccines, pertussis remains being a serious health problem with a high incidence in infant younger than two years, with a reemergence of the disease in many countries, especially in the industrialized ones. Although several strategies have been used to control the disease (repeated vaccination, cocoon vaccination and maternal immunization), none have proven their effectiveness so far. Therefore, new pertussis vaccines are needed. The main approaches include whole-cell pertussis with a reduced endotoxin content, OMV, extracted and purified antigens with new and potent adjuvant acting as agonist for TLR and live attenuated candidates. The present Paper aims to give a broad overview on the state of art of the generation of new pertussis vaccine candidates, principles, mechanisms of action and potential contribution to the disease control.

**Keywords:** Pertussis, Vaccines, New candidates.

### CO-074: MOLECULAR EVOLUTION AND BIOINFORMATICS TOOLS FOR PRODUCING RECOMBINANT PROTEINS TO BE USED IN MEDICAL AND PHARMACEUTICAL APPLICATIONS

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Proteins realize most of the molecular tasks in the cell. Because of it, redesign proteins implies a high potential for pharmaceutical products. Here we present molecular evolution and bioinformatics tools for redesigning proteins suitable for evaluating new candidate molecules to become antibiotics, and proteins for regenerating bone in fractures.





## CO-075: OUTER MEMBRANE VESICLES EXTRACTED FROM *NEISSERIA MENINGITIDIS* SEROGROUP X FOR PREVENTION OF MENINGOCOCCAL DISEASE IN AFRICA<sup>x</sup>

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**Introduction:** Meningococcal disease is caused mainly by serogroups A, B, C, Y, W of *N. meningitidis*. However, numerous cases of meningitis caused by serogroup X *N. meningitidis* (MenX) have been reported in several African countries. Currently, there are no licensed vaccines against this pathogen and most of the MenX cases were caused by meningococci from clonal complex (c.c) 181. Detergent extracted meningococcal outer membrane vesicle (dOMV) vaccines have previously shown to be safe and effective against epidemics of serogroup B meningococcal disease in all age groups. The aim of this work is to obtain, characterize and evaluate the vaccine potential of dOMVs derived from a MenX strain (OMVx). **Methodology:** Three experimental lots of OMVx were prepared by deoxycholate extraction from the MenX strain BF 2/97. Size and morphology of the vesicles were carried out by Dynamic Light Scattering and electron microscopy, whereas the antigenic composition was characterized by gel electrophoresis, immunoblotting and mass spectrometry. OMVx were thereafter adsorbed to aluminum hydroxide (OMVx/AL) and two doses of OMVx were administered subcutaneously to BALB/c mice three weeks apart. The immunogenicity and functional antibody activities in sera were evaluated by ELISA (anti-OMVx specific IgG responses) and serum bactericidal activity (SBA) assay, respectively. **Results:** The size range of OMVx was between 90 and 120 nm, whereas the most relevant antigen detected were the outer membrane proteins PorA, PorB, OpcA and RmpM. The three experimental/pilot lots of OMVx/AL elicited high anti-OMVx antibody responses with bactericidal activity, whereas no bactericidal activity was observed in the placebo group. **Conclusions:** The results demonstrate that OMVx are immunogenic, can be consistently obtained and may be used as a vaccine to prevent the majority of meningococcal X disease in the African meningitis belt.

**Keywords:** Outer membrane vesicle (OMV), *Neisseria meningitidis* serogroup X, Vaccine.

## CO-076: ADVERSE EFFECTS OF TETANUS TOXOID VACCINE IN NEIVA, COLOMBIA: A CASE REPORT

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**Introduction:** Data related to adverse effects of tetanus toxoid is unusual, even if considered as a safe and well tolerated vaccine. However, few reports regarding serious and potentially lethal side effects do exist in literature. Chouaib et al reported a case of a 29-year-old woman who presented anaphylactic shock some minutes after the administration of tetanus toxoid, which progressed to cardiac arrest. (1) Demoly et al also reported the case of a 38-year-old woman who experienced a very severe anaphylactic shock with cardiorespiratory arrest within minutes of injection of tetanus toxoid, requiring emergency treatment. The patient was considered to have serum anaphylaxis of horse tetanus toxoid IgE, related to horse serum albumin. (2) **Results:** A 51-year-old female patient was admitted for stray after being scratched by a stray cat. The patient was found in good general

<sup>x</sup> The Scientific Articles Program Committee of the XVII Colombian Congress of Pharmacology and Therapeutics 2019 and the XXII Latin American Congress of Pharmacology 2019 (LATINFARMA 2019) recognizes this work with the FIRST POSITION in ENRIQUE NÚÑEZ OLARTE AWARD - LABORATORIOS ROCHE S.A. in the section of BASIC PHARMACOLOGY.



conditions and with normal vital signs. Tetanus toxoid was injected at 7:00 pm and the patient was discharged 16 minutes later. At 7:25 pm, the woman was admitted again and presented syncope, no spontaneous breathing and cyanotic coloration. Blue code was activated. Patient had weak carotid pulses, mydriatic pupils and the following vitals: BP: 96/60 mmHg, HR: 80, RR: 0, SaO<sub>2</sub>: 0%. cardiopulmonary resuscitation (CPR) was started as the monitor showed pulseless electrical activity. After the administration of 1 mg of adrenaline, pulse reappeared with sinus tachycardia (153 bpm) and 86% oxygen saturation. After a while, heartbeat decreased to 40 bpm and no pulses were registered, so that CPR was started again, and adrenaline administered. Afterwards patient recovered sinus rhythm. Family members did not report any relevant medical history or allergies. Naranjo algorithm was applied, scoring 5, it is, "with probable adverse drug reactions to tetanus toxoid." A head Computer Tomography scan showed diffuse supratentorial cytotoxic edema. As the patient continued with severe alteration of mental status, a Magnetic resonance Image was performed, reporting anoxic-ischemic encephalopathy after three days of onset. At the moment, she is still under medical surveillance, with poor both clinical and neurological prognosis. **Conclusion:** The patient had a severe anaphylactic reaction with cardiovascular decompensation after the administration of the tetanus toxoid vaccine.

**Keywords:** adverse events; pharmacovigilance, tetanus toxoid vaccine.

#### References

- 1- Chouaib N, Bensghir M, Azendour H, Balkhi H, Haimeur C; et al. (2010) Choc anaphylactique suite à une injection de sérum antitétanique. *Ann Fr Anesth Réanimation*. 29 (4):314-5. DOI: 10.1016/j.annfar.2010.03.005
- 2- Demoly P, Botros HG, Rabillon J, David B, Bousquet J. (2002). Anaphylaxis to antitetanus toxoid serum. *Allergy*: 7:860-861. DOI: 10.1034/j.1398-9995.2002.23575\_3.x

## CO-078: NEONATAL DIABETES TREATMENT

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Neonatal Diabetes is characterized by presentation in the first six months of life, there are different etiologies associated with mutations in genes, they are monogenic and there are phenotypes related to the mutation of the genes that encode the potassium channels of the Beta cell in the pancreas. It is of special interest to detect the cause in time to define the appropriate treatment, given that some patients respond to oral sulfonylurea therapy, with excellent response to 10 years of treatment and extending the benefit at the level of CNS where these channels are also expressed and avoiding cognitive disorders.

## CO-079: METFORMIN: THE PANACEA OF THE 21<sup>ST</sup> CENTURY?

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Metformin is an oral antidiabetic used for several decades that has gained great recognition in recent years for its pleiotropic effects in patients with DM2 who use it. Approved in the US since 1995, the mechanism of action has had several proteins that have been considered as targets of its pharmacological actions such as AMPK, eNOS, ACC and mTOR. The cell pathways influenced by metformin have supported the thesis that their various independent actions of glycemic control may have an origin in the metabolic and mitochondrial control and balance of liver, endothelial, myocardial cells etc. This conference will discuss a brief summary of the history of this medicine, its physicochemical characteristics, its mechanism of action and the description of some clinical effects described in different studies in humans and other animals.



## CO-081: HYPOGLYCEMIC ACTIVITY OF A COORDINATION COMPOUND BASED ON METFORMINE AND COPPER(II) IN A DIABETES MELLITUS MOUSE MODEL

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**Introduction:** Metformine hydrochloride is nowadays the most popular pharmaceutical drug prescribed for the control of hyperglycemia for diabetes mellitus. The synthesis of new coordination compounds based on metformin and copper(II) probably can increase in its pharmacological properties. Thus, we have been involved on the synthesis, structural, theoretical, spectroscopical and pharmacological characterization of coordination compounds based on copper(II) and metformin and we report here the concerning to the hypoglycemic activity of the compound named as triaquometformincopper(II) sulfate,  $[\text{Cu}(\text{Metf})(\text{H}_2\text{O})_3]\text{SO}_4$ , in a diabetes mellitus mouse model induced with streptozotocine. **Methodology:** The hypoglycemic activity of triaquometformincopper(II) sulfate was compared with that of metforminium hydrochloride using DM mouse models induced with streptozotocine. The animals were divided in three groups: diabetics, hyperglycemic and control (Arroyo-Carmona, 2016), the compounds were administered by oral *via* with a dose of 300 mg/kg weight and then the plasmatic concentration of glucose was measured at 0, 20, 40, 90 and 120 minutes. **Results:** The concentration of plasmatic glucose of DM-group descended 40% with respect to the basal value after two hours of administration of triaquometformincopper(II) sulfate. However, there was not significant difference with respect to the group treated with metforminium hydrochloride, meaning that both compounds possess similar hypoglycemic activity. On the other hand, it was found a statistically significant difference in the concentration of plasmatic concentration of glucose in the hyperglycemic animals, at 20 and 40 minutes after the administration of triaquometformincopper(II) sulfate vs metforminium hydrochloride group. These preliminary results suggest that these animal groups metabolize glucose by different routes. **Conclusion:** Hypoglycemic activity of triaquometformincopper(II) was similar of metformin hydrochloride in the mouse models and conditions studied in this work. This fact prompts us to carry out new experiments devoted to evaluate the action of this compound in chronic conditions because there are reports which associate a lowering in glycosylated hemoglobin depending on the concentration of plasmatic copper (2). **Acknowledgment:** This study was supported in part by Grants from project BUAP, VIEP-100059822 to JTT.

### References

1. Arroyo-Carmona RE, Lopez-Serrano AL, Albarado-Ibanez A, et al. (2016). J Diabetes Res. 2016: 8483537.
2. Naka T, Kaneto H, Katakami N, et al. (2013). Endocrin J. 60(3): 393-396. DOI: 10.1507/endocrj.EJ12-0342.



## CO-082: NURSING INTERVENTIONS AIMED AT IMPROVING SAFETY IN THE USE OF MEDICINES

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In Nursing, the NANDA taxonomy frames care plans with nursing diagnoses that define guidelines for interventions (NIC - Nursing Interventions Classification) and expected results (NOC - Nursing Outcomes Classification) within care plans. Regarding the majority of nursing work, it refers to the administration of medications, the nursing diagnoses have a limited scope considering the associated NIC and NOC.

## CO-083: RESULTS OF THE TRAINING FOR GOOD USE OF MEDICINES IN THE PHARMACOLOGY CHAIR IN MEDICINE STUDENTS

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**Introduction:** Medical students perceive difficulties in prescribing medications, analyzing risks, indications and effectiveness. It is necessary to strengthen the skills in the use of medication, in the student. Teaching pharmacology is transversal, focused on pharmacological groups and low therapeutic (1,2). Teaching strategies for good use of medications is a necessity: pharmacovigilance (VF), prevention of medication errors (MS), pharmacotherapeutic follow-up (SFT); many hospital admissions and deaths are due to preventable medication errors (3,4,5). **Methodology:** The teacher trained tutors and students in the 5th semester, on strategies for good use of medications (FV, EM, SFT). Students and monitors, looked for cases in the two hospitals, approved by the teacher, medical history was reviewed. The cases had medications to evaluate in the next exam. PRM, IF, RNM, RAM, and MS were identified and the causality assessment of the RAM was performed using the WHO algorithm (definitive, probable, possible, improbable, unclassified and unclassifiable). of 3 cases per session, in Athenaeum of Drug Use Cases (ACUM): relevant clinical data, pharmacotherapeutic profile, pharmacological contents, appropriate and inappropriate use findings, conclusions, recommendations and correlation with the literature. Teacher moderated the discussion, active participation of tutors and students. The PRM, RAM and EM, were notified to the pharmaceutical service of the hospitals. **Results:** In 7 sessions of ACUM (voluntary assistance), 21 clinical cases were presented, participation on average of 65 students (90% of the course), 12 tutors and the teacher of the patients, 13 were women (62%); The age range was 20 to 90 years. 15 patients were from internal medicine (71.4%). 39 PRMs were identified, those of type 5 were the most frequent (The patient uses a dose, schedule and / or duration longer than he needs) 20 cases (51.3%). 45 NMRs were detected, the most frequent were 15 cases of hematological alterations (33.3%) and 9 metabolic and hydroelectrolytic alterations (20%). The causality analysis of AMR according to WHO showed that 60% were possible (27 cases) and 35.6% probable (16 cases). All were notified to hospital pharmacies. **Conclusion:** Students gradually develop skills to more easily detect PRM, RNM, RAM, MS and IF; and propose solutions to control or avoid them. It was intended with this strategy of active pharmacovigilance, that the students of 5th semester, develop a critical thinking in the use of medicines, which can contribute to the control and prevention of PRM.

### References

1. Muñoz L., García A., Salvador A., Bofill P., Valenzuela K. Farmacovigilancia en el programa de Farmacología de la carrera de Medicina. Rev. Medical Electron 39 (2): 179-187, 2017.
2. Maxwell SR, McQueen DS, Ellaway R. Drug: a dynamic interactive electronic drug formulary for medical students. Br J Clin Pharmacol 62(6):673-681.
3. Hartman J., Harkmark L. A global view of undergraduate education in pharmacovigilance. Eur J Clin Pharmacol 73 (7): 891-899, 2017.
4. Sheldon T. Dutch doctors call for action on drug safety. Br Med J 333(7581), 2006.



5. Schutte T., Tichelaar J., Reumerman M. Pharmacovigilance Skills, Knowledge and attitudes in our Future Doctors - A Nationwide Study in the Netherlands. *Basic Clin Pharmacol Toxicol* 120 (5): 475- 481, 2017.
6. Vallejos Narváez, Á. (2016, 09). Didácticas innovadoras en el aprendizaje de la farmacología en estudiantes de medicina. *Revista del Hospital Italiano de Buenos Aires*. 36: 99-106.

## CO-084: COLOMBIA AND THE PHARMACEUTICAL GEOGRAPHIES FROM THE SOUTH: GENERICS, PATENTS SYSTEM AND ACCESS TO HEALTH IN THE 1960S

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This paper analyzes the history of the debates on the reform of the pharmaceutical patents system submitted to Congress of the Republic in 1963 as a part of an innovative policy implemented by the Minister of Public Health between 1962 and 1965. This pioneering policy consisted in the enlargement of the access to health throughout the availability of generic medicines, the improvement of medicines quality control devices, and the reform of the patents system. The debates on the excessive protection of patents have also been contemporary of the international discussion on quality standards and equivalence of generic medicines and of the requirement to avoid the lack of competition on the pharmaceutical market. This study shows that Colombia contributed to the positioning of a new pharmaceutical geography which offered, from the South, new alternatives to expand access to health. Moreover, the debate among doctors, public officers, politicians and industrialists that took place during the 1960s made emerge the narratives that are since then used by the pharmaceutical industry in order to support the enlargement of the patents protection and slow down state initiatives to regulate the pharmaceutical market.

## CO-085: EPIDEMIOLOGICAL PROFILE OF PATIENTS WITH SEPSIS IN THE INTENSIVE CARE UNIT OF A CLINIC IN THE CITY OF CALI, COLOMBIA

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**Introduction:** Sepsis is a public health problem due to the high mortality rate in intensive care units (ICU). The main objective of this work was to determine the main epidemiological traits of patients with sepsis in the ICU of a hospital in Cali, Colombia. **Methodology:** A retrospective descriptive study was carried out from the database of 295 clinical records of patients who presented sepsis. The association between quantitative variables was analyzed using the chi-square test with a significant value of  $p < 0.05$ . The association measure used was The Odds Ratio, with a 95% of confidence interval, using the SPSS statistical program. Vs 22.00. **Results:** The mean age of the patients was 75 years (SD = 17,276), men had a higher risk of developing the disease (OR: 1,250, 95% CI = 0.669, max = 2,341). Sepsis of the abdominal cavity represented 22.1% and a greater possibility of developing septic shock (4.4%, OR = 1,326). *Escherichia coli* was the most isolated agent, especially the urinary tract (10.2%; OR: 5,216 ( $p < 0.05$ )). **Conclusion:** Gram-negative bacteria, diseases with metabolic and abdominal cavity disorders, as the primary septic focus, were the most prevalent factors in septic patients. **Acknowledgments:** Thanks to the Department of General Research of the USC.

**Keywords:** Septic focus, Mortality.

### References

1. Riedel S, Carroll KC. Early Identification and Treatment of Pathogens in Sepsis: Molecular Diagnostics and Antibiotic Choice. *Clin Chest Med*. 2016; 37 (2): 191-207. DOI: 10.1016/j.ccm.2016.01.018.7.
2. Ayub M, Rizwan H. Isolation of Pathogens Causing Sepsis, Pus and Infected Wounds from Critical Care Unit: A Retrospective Study. *Ann Clin Lab Res*. 2015; 3: 1-7.





## CO-086: THERAPY FOR AUTOIMMUNE DISEASES IN SMALL ANIMALS

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**Introduction:** Multiple autoimmune diseases there are in pets that affect the normal functioning of the immune response and the magnitude of its effects, will be depend of immune response type and the organs that will have be affected. **Methodology:** A bibliographic search was carried out using database of Scielo, Google Scholar and PubMed with mesh terms small animals, autoimmune and immunodeficiency diseases. **Results:** Autoimmune diseases or immunodeficiencies occur due to an imbalance of either innate or adaptive immune responses. These can affect various organs such as skin, blood and lymphoid, endocrine, ocular and neuromuscular systems, where the skin is one of the most affected organs. In the skin, autoimmune dermatoses are divided into a reaction of hypersensitivity (allergic) and autoimmunity (own antigens). The different allergens that may be compromised are food (animal or vegetable protein, additives), fleabites, environmental allergens, insect bites (flies and mosquitoes), and bacterial infections by *Staphylococcus*, Hemolytic *Streptococcus* and *Pasteurella*, viral infection by *Calicivirus*, Genetic factors and trauma. Autoimmune dermatoses can be vesicular or bullous like pemphigus, pemphigoid, and not bullous lupus erythematosus, discoid and systemic. In this case, the pemphigus complex is one of the most studied pathologies. In this, the antibodies cause loss of cohesion among the keratinocytes, and favor neutrophil recruitment. For its treatment, depending on the severity in mild-moderate forms, potent topical corticosteroids, moderate forms - severe systemic corticosteroids, if there is no adequate response, methotrexate, azathioprine, cyclophosphamide, immunoglobulin's or plasmapheresis can be implemented. The most commonly used immunopharmaceuticals are  $\alpha$ CD20 (Rituximab or Ofatumumab), Antagonist TNF- $\alpha$  (Etacerecept). In Feline Immunodeficiency Virus only Interferon's (Feline interferon- $\omega$ ) and Human interferon- $\alpha$  PO low dose have evidence for treatment. **Conclusions:** Currently, there are several therapeutic alternatives to deal with autoimmune diseases or immunodeficiency but part of the benefit of the treatment will depend on accurate and timely diagnoses.

### References

1. Gershwin, L.J. (2010). Autoimmune diseases in small animals. *Veterinary Clinics: Small Animal Practice*, 40(3), 439-457.
2. Gershwin, L.J. (2018). Current and newly emerging autoimmune diseases. *Veterinary Clinics: Small Animal Practice*, 48(2), 323-338.
3. Hartmann, K., Wooding, A., Bergmann, M. (2015). Efficacy of antiviral drugs against feline immunodeficiency virus. *Veterinary sciences*, 2(4), 456-476.





## CO-088: PREVALENCE OF POLYPHARMACY IN COLOMBIA 2018

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**Introduction:** Polypharmacy is a clinical and social situation known as the use of several drugs by a single patient. Polypharmacy is increasing, according to many authors, probably associated with factors such as longer longevity, the increase of the chronic disease's prevalence; etc. This paper establishes the prevalence of polypharmacy in outpatient population of the Colombian Health System. **Methodology:** Longitudinal descriptive observational study with retrospective collection of data contained in the electronic records of one outpatient pharmaceutical service operator in 2018, from patients of three contributory regime insurers (EPS-C) of the Colombian health system (4,844,868 people). The association between polypharmacy and sex, age and comorbidities were evaluated. **Results:** Overall, 28.5% of the patients assessed each month had polypharmacy. The prevalence of polypharmacy (5 or more drugs) was greater in women (26,4%) than male (25,0%) ( $p < 0,0001$ ); and it increases with age, being major in older than 80 years old patients (49,8%). Extreme polypharmacy (10 or more drugs) was observed in 4.6% of the patients, and 1,01% had more than 25 medications prescribed for one month. The most frequent clinical conditions associated with polypharmacy were heart failure, ischemic heart disease and unspecified constipation (9%, 8% and 7.9% respectively). **Conclusions:** Polypharmacy is a frequent and increase situation in Colombia, however, this index cannot be directly classified as a positive or negative, and must be evaluated individually in each case.

### Reference

1. Payne R.A., et al. (2014): Eur J Clin Pharmacol 70:575–581. DOI: 10.1007/s00228-013-1639-9.

## CO-089: USE OF ANTIBIOTICS ACCORDING AWARE CLASSIFICATION IN COLOMBIA 2018

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**Introduction:** Currently the effectiveness of antibiotic therapy is limited because the antimicrobial resistance, and several authors had report as a critical world problem. In order to control this situation, World Health Organization design the AWaRe list and establish for each country member the objective of at least 60% of all antibiotic prescriptions must be of Access group. The AWaRe classification is a tool for optimized the treatment of infective diseases. **Methodology:** descriptive observational study with retrospective collection of data contained in the electronic records of one hospital pharmaceutical service operator in 2018, from patients of twenty-one clinics and hospital of different Colombian cities. The level of use of antibiotics according to AWaRe strategy was evaluated. **Results:** Overall, half of the clinics and hospitals assessed have a 49,97% de utilization of Access antibiotics, less than 5% have a Access proportion above 60%. The most commonly used reserve medication was Cefepime and in the watch group it was Piperacillin Tazobactam. **Conclusions:** Countries as Germany, Italy and Russia have a less than 50% of use of Access group antibiotic, similar to our findings. This kind of investigation is very important to evaluate the adoption de AWaRe strategy, in order to reduce the antibiotic resistance.

### Reference

1. Payne R.A., et al. (2014). Eur J Clin Pharmacol 70:575–581. DOI: 10.1007/s00228-013-1639-9.



## CO-090: PROFILE OF ANTICOAGULANT USE IN HOSPITALIZED PATIENTS, PHARMACOLOGICAL INTERACTIONS AND ADVERSE REACTIONS IDENTIFIED<sup>xi</sup>

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**Introduction:** The effects of anticoagulants are known as treatment or prophylaxis of thrombotic events, allowing to establish individualized therapy according to their needs. Anticoagulant therapy provides the patient with enormous benefits but also can cause side effects. Antagonists of vitamin K are the basis for the oral anticoagulant treatment; warfarin is the most frequent and effective used medication. Besides, the entry of new oral anticoagulants which inhibit coagulation such as Xa or IIa, tend to change the perspective on warfarin.

**Methodology:** A descriptive cross-sectional, non-randomized study was carried out in 138 hospitalized patients of legal age in a fourth-level care institution with therapeutic and prophylactic anticoagulant treatment, addressing the type of drug indicated, periodicity, side effects, laboratory controls, pharmacological interactions and causality of adverse reactions. **Results:** It was found that the anticoagulant with the highest frequency of use was enoxaparin (68%) (Table 1), the most used control was the prothrombin time (60.39%), pharmacological interactions were identified in 47.1%, being the most frequent with acetylsalicylic acid (29.7% of the total number of interactions), the most frequent adverse reactions were of a hematological nature (58.3%) (Figure 1); and the causality assessment of adverse reactions was 4.2% probable. **Conclusion:** The study showed that the most commonly used anticoagulant was enoxaparin. The pharmacological interactions of anticoagulants were very frequent, especially with warfarin. The most frequent adverse reactions were those of hemorrhagic type, and the causality assessment was of possible category for most of these adverse reactions.

**Keywords:** Anticoagulants, inpatients, drug-related side effects and adverse reactions.

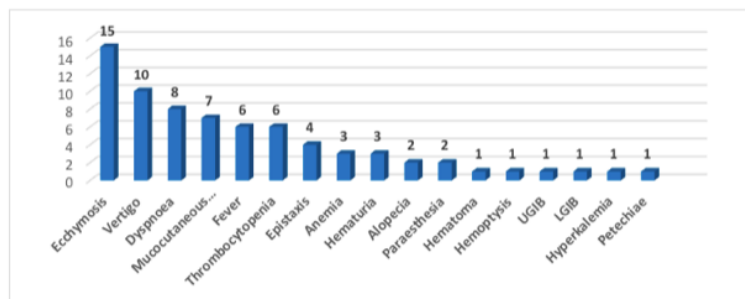
### References

1. Chaverri J.M., Rojas C. et al. (2015). Caracterización farmacoterapéutica de los anticoagulantes orales utilizados en pacientes hospitalizados. *Acta Méd Costarric*, 57(1), 16-22.
2. Kearon C., Akl E.A. et al. (2016) Antithrombotic Therapy for VTE Disease. *Chest J.*, 149 (2), 315-352. DOI: 10.1016/j.chest.2015.11.026
3. Linkins L.A., Choi P.T. et al. (2003) Clinical impact of bleeding in patients taking oral anticoagulant therapy for venous thromboembolism, a meta-analysis. *Ann Intern Med*, 139(11), 893-900. DOI: 10.7326/0003-4819-139-11-200312020-00007
4. Villines T., Fran W. et al. (2016) Safety of direct oral anticoagulants, insights from postmarketing studies. *Am J Med*, 129 (11S), S41-S46. DOI: 10.1016/j.amjmed.2016.06.004
5. Reyes A., Raffo M. et al. (2011) Necrosis cutánea por tratamiento anticoagulante oral. Caso clínico. *Rev. Chilena de Cirugía*, 63 (2), 200-203. DOI: 10.4067/S0718-40262011000200012
6. Crowther M, Crowther MA. et al. (2015) Antidotes for novel oral anticoagulants: current status and future potential. *Arterioscler Thromb Vasc Biol*, 35(8),1736-1745. DOI: 10.1161/ATVBAHA.114.303402
7. Leizorovicz A, Cohen AT, et al. (2004) Randomized, placebo-controlled trial of dalteparin for the prevention of venous thromboembolism in acutely ill medical patients. *Circulation*, 110, 874-879. DOI: 10.1161/01.CIR.0000138928.83266.24
8. Correa M, Naranjo C, et al. (2015) Prácticas de prescripción y conocimientos médicos acerca de los anticoagulantes orales directos en un hospital de referencia. *IATREIA*, 28(2),148-156. DOI: 10.17533/udea.iatreia.v28n2a05.

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**Figure 1.** Description of adverse reactions associated with anticoagulant therapy



**Table 1.** Duration treatment of anticoagulants in study patients.

Anticoagulants	Duration treatment (Days)				
	1 to 10	11 to 20	21 to 30	>30	Total
Enoxaparin	81	7	4	2	94
Heparin sodium	22	1	2	1	26
Warfarin	9	0	0	5	14
Dabigatran	3	0	0	0	3
Rivaroxaban	0	1	0	0	1
TOTAL	115	9	6	8	138



## CO-091: IMPORTANCE OF MOLECULAR STABILITY IN PHARMACEUTICS ESTABLISHMENTS AND THEIR THERAPEUTIC ACTION

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**Introduction:** Recent studies have shown the decrease in the effectiveness of medicines when they are exposed to unfavorable conditions within the framework of the opening criteria of pharmaceutical establishments. These economic entities do not have an adequate infrastructure and equipment that guarantees the good practices of drug storage, which generates molecular instability, affecting the quality of the drug and its therapeutic action in the users' organism. **Methodology:** This paper is theoretical. The information was collected through the observation, verification and evaluation of outpatient pharmaceutical establishments nationwide. The findings related to the change are shared based on the 16 years of work experiences of the exhibitor and the skill in the molecular stability of drugs as a result of processes of acquisition, reception, storage and distribution. During the presentation, attendees will be able to interact with the speaker from open-ended questions that allow clarifying specific concerns. **Results:** At the end of the presentation, attendees will have theoretical-practical tools that allow them to recognize the importance of good storage practices, the impact on the molecular stability of medications and their therapeutic effect on the users to whom it is administered. The supply of drugs with molecular alteration can cause changes in the organism, leading to resistance to these active principles, which means that medical personnel must rethink their treatment with much more concentrated and molecularly toxic medicine. **Conclusion:** During this experience in the verification and audit of outpatient pharmaceutical establishments, it was evidenced the lack of education and accompaniment by the health control entities as well as the infrastructure and provision for the storage of medications and medical devices.

### Reference

1. National Pharmaceutical Policy, Decree 780 of 2016, Ministry of Social Protection.



## CO-092: USE OF NON-VITAMIN K ANTAGONIST ORAL ANTICOAGULANTS IN PATIENTS WITH NON-VALVULAR ATRIAL FIBRILLATION IN COLOMBIA

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**Introduction:** Data on the use of non-vitamin K antagonist oral anticoagulants (NOACs) from Latin American populations are lacking. We aimed to describe time-trends in the use of NOACs among ambulatory patients with non-valvular atrial fibrillation (NVAf) in Colombia and to describe treatment patterns and user characteristics. **Methodology:** Using the Audifarma S.A administrative healthcare outpatient database in Colombia, we identified 10,528 patients with NVAf aged at least 18 years between July 2009 and June 2017 with a first prescription (index date) for apixaban, dabigatran or rivaroxaban (index NOAC) and followed them for at least year (max, 8.0 years, mean 2.2 years). We described patient characteristics, NOAC use over time, and the dose of the first NOAC prescription. **Results:** A total of 2153 (20.5%) started on apixaban, 3089 (29.3%) on dabigatran and 5286 (50.2%) on rivaroxaban. The incidence of new users of apixaban and rivaroxaban increased over study years while for dabigatran it decreased. Mean age at the index date was: 78.5 years (apixaban), 76.5 years (dabigatran), 76.0 years (rivaroxaban). Less than half of patients started NOAC therapy on the standard dose: apixaban 26.2%, dabigatran 42.2%, rivaroxaban 43.9%. The percentage still prescribed their index NOAC at 6 months was apixaban 54.0%, dabigatran 58.5%, rivaroxaban 58.0%. Hypertension was the most common comorbidity (>80% in each NOAC cohort). **Conclusion:** During the last decade, the incidence of NOAC use in patients with NVAf in Colombia has markedly increased. Future studies should evaluate whether the large number of patients with NVAf starting NOAC treatment on a reduced dose are done so appropriately.



## CO-093: CLINICAL CHARACTERISTICS AND RESOURCE USE OF SYSTEMIC LUPUS ERYTHEMATOSUS IN COLOMBIA

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**Introduction:** Burden of systemic lupus erythematosus (SLE) in Colombia has been limitedly explored. This study describes the clinical characteristics and health care resource utilization in a Colombian outpatient SLE cohort. **Methodology:** Retrospective descriptive study. Clinical records and claims data of SLE patients from ten specialized primary care centers in Colombia between July 2017 and June 2018 were reviewed. Baseline clinical variables, SLE activity (SLEDAI), drug use and direct costs were measured. **Results:** 413 patients were included, 361 (87%) female; mean age was 42 ±14 years. Mean disease evolution was 7.8 ± 5.8 years; 174 patients (42%) had a systemic manifestation at baseline, mostly lupus nephritis (105; 25%). 334 patients (81%) had at least one comorbidity, mainly antiphospholipid syndrome (90; 22%) and hypertension (76; 19%). Baseline SLEDAI score was 0 in 215 patients (52%), 1-4 in 149 (36%), 5-9 in 45 (11%) and 10+ in 4 (1%). All patients received pharmacological therapy, the most common were corticosteroids (293; 71%; mean dose 18±69 mg prednisolone/day), followed by antimalarials (chloroquine 53%, hydroxychloroquine 31%), immunosuppressants (azathioprine 45%, methotrexate 22%, mycophenolate mofetil 20%, cyclosporine 8%, cyclophosphamide 7%, leflunomide 5%) and biologicals (9%). Direct costs are summarized in the table. **Conclusion:** SLE outpatient attention costs are mainly determined by drug therapy (especially biologics), medical visits and laboratory tests. **Conflicts of interest:** This is a GSK-sponsored study, ID HO-17-17647. AG and CD are GSK employees. JEM, MEM and AGM received honoraria for the study, acting independently of the sponsorship.

**Keywords:** Biological Therapy; Costs and Cost Analysis; Lupus Erythematosus, Systemic.

Table

Cost source	Percentage	Total cost (USD)	Mean cost (USD)
Total (n=413)	100.0%	807,019	1954
Biological therapy (n=39 rituximab, n=3 belimumab)	55.9%	450,947	10,487
Other drug therapies	23.7%	191,066	516
SLE-specific laboratory tests	10.2%	82,082	199
Medical visits	4.4%	35,546	86





## CO-094: POTENTIALLY INAPPROPRIATE PRESCRIPTIONS OF ANTICHOLINERGIC DRUGS IN PATIENTS WITH BENIGN PROSTATIC HYPERPLASIA

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**Introduction:** Prostatic hyperplasia is frequent in the elderly, and it can be associated with urinary retention in patients who use cholinergic antagonists. The objective was to estimate the anticholinergic burden of drugs prescribed to patients diagnosed with benign prostatic hyperplasia in Colombia. **Methodology:** A cross-sectional study was conducted in patients diagnosed with benign prostatic hyperplasia who were identified from a population database and had been treated with adrenergic antagonists, 5- $\alpha$  reductase inhibitors and 5-phosphodiesterase inhibitors. The anticholinergic burden was evaluated using the Anticholinergic Drug Scale (ADS), and patients were classified on a scale of 0-3 points according to anticholinergic potential. **Results:** 3760 patients with benign prostatic hyperplasia were identified, with a mean age of  $68.26 \pm 10.46$  years. Of these patients, 78.8% received pharmacological treatment mainly with tamsulosin monotherapy (34.7%). Overall, 34.7% of all patients were taking cholinergic antagonists. The most frequently prescribed drugs with anticholinergic properties were furosemide, codeine and chlorpheniramine. Patients aged 75-84 years (OR: 1.98, 95%CI: 1.06-3.70) and those 85 or older (OR: 2.52, 95%CI: 1.28-4.94) had a greater probability of having an anticholinergic burden score  $\geq 3$  points. Of the patients not receiving pharmacological treatment for benign prostatic hyperplasia, 35% were taking medications with anticholinergic properties. **Conclusion:** A high proportion of patients with benign prostatic hyperplasia were receiving medical management for the relief of symptoms, mostly via monotherapy. However, one-third of patients received some type of medication with anticholinergic properties, which, increase the risk of urinary retention.



## CO-095: IDENTIFICATION AND ANALYSIS OF ADVERSE DRUG REACTIONS (ADRS) TO ANTIRETROVIRALS IN PATIENTS WITH HIV/AIDS AND PREDICTION OF CAUSALITY USING BIOINFORMATIC TOOLS

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**Introduction:** Antiretroviral therapies help to HIV-positive people to increase survival and quality of life. However, they can also cause adverse drug reactions (ADRs) that are mostly manageable, although some can be serious, contributing to increased morbidity and mortality. For this reason ADRs identification and analysis become a fundamental pillar in the comprehensive management of the patient, so the aim of this study was to identify ADRs caused by antiretroviral treatments in a group of patients with HIV/AIDS from Cartagena City and establish the analysis of the possible causal relationship, using the bioinformatics tool Swiss Target Prediction. **Methodology:** A descriptive study was carried out by using active pharmacovigilance and pharmacotherapeutic follow-up of ambulatory patients with HIV/AIDS in an IPS from Cartagena city. Initially the antiretroviral potentials causing of ADRs were identified, later their smile-like structures were downloaded from the DRUGBANK database to search for different biological targets by inverse docking, using the Swiss target Prediction bioinformatics tool. The information provided was used to analyse the probable causal relationship between antiretroviral and identified ADRs. **Results:** A total of 103 ADRs were identified in 72 patients. The most frequent were nausea (28.16%), diarrhea (13.59%), drowsiness and allergies (7.77%). Efavirenz was associated with 37 ADRs (35.92%). 22.33% of the ADRs were associated with a complementary drug while 77.67% were associated with antiretroviral drugs, the complete information is presented in Table 1. In silico causality analysis, the nausea and vomiting of Efavirenz may be related to its interaction with endocannabinoid receptors CB1 and CB2 [1,2]. Diarrhea described by abacavir and ritonavir/lopinavir may be related by interaction with cystic fibrosis conductance regulating factor (CFTR) receptors [3], uridine phosphorylase 1 enzyme [4], and bile acid receptor FXR [5] identified with Swiss Target Prediction. **Conclusion:** Most of the ADRs (nausea and vomiting) were related to efavirenz drug, probably because to its association with endocannabinoid receptors identified by inverse docking with Swiss Target Prediction. Overall, It is evident that bioinformatics is a useful tool to establish the possible causal relationship between ADRs and antiretroviral drugs in HIV/AIDS patients under study, with which it is possible to establish the possible molecular mechanism of ADRs, which is useful for future research that will allow progress towards safer and more effective therapeutics. **Acknowledgment:** Universidad de Cartagena.

**Keywords:** HIV; ADRs; Swiss Target Prediction.

### References

1. Koh A.O. K.C., Daniel Eh Z.W., Lee W.-Y., Murgiah T., Ismail N.J., Tee P.S. Efavirenz and positive urine test for cannabis - debunking the myth, *Int J Infect Dis.* 2012; 16S: 376-377.
2. Malik Z., Baik D., Schey R. The Role of Cannabinoids in Regulation of Nausea and Vomiting, and Visceral Pain, *Curr Gastroenterol Rep.* 2015; 17. DOI: 10.1007/s11894-015-0429-1.
3. Riaz N., Wolden S.L., Gelblum D.Y., Eric J. Drug-induced secretory diarrhea: A role for CFTR, *Pharmacol Res.* 2016; 118: 6072-6078. DOI: 10.1002/cnrc.27633.Percutaneous.
4. Renck D., Santos A.A., Machado P., Petersen G.O., Lopes T.G., Santos D.S., Campos M.M., Basso L.A. Human uridine phosphorylase-1 inhibitors: A new approach to ameliorate 5-fluorouracil-induced intestinal mucositis. *Invest New Drugs.* 2014; 32: 1301-1307. DOI: 10.1007/s10637-014-0135-0.
5. Hvas C.L., Ott P., Paine P., Lal S., Jørgensen S.P., Dahlerup J.F. Obeticholic acid for severe bile acid diarrhea with intestinal failure: A case report and review of the literature. *World J Gastroenterol.* 2018; 24: 2320-2326. DOI: 10.3748/wjg.v24.i21.2320.



## CO-097: INSULIN PRICES IN COLOMBIA: A LONGITUDINAL ANALYSIS

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**Introduction:** Diabetes mellitus (DM) is a highly prevalent disease in Colombia. In 2010, the estimated prevalence of diabetes in the Colombia varied from 4 to 8 percent. That means that approximately 2 to 4 million people are diagnosed with diabetes across the country. According to the national clinical practice guidelines for the treatment of diabetes mellitus, basal insulin is recommended as a third-line therapy when patients have failed to combination therapy of oral hypoglycemic agents. Modern insulins are among the costliest alternatives for the treatment of DM, according to local price databases. Given the current state of Colombian manufacturing capacity, insulins are not produced locally, which gives international manufacturers the possibility of having little or no competition in this segment, allowing the creation of monopolies. Our goal was to estimate the market concentration and possible insulin monopoly in Colombian market, using local drug prices and market databases. **Methodology:** We extracted information pertaining to insulin prices from a local drug price database (SISMED), we used data from 2014 to 2018 and considered only the institutional channel (laboratory and wholesaler). We then estimated the mean price per IU of each insulin, weighted by their market share. Finally, we estimated the Herfindahl Hirschman Index (HHI) for the whole segment, using the information on unit sells. **Results:** There are 22 sanitary registries for 499 presentations, from which 92 are drug samples, leaving 407 intended-for-consumer- use presentations. There are only 6 manufacturers and the method of registration is importing and selling for all the insulins. Insulin utilization raised throughout the analyzed period, being glargine the one with the most marked rise in sales: an 819% and 224% increase in the wholesaler and laboratory channels, respectively, from 2014 to 2018. On the other hand, average insulin price per UI increased 43% and 252% in the laboratory and wholesaler channel, respectively. When considering individual insulins, the change was 57% and 118% for aspart; 8% and 7% for degludec; -42% and -7% for glargine; 36% and 9% for glulisine; -8% and -20% for human; -10% and 89% for lispro; 55% and 116% for NPH and 34% and 46% for detemir, considering laboratory and wholesaler channel, respectively. Finally, regarding the HHI, its value was above 2500 every year, indicating a very concentrated market, as one laboratory (Sanofi) has always had more than 50% of the market share in the whole period. **Conclusion:** Although insulin prices are regulated in Colombia since 2013, their increment has been substantial throughout the years, and reflects the price changes in reference countries (such as USA, countries inside the EU, among others), as the findings of similar studies confirm<sup>1,2</sup>. These results must be interpreted cautiously however, given the fact that there were data collection inconsistencies in the early days of the SISMED database.

### References

1. Torres DR et al., Trends in the use and cost of human and analogue insulins in a Colombian population, 2011–2015. Public Health. 2017.153:64–9.
2. Xu Y et al., Analysis of Trends in Insulin Utilization and Spending Across Canada From 2010 to 2015. Can J Diabetes. 2019.43(3):179–185.e1.



## CO-098: ADVERSE EVENTS IN DENTAL PROCEDURES RELATED TO MEDICATION

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**Introduction:** An adverse event is the "result of health care that unintentionally causes harm." These can be either preventable or not, depending on the cause of the event and the meeting of the caring standards available at a given time". In Colombia, the concept is framed in the context of patient safety policy whose primary intention is to offer safe and harm-free health care. Currently, adverse events constitute a public health problem and a great challenge for the control and prevention programs. Various studies worldwide report the presence of adverse event between 5.4% and 16.6%. Therefore, it is reasonable to expect a prevalence close to 10%. In addition, it has been reported that adverse events are the leading cause of global morbidity and mortality in some developing countries. During the dental procedure, there are adverse events caused by failures in the use of medications; for this reason, the objective of this investigation was to identify the causes of the adverse events related to the medication from the year 2015 to 2018, in a dental clinic of the city of Cali, Colombia. By doing this study, the unsafe actions that produced these adverse events are known. **Methodology:** The method of this investigation is described as a retrospective descriptive study. It took forty-two (42) AE records related to medication in a dental clinic in Cali, between the years 2015 and 2018. For the choice of records, the inclusion and exclusion criteria were taken into account. For the first reports of patients, their life cycles, corresponding to all dental procedures were taken. In the exclusion criteria, the AE report formats with an empty data proportion were greater than 10%. The information was collected through a format based on the EA notification instrument of the National Institute of Food and Drug Surveillance INVIMA 2014. The information was processed in Epi info version 7.2.0.1. Previous authorization was obtained from the scientific committee of the institution in order to carry out the study. **Results:** Reports of adverse events related to medication in dental processes were presented with a frequency between two and four months. Among the most frequent causes of adverse events presented, omission of medications was the higher with 63%. Other frequent causes were incorrect dose 13%, incorrect medication 8%, medication reaction 8%, administration error 5% and medication in wrong patient 3%. Some unsafe actions were identified, such as the lack of knowledge on the part of dentists for the administration of medications, in the case of the use of anesthetics. In addition, the effects of dental materials, sterilization of non-disposable material and inappropriate reuse of dental materials were associated. Additionally, diagnostic errors, performing invasive treatments in understructure conditions due to failures in the identification of drugs with similar names and appearance were found, as well as errors in the identification of patients. **Conclusion:** Adverse events are preventable. Therefore, dentists must implement pharma surveillance as mechanisms to mitigate them in the use of potentially dangerous medication management, used in dental procedures that are increasingly aggressive, such as surgical processes, the management of technical resources such as X-rays and CT scans that can cause injuries.

### References

1. Estrada González C, González Restrepo LD. Adverse events related to the surgical act in a third level health institution. Cuban Journal of Public Health. 2018; 44 (3).
2. Daza Aliatis JM, Jimbo Mendoza JC, Obeyes Macías GM, Toro Castillo M. Adverse events in dental practice. MEDISAN. 2015; 19 (9): 1158-1162.



## CO-099: PHARMACOLOGICAL TREATMENT AND INAPPROPRIATE PRESCRIPTIONS IN PATIENTS WITH ERECTILE DYSFUNCTION

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**Introduction:** Erectile dysfunction could affect more than 320 million people in the world by 2025. It is associated with various risk factors such as age, comorbidities and medications, including beta blockers, diuretics and psychotropic drugs. The objective was to identify drug treatment and medications related to worsening sexual activity in patients with erectile dysfunction in Colombia. **Methodology:** Cross-sectional study, based on a population database that identified the prescriptions used in patients with erectile dysfunction, between January 1 and December 31, 2018. A descriptive analysis was carried out to determine the frequencies and proportions for qualitative variables and measures of central tendency and dispersion for quantitative variables. Categorical variables were compared using the X<sup>2</sup>. Binary logistic regression models. A threshold of  $p < 0.05$  was set for statistical significance. **Results:** A total 2999 patients with erectile dysfunction were identified, with a mean age of  $59.6 \pm 2.1$  years. An 88.2% received pharmacological treatment for erectile dysfunction, with tadalafil being the most used (70.5%). 47.6% of all patients received at least one medication associated with erectile dysfunction. Of these, 60.5% received a single prescription, 25.2% two and 14.3% three or more. The most frequent were hydrochlorothiazide (17.0%), metoprolol (7.9%) and sertraline (6.7%). Residing in Cali or Bucaramanga and having various comorbidities were associated with the risk of having this type of medication prescribed. **Conclusion:** The pharmacological treatment of erectile dysfunction was according to the recommendations of the clinical practice guidelines. The high proportion of inappropriate prescriptions in patients with erectile dysfunction make it necessary to promote and strengthen educational and pharmacovigilance strategies that improve the prescription habits of doctors involved in the care of such patients.

## CO-100: SEROTONINERGIC SYNDROME (SS)

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Serotonin syndrome is a predictable and life-threatening syndrome, secondary to the use, overdose or interaction of antidepressant, anxiolytic drugs and other drug groups that carry an overstimulation of serotonin receptors both peripherally and centrally, causing changes in mental status, autonomic instability and neuromuscular alterations.

The current incidence of the syndrome is unknown, however, with the massive use of antidepressant and anxiolytic medications, the current report of these cases has increased, and in long series of patients, serotonergic toxicity has been shown up to 15% of patients poisoned with inhibitors of serotonin reuptake. It occurs in all population groups without difference in age or sex and is life threatening.

The presentation of this syndrome is very variable; Most of its symptoms begin within the first 24 hours of increasing the dose of the serotonergic agent, overdose or the addition of another medication with serotonergic action.

All symptoms are a product of the overstimulation of peripheral and central serotonin receptors resulting from high levels of serotonin in the synaptic cleft.

The serotonin in the central nervous system is concentrated in a greater proportion in the midline and bulb, especially in the dorsal and medial nuclei of the raphe and, in a lower concentration in the locus ceruleus, the last



and interpeduncular area, and its function is to inhibit the Excitatory neurotransmission and modulate affective and sexual behavior, attention, appetite, thermoregulation, motor tone, emesis, noniception and aggressive behavior. At the peripheral level it is produced mainly by gastrointestinal enterochromaffin cells and they act in processes such as vasoconstriction, uterine contraction, bronchoconstriction, gastrointestinal motility and platelet aggregation.

The drugs involved in serotonergic syndrome cause an overstimulation by several mechanisms among which are:

1. Increase in serotonin synthesis
2. Increased serotonin release
3. Inhibition of serotonin recapture
4. Decrease in serotonin metabolism
5. Activation of serotonergic receptors
6. Inhibition of cytochrome p450 (CYP), specifically CYP2D6, CYP3A4 and 2C19.

In serotonin syndrome, the increase in serotonin in the synaptic cleft leads to overstimulation of 5-HT<sub>2A</sub> type receptors. These receptors are coupled to Gq protein that induces the activation of phospholipase C and are present in cerebral cortex, gastrointestinal tract, smooth, bronchial and vascular muscle and in platelets, leading to effects such as neuroexcitation, bronchoconstriction, vasoconstriction and platelet aggregation.

SS is characterized by a triad of symptoms that include changes in mental status, autonomic hyperactivity and neuromuscular abnormalities, but not all of these symptoms are constantly present.

In mild cases, mild hypertension and tachycardia, mydriasis, diaphoresis, insomnia, anxiety, chills, tremor, myoclonus and hyperreflexia occur mainly in the lower limbs. They are usually afebrile.

In moderate cases, it is presented in addition to the previous symptoms, hyperthermia (40°C), increased bowel sounds, diarrhea, nausea, vomiting, horizontal ocular clonus, mild agitation with rapid and unstoppable speech.

In severe cases, temperatures higher than 41°C, muscle stiffness, continuous variations in frequency and blood pressure are also present; and complications such as seizures, rhabdomyolysis, myoglobinuria, metabolic acidosis, renal failure, respiratory distress, disseminated intravascular coagulation, coma and death can be evidenced.

The diagnostic criteria currently used are the Hunter criteria described in 2003 (which have shown a sensitivity of 84% with a specificity of 97%) that include the use of a serotonergic agent plus 1 of the following 5 criteria:

1. Spontaneous clonus
2. Inducible clonus plus agitation or diaphoresis
3. Eye clonus plus agitation or diaphoresis
4. Tremor plus hyperreflexia
5. Hypertonia and temperature greater than 38 ° C plus ocular or inducible clone.

The key to the management of SS is the suspension of all serotonergic agents, stabilization of vital signs, maintaining a saturation greater than 93%, administering intravenous fluids and continuous cardiac monitoring. Most cases of SS improve their symptoms within the next 24 hours with the treatment and discontinuation of the substance involved, 40% require admission to the intensive care unit and 25% require endotracheal intubation.

Benzodiazepines are a fundamental pillar in the management of patients with SS as they improve psychomotor agitation, anxiety and muscle stiffness.

In moderate and severe cases, the use of antiserotonergic medications should be considered. This syndrome can be avoided with the appropriate prescription of drugs with setononinergic effect and avoiding polypharmacy that increases the risk and the possibility of its appearance.





## CO-101: PHARMACOVIGILANCE AND PATIENT SAFETY

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According to the World Health Organization (O.M.S.), Pharmacovigilance is defined as the science and activities related to the detection, evaluation, knowledge and prevention of adverse reactions and other possible medicament-related problems. In turn, patient safety refers to the provision of health services with minimum risks, strengthening safe practices in each process. Pharmacovigilance is a very important component of the Patient Safety macroprocess. There is a great problem worldwide, with everything related to Pharmacovigilance, on the one hand; there is a significant percentage of Adverse Drug Reactions (R.A.M.). On the other hand, the percentage of underreporting is high, taking into account the number of reports that are made of the adverse reactions and the quality of them. Additionally, the R.A.M. produce 10% hospitalizations worldwide. (O.M.S.). As international strategies to intervene and reduce the number of adverse drug reactions, the Patient Safety Centers have been created; Each country has from its Ministry of Health an entity that inspects, monitors and controls the issue of medicines. In the case of Colombia, the National Institute for Food and Drug Surveillance (INVIMA) performs these functions. From the Ministry of Health, a "Pharmacovigilance Network" has been created in each of the country's departments that monitors health providers and requires the implementation of the Pharmacovigilance Program. This is done through staff training, and socialization of guidelines of the Ministry as well as international organizations. This is done to evaluate their implementation, taking into account the impact achieved in the reports and their quality. It is of vital important to strengthen and deepen the health undergraduate subjects in Pharmacovigilance. **Conclusions:** There is great concern worldwide for adverse reactions to medications, as well as their sequelae that increases health spending. Finally, health authorities and all actors in the health sector should be sensitized so that training and monitoring of Pharmacovigilance processes is strengthened.

## CO-103: STUDIES AND METHODS FOR THE EFFICACY EVALUATION OF DERMATOLOGICAL PRODUCTS

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Cosmetic/ dermatological products become more and more effective at performing up to their claims, narrowing the frontier between cosmetic/dermatological products and drugs. Regulatory bodies on the other hand are becoming stricter and stricter to ensure consumers' safety as well as the respect of those claims made by cosmetic companies. Several parameters need to be taken into account when setting up a clinical study to prove the efficacy of a dermatological product, as those can impact the final study results. The choice of the method of evaluation can also impact on the final claims as methods are not all equivalent and might measure a different aspect of a given skin property. This review aims at making the audience aware of some of those parameters that should be considered before starting a clinical study, with a special focus on studies performed in South America. The presentation will also show several methods available for a given claim and how to link clinical study results with marketing claims.



## CO-104: ASSESSMENT OF THE SAFETY OF DERMATOLOGICAL PRODUCTS

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While the balance benefit/ risk is part of the evaluation of a new drug in development, any cosmetic/ dermatological product put on the market should demonstrate that it is actually perfectly safe to be used by targeted consumers. Depending on the country where the new product will be launched/ sold, different safety tests need to be performed by manufacturers, even though most regions of the world require similar tests to be performed as part of confirming the safety of a new product. This presentation will review those tests required for dermatological products.

## CO-106: FACIAL BIOSTIMULATION WITH PLATELET RICH PLASMA ACTIVATED WITH OZONE RESOUND ON CELLULAR REDOX BALANCE, IMPROVES LIPOATROPHY AND QUALITY OF LIFE IN HIV PATIENTS<sup>xii</sup>

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**Introduction:** Pathogenic impact of high-grade local and systemic oxidative stress indexes in antiretroviral treated HIV patients are higher and recognized factor influencing in lipodystrophy which is proposed can be ameliorate with platelet rich plasma (PRP). The aim of this quasi-experimental study was to determine the efficacy and safety of ozone and calcium activated PRP application to facial bioestimulation of lipoatrophy- Aids Cuban individuals. **Methodology:** Thirty HIV individuals enrolled in prospective study showed lipoatrophy grade from 1 to 3. A mean volume interval of 22.2 to 8 mL of PRP was injected in multiple sessions. The clinical, chemical, oxidative stress and progression indexes determinations were performed prior to treatment and again at 6 and 12 months after. Also, questionnaires based on Short Form 36, Medical Outcomes Study HIV Health Survey were assessed. Different statistical analyses were done comparing baseline respect final values of variables after 5 interventions during a year. **Results:** Beneficial improve of lipoatrophy grade ( $p < 0.05$ ) and stabilization in global indexes of damage and antioxidant status at the end of the study was demonstrated. The comparison revealed a significantly smaller damage (HPO, AOPP) and higher antioxidant status (SOD, CAT) compared to baseline values ( $p < 0.05$ ). Non-significant modifications were observed in hematological and hemochemical indexes ( $p > 0.05$ ), respect quality of life 75% of mental health, social and role functioning improved and depressive symptoms decreased. Non adverse reactions were observed during study period. **Conclusion:** It was corroborated that beneficial amelioration of oxidative stress occurs in lipoatrophy AIDS patients during effective and safety PRP-ozone facial bioestimulation. Integral diagnosis to follow up should be considering in early diagnostics, prevention and treatment with PRP, which would be worthwhile to conduct a more comprehensive study and manage of lipoatrophy. **Acknowledgment:** To AIDS patients recruited and others sanitary personnel involved in the study.

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## **CO-107: ACADEMY AND SCIENTIFIC SOCIETY OF PHARMACOLOGY: LINKS, ACHIEVEMENTS AND CHALLENGES IN THE TEACHING OF PHARMACOLOGY IN CUBA**

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There is a brief historical account of the teaching of pharmacology in the career of Medical Sciences in Cuba and the evolution of the methods used in recent years. The necessary mixture of traditional and participatory methods in the teaching of pharmacology is explained, to face the massive enrollment and the insertion of foreign students in our Universities. We will approach the experience of the introduction of games and dramatizations created by groups of students, to stimulate the teaching activities, to reinforce the learning of complex subjects, to improve the communication and the interaction in the working groups; aspects of importance for medical care and biomedical research in our globalized world. Emphasis will be placed on the novel role of the Cuban Society of Pharmacology in promoting Olympics of knowledge throughout the country, which will be published this year for its sixth edition; as an innovative and widely participatory way in biomedical careers to stimulate and deepen knowledge of this discipline and attract new talents, who can continue the path of developing this specialty in the country. Challenges are posed in perspectives that could open the doors to future research and collaborations, placing pharmacology as an essential subject for therapeutics, the development of drugs and their rational use.

## **CO-108: IMMUNOPHARMACOLOGY: A VIEW FROM SCIENCE TO TEACHING**

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Immunopharmacology is a field of Pharmacology that studies essential aspects on the immune response, to analyze its diagnosis and its modification by drugs and chemicals. Recent advances made available new classes of clinically relevant drugs that selectively modulate the immune response as a mechanism, through different targets, to modulate several human pathologies. From a different point of view, immune system mediators can also modify the effectiveness of several drugs, pharmacometrically or pharmacodynamically, as part of this system's physiological role. The study of this science is very necessary for the development of promising drugs. To teach this subject, an integrative view of pathophysiological aspects is required. Also, a vision of new examples of drugs that interact with immune system allows to explain the main concepts of druggable targets. This work presents a review of main immunopharmacological aspects that should be taken into account to prepare a specialist to afford the relationship between immune system pathophysiology and therapeutic strategies.

**Keywords:** immunopharmacology, pharmacology teaching, immunomodulator.



## CO-110: FROM PHARMACOKINETICS TO PHARMACODYNAMICS, ARE WE READY FOR 3D SOFTWARE?

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The relationship between the dose and the plasma concentration of a drug is determined by the pharmacokinetics. However, difficulties arise when there is more than one medication administered simultaneously. There is currently a gap in the teaching model when it is intended to spread the importance of pharmacodynamic interactions. This presentation shows the construction of software that simplifies the pharmacokinetic concepts of two medications, turning them into a single space variable as a function of time. This model would allow, along with the monitoring of anesthetic depth and pain control variables, to link pharmacokinetics to pharmacodynamics, and provide an educational tool for understanding these concepts.

## CO-111: THE TEACHING OF PHARMACEUTICAL SCIENCES IN CUBA. EXPERIENCES AND PROJECTIONS

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The Pharmacy career is taught in most countries of the world constituting one of the oldest professions in the history of mankind. In Cuba, the teaching of Pharmaceutical Sciences has evolved in correspondence with the changes operated in the national and international context, being the Institute of Pharmacy and Food of the University of Havana, the rector center. In the present work, the main novelties that characterize the different curricula for which the career in the country has transited are exposed, reflecting the changes operated in the professional model in general, as well as the role of the Pharmacological Sciences Discipline, in the formation of the pharmacist in particular. In addition, the strengths that characterize the level of maturity reached as an accredited career of excellence are presented, as well as the main projections considered in the design and implementation phase of the new study plan in day course and semi-attendance modalities, with a reduction in the cycle of training at 4 and 5 years, respectively. The importance of Pharmacology in the execution of impact investigations that pay tribute to the two fundamental profiles: technological (biopharmaceutical industry) and clinical-assistance; with an excellent link with employers' centers and a projection towards continuous training. The results obtained in the measurement of the impact of the career in the graduates of 2018 and 2019 are summarized, which reflect high levels of satisfaction with the training received and constitute the basis for curricular improvement.



## CO-113: IMPACT OF VIRTUAL LABORATORIES FOR BIOMEDICAL COURSES AT THE MEDICAL SCHOOL

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Laboratory practices facilitate learning in biomedical sciences; however, they require experience in laboratory techniques, as well as financial resources and adequate facilities. (1) Therefore, the use of virtual labs should be considered as a viable strategy to teach fundamental biomedical concepts to medical students. This study aims to evaluate students' perception and to describe the advantages and disadvantages of the application of virtual labs for teaching biomedical sciences.

A survey with Likert-type questions was applied initially to the students enrolled at the physiology and pharmacology courses. The survey evaluated the students' perception of the use of virtual physiology® (SimHeart and SimVessel), for teaching autonomic nervous system and cardiac physiology and pharmacology. Students from earlier semesters arrive with less prior knowledge than advanced students. However, both groups improve their mastery of the subject in similar magnitude. Physiology students, however, report a much higher functionality and usability with the simulator and a more favorable impact on their learning.

The experience therefore was customized for physiology students. Additional surveys examined eight categories (usability, motivation of the students, feedback received, usefulness of the tools and learning improvement). Overall students thought the simulators worked well (78%) and were easy to use (68%). Students enjoyed using the simulators (71%) and felt that the virtual labs were useful for promoting mastery of the concepts (88%) and identifying weak areas (77%). Simulators were also useful to visualize biological processes (91%) and integrate physiological and pharmacological phenomena (83%).

In conclusion, virtual labs are an efficient and cost-effective tools for promotion of critical and scientific thinking in biomedical sciences. Simulators enable students to face tasks and conditions that they will encounter in the real world. Improvements in the design of workshop methodologies associated with simulators for teaching biomedical sciences are required.

### Reference

1. Arcoraci V, et al. (2018) Medical simulation in pharmacology learning and retention: A comparison study with traditional teaching in undergraduate medical students. *Pharmacol Res Perspect.* 7(1). DOI: 10.1002/prp2.449.



## CO-114: THE “MEMORY CLINICS” AS A COMPLEMENTARY TOOL FOR THE IMPROVEMENT OF MEMORIZATION SKILLS IN A PHARMACOLOGY COURSE

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Memorization is an essential ability in most contexts of learning and functions as a tool for more advanced and lasting learning (1). This skill is necessary for lifelong learning of pharmacology and it is inherently involved with metacognition, a skill that allows students to improve their study methods. The goal of this study is to design and to test a strategy to promote metacognition in a pharmacology course through a “memory clinic”. A memory clinic is a time- controlled space for memorization and active reflection of study methods relevant for learning of pharmacology.

We include data from 1 cohort of second-year medical students attending the pharmacology course corresponding to 35 students. A set of concepts was chosen for each memory Clinic with the intent of introducing new information not included in the pharmacology curriculum, for students to memorize with a technique of their preference. The activity takes place in several stages during a one-hour block. 1) Two short (10 min) study sessions (individually + individually or in groups) to memorize biomedical information related to pharmacology. 2) Retention of information is evaluated in a short activity in which the students solve a crossword puzzle. At the beginning, in-between the sub-stages and at the end of the activity, students are required to report their expected performance on a numerical scale. They also answer some open questions in which they reflect confidence in their mastery of the concepts and time devoted to study and solve the crossword.

We found that women had an average expected performance of 57,1%, against 68,6% for men. The actual average performance when solving the crossword was 74% for women and 69% for men, with a unified average of 71%. The difference between expected and actual performance for women was  $\Delta = -15.41$  against  $\Delta = -17.28$ . Finally, we found that 33% of women and 47% of men chose to study in group. The results demonstrate students' tendency to overestimate their performance in a memory challenge, in a pharmacology course, without significant differences between genres. Students report enjoying the activity and being able to recognize points of improvement when memorizing new information such as time management, schematization and others (2). We will complement current data and results with additional “Memory Clinics” in other modules of the pharmacology course.

### References

1. Medina MS et al. (2017) Am J Pharm Educ. 81(4). DOI: 10.5688/ajpe8.1478
2. Young JQ et al. (2014). AMEE Guide No. 86, 2014 (86) DOI: 10.3109/0142159X.2014.889290.





## POSTERS (PO)

### PO-001: PRESCRIPTION PATTERN OF ANTICHOLINERGIC DRUGS IN ALZHEIMER'S DISEASE PATIENTS, COLOMBIA

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**Introduction:** Alzheimer's disease is a common cause of dementia and is usually treated with medications that elevate acetylcholine levels. Alzheimer's disease represents the most frequent cause of dementia in patients older than 65 years. The objective of this study was to identify drugs with anticholinergic properties prescribed to patients diagnosed with Alzheimer's disease in Colombia. **Methodology:** A cross-sectional study was conducted in patients diagnosed with Alzheimer's disease who were identified from a population database and had been treated with cholinesterase inhibitors and glutamate NMDA receptor antagonists. The anticholinergic burden was evaluated using the Anticholinergic Cognitive Burden (ACB) scale, and patients were classified on a scale of 0-3 points according to anticholinergic potential. **Results:** The study included 4134 Alzheimer's disease patients. The mean age was 81.50±8.16 years, and 67.8% were women. A total of 78.4 of patients were receiving pharmacological treatment for Alzheimer's disease. Cholinesterase inhibitors were prescribed to 45.9% of patients, while memantine was prescribed for 27.4% of patients. At least 22.9% of patients took anticholinergic drugs. Of these, the most frequently prescribed medication was quetiapine (8.6%). Age greater than 85 years was associated with a 119% risk of having an anticholinergic burden ≥3 points. Potential interactions between cholinesterase inhibitors and anticholinergic drugs were identified in 7.8% of patients. **Conclusion:** Almost one quarter are taking anticholinergic drugs. In particular, those older than 85 years had a high anticholinergic burden that, in addition to the reduction of cognitive benefits caused by cholinesterase inhibitors, is adding significant potential interactions that increase the undesired effects.



## PO-002: INFLUENCING FACTORS IN THE DISCONTINUATION, CHANGE, OR FAILURE OF HORMONAL CONTRACEPTION AMONG A UNIVERSITY POPULATION IN TUNJA, BOYACÁ, COLOMBIA, 2018

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**Introduction:** Pharmacoepidemiology analyzes trends in medication use in order to identify associations between medical, social, and cultural phenomenon (1). The objective of this study was to characterize the factors that influence discontinuation, change, or therapeutic failure of hormonal contraception among a university population in Tunja, Boyacá, Colombia. **Methodology:** The following study was a transversal descriptive study in which 611 surveys were administered to female university students that use or have used hormonal contraceptive methods. The total accessible population was calculated using the formula: total number of registered women x proportion of expected contraceptive users (30%). Using the formula, 1,500 women were selected as the accessible population. The estimated proportion of discontinuation among the population was 20% (confidence level of 96% and allowable error of 3%). The women answered a 21 question survey that asked information about socio-demographics, discontinuation, change and failure of the hormonal contraceptive method. **Results:** The average age of the participants was 20.5 years old. The most used form of contraception was taken orally (36.3%) and 73.85% of the surveyed population were advised by professionals in the medical field. Alcohol was the most common beverage taken with hormonal contraceptives. Adverse effects to discontinuation, change, or failure included weight gain and headaches. The number one cause for discontinuation was due to the cease in sexual activity, and the presence of adverse effects were primarily caused by the change of contraceptive. Therapeutic failure occurred in 10.3% of the patients. The most effective method was subdermal contraceptive implants. **Conclusion:** Although the primary cause of discontinuation was due to the cease of sexual activity, the presence of adverse effects was also high (2). Additionally, only 17% of the population used hormonal methods for more than 24 months. Based on these results, it is necessary to implement permanent counseling programs for this university population.

**Keywords:** family planning, oral hormonal contraceptives, pharmacoepidemiology.

### References

1. Murdoch TB, et al. (2013). JAMA. 309 (13):1351. DOI: 10.1001/jama.2013.393.
2. Capella D, et al. (2017). Rev. Chil. Obstet. Ginecol. 82 (2): 212. DOI: 10.4067/S0717-75262017000200012



## PO-003: PRESCRIPTION PATTERNS AND INDICATIONS OF FLUOROQUINOLONES IN A GROUP OF AMBULATORY PATIENTS IN COLOMBIA<sup>xiii</sup>

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**Introduction:** To determine the prescription patterns and indications for the use of fluoroquinolones in a group of outpatients in Colombia in 2018. **Methodology:** Observational descriptive pharmacoepidemiological study of prescription-indication type, where patients with outpatient fluoroquinolone prescriptions were included during the period from 01/05/2018 to 10/31/2018, older than 18 years of age and any sex. The information was obtained from a drug dispensing database. Sociodemographic, pharmacological (use of fluoroquinolones), and clinical variables with the indication (diagnosis by International Classification of Diseases-ICD10) registered for the prescription were obtained. They were established if the use was approved or off-label according to the FDA. Descriptive and multivariate analyzes were performed in SPSS 25. **Results:** 23373 patients were identified using fluoroquinolones, with a mean age of 47.9±18.1 years and female predominance (n=15767, 67.5%). ciprofloxacin was the most prescribed fluoroquinolone (n = 19328, 82.7%) followed by norfloxacin (n=3076, 13.2%), levofloxacin (n=573, 2.5%) and moxifloxacin (n=394; 1.7%). The main indications found were urinary tract infection, unspecified site (n=10777, 46.1%), diarrhea and gastroenteritis of presumed infectious origin (n=3077, 13.2%), acute cystitis (n=956; 4.2%). 76% (n=17759) of the prescriptions were made for indications approved by the FDA, while the remainder were being made for off-label uses or without indication as rhinofaringitis or soft-tissue infections. Being male (OR: 1.26, 95% CI: 1.18 - 1.34) and having less than 35 years (OR: 1.92, 95% CI: 1.48 - 1.50), were associated with greater probability of using fluoroquinolones in unapproved. **Conclusion:** The prescription of fluoroquinolones is carried out in Colombia mainly in indications approved as urinary tract infections and mostly with ciprofloxacin. However, safety alerts with this group of medicines make it important to guarantee their use only in approved indications.

### References

- 1- Kabbani S, Hersh AL, Shapiro DJ, Fleming-Dutra KE, Pavia AT, Hicks LA. Opportunities to Improve Fluoroquinolone Prescribing in the United States for Adult Ambulatory Care Visits. Clin Infect Dis. 2018;67(1):134-6. DOI: 10.1093/cid/ciy035.
- 2- Hicks LA, Bartoces MG, Roberts RM, Suda KJ, Hunkler RJ, Taylor TH, Jr., et al. US outpatient antibiotic prescribing variation according to geography, patient population, and provider specialty in 2011. Clin Infect Dis. 2015;60(9):1308-16. DOI: 10.1093/cid/civ076.

<sup>xiii</sup> The Scientific Articles Program Committee of the XVII Colombian Congress of Pharmacology and Therapeutics 2019 and the XXII Latin American Congress of Pharmacology 2019 recognizes this work with the FIRST POSITION in AUDIFARMA S.A. AWARD in the section of PHARMACOEPIDEMIOLOGY AND PHARMACOVIGILANCE.



## PO-004: POTENTIALLY INAPPROPRIATE PRESCRIPTIONS OF ANTICHOLINERGIC MEDICATIONS IN PATIENTS WITH CLOSED-ANGLE GLAUCOMA

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**Introduction:** Glaucoma is a multifactorial optic neuropathy characterized by progressive loss of retinal ganglion cells and lesions in the optic nerve, which cause visual field defects. Glaucoma is the leading cause of blindness after cataracts worldwide. The objective of this study was to identify anticholinergic drugs prescribed to patients diagnosed with closed-angle glaucoma in Colombia. **Methodology:** A cross-sectional study was conducted in patients diagnosed with closed-angle glaucoma who were identified from a population database and had been treated with prostaglandin analogs,  $\beta$ -blockers, carbonic anhydrase inhibitors and muscarinic agonist. The anticholinergic burden was evaluated using the Anticholinergic Drug Scale (ADS), and patients were classified on a scale of 0-3 points according to anticholinergic potential. **Results:** We identified 1958 patients with closed-angle glaucoma, with a mean age of  $70.5 \pm 10.3$  years, 72.9% of whom were women. A total of 96.9% of the patients received pharmacological treatment for closed-angle glaucoma. Prostaglandin analogues as monotherapy were the most prescribed drugs (24.1%), Cholinergic antagonists were prescribed in at least 32.4% of cases. The most frequently prescribed anticholinergic drugs were furosemide, chlorpheniramine and codeine. An age range between 75-84 years (odds ratio (OR): 2.35, 95% confidence interval (CI): 1.36-4.05) and being aged 85 years or older (OR: 3.40, 95%CI: 1.80-6.42) were associated with a greater probability of receiving an anticholinergic burden between 1 and 2 points. Females (OR: 1.54, 95%CI: 1.09-2.18) had a higher probability of receiving an anticholinergic burden  $\geq 3$  points. Interactions between antiglaucoma and anticholinergic treatments and other precipitating drugs were identified in 32.1% and 29.1% of the patients, respectively. **Conclusion:** We can conclude that most patients with closed-angle glaucoma who had been prescribed anticholinergic drugs and other precipitating drugs were mainly elderly women, reflecting potentially inappropriate prescriptions for possible interactions with antiglaucoma drugs, which may diminish their therapeutic effects.



## PO-005: MANAGEMENT OF RESIDUES OF MEDICINES GENERATED IN HEALTH INSTITUTIONS

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**Introduction:** Waste produced in health institutions causes hazards mainly to the employees who handle, classify, collect, transport and dispose of them. They also bring the exposure to risks such as infections, accidents at work, diseases, deterioration of the environment, which increased institutional costs. Among these wastes, there are those derived from the alteration or production of medicine outside the quality standards. Additionally, this medicine has been used, whether or not expired, instead of being stored taking into account the cold chain and all capsules and tablets in bulk, such as antineoplastic drugs and controlled substances like antibiotics, antiseptics, aerosols, hormones and disinfectants; which require a special final treatment and disposal method. For its good manipulation, the producers of these wastes must implement the structure for the destruction or disposal of medications according to their chemical composition, toxicity and physical condition. Both the medication and the primary and secondary packaging and labels must be destroyed before the final disposal in the landfill, prior treatment. The generation of this waste depends on the execution of the caring procedures, degree of complexity, size of institution and number of patients treated. Managing and properly handling waste is of interest to the health institution, the academy, the population and the environment. That is why, it is required to determine the management of medicine residues in health institutions in Cali, Colombia.

**Methodology:** A descriptive cross-sectional study was carried out on healthcare personnel who handle medications. They proved their knowledge about the disposition of medicines. Participation was voluntarily. Participants met the inclusion criteria and signed an informed consent. This procedure counted on an ethics committee approval. The information was collected through a questionnaire; it contained socio demographic variables, management knowledge, elimination of medicine residues and environmental impact. The data analysis was carried out with the Epi info version 6 program, with descriptive statistics. The variables were described by using measures of central tendency and proportions. **Results:** The majority of the population was female; the average age was in the range of 20-24 years old. When determining medicine residue management, 71% of the employees do not know how to classify, manage and dispose the medication bottles that have been used in the treatment of the patient. When referring to the disposal of expired medicine, 57% do not know that they are classified as hazardous waste. With regard to the impact generated by improper handling of medications, it was determined that 57% do not know the possible events that may occur when medications are not correctly discarded. **Conclusion:** Ignorance was evidenced in the classification, management and disposal of medicine residues, which constitutes a problem of interest in public health, since it represents a risk for both human health and the environment.

### References

1. Sistema de Información Ambiental de Colombia, MINAMBIENTE, [Internet] Residuos Peligrosos, [Consultado el 12 de julio del 2019]. Disponible en: <http://www.siac.gov.co/residuos peligrosos>
2. Organización Mundial de la Salud. [Internet]. 2017, febrero. Residuos Sanitarios. [Consultado el 12 de julio del 2019]. Disponible en: [https://www.who.int/water\\_sanitation\\_health/facilities/waste/es/](https://www.who.int/water_sanitation_health/facilities/waste/es/)
3. Ministerio de Salud y Medio Ambiente. Manual de procedimientos para la gestión integral de residuos hospitalarios y similares en Colombia. [Internet] 2018, [Consultado en 12 de julio del 2019] Disponible en: <https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/IA/INS/manual-gestion-integral-residuos.pdf>.



## PO-006: REMINERALIZATION OF DENTAL ENAMEL WITH COCONUT OIL AND FLUORINE VARNISH IN CHILDREN

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**Introduction:** Caries is a "re-emergent, complex and multifactorial disease". The most prevalent in the world, which is undervalued by public health, for not presenting, direct mortality. Natural products are leading strategies in disease prevention. Dentistry alternatives are being sought to mitigate and prevent tooth decay; these natural products include the use of coconut oil. The objective of this study was to compare the remineralizing effect of coconut oil and fluoride varnish on children's teeth. **Methodology:** The study was a quasi-experimental and comparative design. After the application, in three moments, of two products: the fluoride varnish and coconut oil. 56 people out of the total population (243 subjects between 7 and 12 years old), were selected by random sampling that met the inclusion criteria, being distributed proportionally in each group and applying the corresponding product on the occlusal face of the upper and lower first molars. At the first moment, the data were taken with Diagnodent laser technology, which quantifies the activity of caries accurately and reliably, providing information on the status, depth and extent of caries, to determine diagnosis and treatment. The data obtained in the three measurements, were consolidated and processed in SPSS Version 23, obtaining absolute frequency, percentage with univariate analysis and bivariate. It was made from the Pearson correlation analysis: which measures quantitative variables (RHO) and seeks to establish the degree of correlation between the selected tooth and the results obtained from the application with fluoride varnish and coconut oil. **Results:** The majority of participants were women (57%), the age obtained a median of 10 years, a mode of 12 years, a standard deviation of 1.66. 224 teeth were analyzed and only 111 teeth met the inclusion criteria to be operated. In the analysis, both the minimum and the maximum value of each measurement were taken into account. The initial measure with coconut oil was between 4 and 99 degrees and with fluoride varnish 4 to 70. Fifteen days later, it was 0 to 79 degrees with coconut oil and 1 to 50 with fluoride varnish. This indicates that the protection was maintained. However, there were no significant changes, and in the last measurement, after thirty days, it was 0 to 73 degrees with coconut oil and 0 to 38 with the fluoride varnish. From the analysis, no significant differences between the two products are evidenced ( $p \Rightarrow 0.05$ ;  $\chi^2 \Rightarrow 5.0$ ). **Conclusion:** Both products act in a similar way in the time this study took place. However, changes in the last measurement were evident, revealing that coconut oil maintains its protection of the tooth while fluoride varnish lowers it. Thus, the door is opened to the standardization of alternative products in dental practice.

### References

1. Real Freire AG. (2017). Benefits of using oil pulling (coconut oil) for the reduction of bacterial plaque in children in the sixth year of the Rosa Zárate educational unit of the community of San José Puñachizac del Cantón Quero. Ambato-Ecuador: Universidad Regional Autónoma de los Andes "Uniandes", Faculty of Medical Sciences.
2. Trejo S, Guerrero F, Parra R. (2011). Comparison of the clinical efficacy of 1% chlorhexidine varnish vs. 5% sodium fluoride varnish in the prevention of permanent first molar dental caries. Oral. 2011; 37: 702-706.





## PO-007: POTENTIALLY INAPPROPRIATE ANTICHOLINERGIC DRUG PRESCRIPTIONS FOR PATIENTS WITH SJÖGREN'S SYNDROME

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**Introduction:** Sjögren's syndrome is characterized by the involvement of exocrine glands, manifesting with xerostomia and xerophthalmia. The objective was to determine the treatment received and identify potentially inappropriate prescriptions by estimating the anticholinergic burden generated by medications in patients with Sjögren's syndrome in Colombia. **Methodology:** This cross-sectional study was based on a population database that identified patients with Sjögren's syndrome, comorbidities, pharmacological treatment, and medications with anticholinergic properties. The anticholinergic burden was estimated using the Anticholinergic Drug Scale (ADS), and patients were classified on a scale of 0-3 points according to anticholinergic potential. **Results:** A total of 4945 patients with Sjögren's syndrome were identified, with a mean age of 64.6±14.04 years and 75.7% women. A total of 79.0% received a topical lubricant, with hyaluronate being the most prescribed (26.8%), while oral pilocarpine was prescribed for 7.4%. The use of biological disease-modifying antirheumatic drugs was identified in 1.3% of cases. A total of 39.1% of all patients received cholinergic antagonists, especially codeine (6.5%), prednisolone (5.7%), and furosemide (5.3%). Of the patients (n=811) who were not prescribed topical lubricants or oral pilocarpine, 37.4% were prescribed anticholinergic drugs, of which 14.4% had a burden ≥3. Multiple comorbidities were associated with the risk of having cholinergic antagonist medication prescribed. **Conclusion:** Most patients with Sjögren's syndrome were women whose symptomatic management mainly included ocular lubricants with low use of oral pilocarpine. A large proportion of patients had at least one cholinergic antagonist drug prescribed, increasing its use risk after 40 years of age.



## PO-008: AN ELECTROPHYSIOLOGICAL APPROACH TO DETECT PALYTOXIN-LIKE EFFECT FROM *PALYTHOA CARIBAEORUM* EXTRACTS

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**Introduction:** Palytoxin (PLTX) is a large and complex marine polyether toxin that was originally isolated from *Palythoa* corals, which remain the major known source of this toxin. It targets Na<sup>+</sup>/K<sup>+</sup>-ATPase by converting it into an ion channel, destroying the electrochemical gradient of the membrane and causing high toxicity. PLTX can be found in *Palythoa caribaeorum*, an abundant and evenly distributed zoantharian species in the Caribbean Sea. It has been documented, however, that PLTX can be both present and absent from the same *Palythoa* species depending on when and where the observations are being done. An explanation for this unpredictable nature of PLTX is that its presence can be modulated by environmental conditions. This study sought to confirm whether or not PLTX is present in the colonies of *P. caribaeorum* found off the coast of Santa Marta, Colombia. **Methodology:** As this had been done by others using HPLC and delayed haemolysis, we used electrophysiology to confirm the presence of this toxin. Using methanol and ethanol as solvents, we took tissue extracts from *P. caribaeorum*. We then evaluated the effect of the extracts on the resting potential and ion currents in anuran oocytes from *Rhinella marina*. This was done using a microelectrode amplifier and measuring the transmembrane potential and ionic conductance over time. The extracts depolarized the cells, confirming the presence of a PLTX-like compound in *P. caribaeorum* in Santa Marta. An advantage of using electrophysiology is that by using ouabain to inhibit the function of Na<sup>+</sup>/K<sup>+</sup>-ATPase. We then evaluated the effect of the extracts on the resting potential and ion currents in anuran oocytes from *Rhinella marina*. This was done using a microelectrode amplifier and measuring the transmembrane potential and ionic conductance over time. **Results:** The extracts depolarized the cells, confirming the presence of a PLTX-like compound in *P. caribaeorum* in Santa Marta. An advantage of using electrophysiology is that by using ouabain to inhibit the function of Na<sup>+</sup>/K<sup>+</sup>-ATPase, we were able to prevent depolarization, demonstrating that this result arises from an interaction with that enzyme, as expected from PLTX. **Conclusion:** A combined approach of electrophysiology with chemical analysis could be powerful in the screening of PLTX-like molecules in marine environments.



## PO-009: POTENTIALLY INAPPROPRIATE PRESCRIPTIONS FOR ANTICHOLINERGIC MEDICATIONS FOR PATIENTS WITH CONSTIPATION

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**Introduction:** Constipation is a very common functional gastrointestinal disorder in the general population and can be primary or secondary. Among the factors associated with the risk of constipation are an inadequate diet, the use of different classes of medications, concomitant diseases, low socioeconomic status, psychological aspects and structural alterations at the intestinal level. The objective of this study was to estimate the anticholinergic burden of prescribed drugs in a population diagnosed with constipation in Colombia. **Methodology:** This was a cross-sectional study that used a population database to identify the prescription of cholinergic antagonists and drugs for the management of constipation. The anticholinergic burden was evaluated using the Anticholinergic Drug Scale (ADS) and patients were classified on a scale of 0-3 points according to anticholinergic potential. **Results:** A total of 3887 patients with constipation were identified; the identified patients had a mean age of  $54.4 \pm 21.9$  years, and 69.4% were women. Eighty percent received at least 1 laxative, and the most prescribed laxative was bisacodyl (50.5%). 41% of all patients received drugs with cholinergic antagonist activity, in particular codeine (6.5%) and valproic acid (6.5%). Being over 30 years of age (OR: 1.79; 95%CI: 1.24-2.57), residing in the cities of Manizales (OR: 2.20; 95%CI: 1.50-3.21) or Pereira (OR: 1.49, 95%CI: 1.07-2.09) and having hypothyroidism as a comorbidity (OR: 1.37; 95%CI: 1.08-1.73) were associated with a greater probability of receiving medications with an anticholinergic burden of 3 or more points. **Conclusion:** The majority of patients with constipation were women and were using laxatives to manage the constipation. A large proportion of patients were prescribed at least one cholinergic antagonist drug, with an increased probability of use after 30 years of age.



## PO-010: PHARMACOTHERAPEUTIC FOLLOW-UP AS A FACTOR ASSOCIATED WITH THE VITAL STATE OF HOSPITAL DISCHARGE IN TERTIARY CARE CENTER

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**Introduction:** Pharmacotherapeutic Follow-up is considered as the professional practice that aims to evaluate and monitor pharmacotherapy according to the individual characteristics of the patient, allowing to achieve favorable health results. The basic requirements of pharmacotherapy meet their need, effectiveness and safety. However, the open exposure of patients in the hospital to various pharmacological modalities necessarily involves risks, a framework that leads to the implementation of active surveillance strategies, with critical implications for the rational management of medications. The use of the information collected in therapeutic monitoring describes, not only the profile of substance use at the institutional level, also the impact of the surveillance process on various clinical outcomes. **Methodology:** retrospective, transversal and analytical research associated with the pharmacotherapeutic follow-up process in a highly complex health institution during the period January - December 2018. 171 patients treated in hospitalization and intensive care services were included. The variables proposed for the analysis included age, sex, care service, drug under follow-up, concomitant drugs, presence of interactions, interaction analysis, type, classification and cause of the Drug-Related Problem (DRP), performance of intervention from the pharmaceutical service (supervision variable), number of interventions and vital status at discharge. For the biostatistical analysis, the non-parametric statistic  $\chi^2$  was used with Yates continuity correction and a significance level of 5%. **Results:** The men represented 57.3% of the sample (n = 98). The patients with follow-up were mainly from the hospitalization service (n = 122, 71.3%). Dipyrone was the main follow-up medicine, followed by piperacillin/tazobactam and meropenem (34.5%, 24.6% and 9.4%). Security represented the main DRP (n = 141, 82.5%). The main cause of DRP corresponded to the drug interaction (n = 114, 66.7%). Pharmacotherapeutic intervention was generated in 130 cases (76.0%). The final state "live" corresponded to 94.2% of the cases (n=158). A statistically significant association was found between having carried out pharmacotherapeutic intervention, type of DRP, classification of DRP, cause of DRP and state of exit to live discharge (p <0.05). **Conclusion:** Pharmacotherapeutic follow-up is constituted as a factor that is associated with both the context of the PRM and the vital situation of hospital discharge, representing a clear value in the chain of events in active pharmacovigilance and applied in institutions of high complexity care. **Acknowledgments:** The San Marcel Clinic of the city of Manizales and Audifarma S.A fundamentally facilitated the logistic elements for the development of the research.

**Keywords:** Drug therapy, Pharmacovigilance, Adverse drug events, Risk Management, Tertiary Care Centers (MeSH).



## PO-011: ADEQUATE INTERVENTION IN A PATIENT WITH POLYPHARMACY: CASE STUDY

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Polypharmacy is a condition where the patient could be administered five or more medications, having a main focus in elderly patients. However, it has been observed inadequate prescriptions that may lead to pharmacological interactions, side effects, etc. A 65-year-old patient entered the hospital with Mellitus Diabetes, arterial hypertension and some other derived implications, this patient had sixteen medications regardless his base pathologies. Due to this, it is necessary to carry out a pharmacovigilance intervention, having as result the suspension of 10 medications, reducing in 100% the risk of serious interactions, and a 91% of the total interactions. The patient presents gynecomastia, probably because of the spiro lactone, therefore this medication is suspended. These processes of pharmacovigilance help to support the security of the patient. Taking into the interventions, it was found the use of non-selective b-blockers as carvedilol that's stimulate the insulin resistance and decrease the glucose intake, possibly altering diabetes' control.

**Keywords:** polypharmacy, Pharmacovigilance, Drug Interactions.

Tabla 1: comparativo número de medicamentos e interacciones.			
ÍTEMS	INGRESO	EGRESO	Variación en %
Número de medicamentos	16	6	-63%
Interacciones graves	8	0	-100%
Interacciones moderadas	22	3	-86%
Interacciones leves	2	0	-100%
Total de interacciones	32	3	-91%

### References

1. Masnoon N, Shakib S, Kalisch-Ellett L, Caughey GE. What is polypharmacy? A systematic review of definitions. BMC Geriatr 2017; 17(1). DOI: 10.1186/s12877-017-0621-2
3. Fajreldines A, Schnitzler E, Insua JT, Valerio M, Davide L, Pellizzari M. Reducción de prescripción inapropiada y eventos adversos a medicamentos en ancianos hospitalizados. Medicina (Buenos Aires) 2018; 78: 11-17.
4. Castro-Rodríguez JA, Orozco-Hernández JP, Marín-Medina DS. Polifarmacia y prescripción de medicamentos potencialmente no apropiados en ancianos. Rev. Méd. Risaralda 2016; 22 (1):52-57.
5. Gómez Aguirre N, Caudevilla Martínez A, Bellostas Muñoz L, Crespo Avellana M, Velilla Marco J, Díez-Manglano J. Pluripatología, polifarmacia, complejidad terapéutica y uso adecuado de la medicación. Rev Clínica Esp. 2017; 217(5):289-95.
6. American Diabetes Association. Chapter 4. Comprehensive Medical Evaluation and Assessment of Comorbidities: Standards of Medical Care in Diabetes – 2019. Clin Diabetes. 2019; 37(1):11-34.



## PO-012: POST SURGICAL PAIN MANAGEMENT IN PATIENTS WITH RENAL TRANSPLANTATION WITH PHARMACOLOGICAL VS NON-PHARMACOLOGICAL INTERVENTION

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**Introduction:** Chronic Renal Disease (CKD) is one of the most prevalent pathologies worldwide. As the disease progresses, there is a degeneration of the kidney being the cause, in some cases, of a kidney transplant. Waiting for a transplant alters the patient both psychologically and emotionally, finding high levels of anxiety and fear for the pain of the intervention. The objective of this research is to make a comparison of pharmacological vs. non-pharmacological intervention in the management of postoperative pain in kidney transplant recipients.

**Methodology:** A systematic search was conducted in the main databases ScienDirect, EBSCO, Gale, and PubMed. There were used keywords such as renal transplant, pain, pharmacological, post-surgical, intervention, treatment and alternative therapies. The estimated time went from 2001 to 2016. There was a selection of 20 articles; 9 out of those 20, focus on the most commonly used analgesic medication (opioids and NSAIDs). Other 9, focus on the major different alternative techniques used in pain management; and the other 2 are based on other techniques that are rarely used but are effective against pain management, as well as other medication that help reduce this symptom. **Results:** The results obtained provided scientific evidence with pharmacological management. In the first place, the choice and use of opioid medication and NSAIDs as coadjutants or second choice. Second, it was seen the analgesics have a better effect of continuous use in pre, intra and postoperative procedures that use the union of different groups of medicine such as NSAIDs, COX-2 inhibitors, and medicine for neuropathic pain, without ignoring that the combination of both pharmacological and non-pharmacological interventions are more effective for the recovery of the kidney transplant patient. **Conclusion:** Although the first-choice management for postoperative pain in kidney transplant patients is pharmacological intervention, it would be useful to include alternative therapies such as mindfulness, acupuncture and meditation in the treatment. It is considered convenient to implement a comprehensive pain management program, understanding that pain control reduces hospitalization recurrence and contributes to quality of life and reducing costs in the health system.

### References

- 1- Ministerio de Sanidad, Servicios Sociales e Igualdad. El Registro Mundial de Trasplantes, que gestiona la ONT, eleva a 115.000 los trasplantes realizados en 2013, el 10% de los que se necesitarían en todo el mundo. [citado 20 junio 2017]. Disponible en: <https://www.msssi.gob.es/gabinete/notasPrensa.do?id=3388>
- 2- Kulshrestha S, Barrantes F, Samaniego M y Luan F. Chronic opioid analgesic usage post-kidney transplantation and clinical outcomes. Clin Transplant. 2014; 28(9):1041-1046. DOI: 10.1111/ctr.12414.
- 3- Barrantes F, Luan F, Kommareddi M. A history of chronic opioid usage prior to kidney transplantation may be associated with increased mortality risk. Kidney Int. 2013; 84(2): 390-396.
- 4- Tafoya-Olivos, R. Dosta-Herrera J, Morales-Soto, Bertha. Eficacia de la analgesia postoperatoria en receptores de trasplante renal. Rev Mexicana Anestesiología. 2017; 40: 21-28.
- 5- Rivera-Luna et al. Manejo perioperatorio en el receptor de trasplante renal. Hospital de Especialidades Centro Médico Nacional «La Raza» IMSS. Rev Mexicana Trasplant 2016;5(1): 28 - 31.
- 6- Zgierska A et al. Mindfulness Meditation-Based Intervention Is Feasible, Acceptable, and Safe for Chronic Low Back Pain Requiring Long-Term Daily Opioid Therapy. University of Wisconsin-Madison. J Alternat Complement Med. 2016; 22(8): 610-620.
- 7- Chen T, Wang K, Xu J, Ma W, Zhou J. Electroacupuncture reduces postoperative pain analgesic consumption in patients undergoing thoracic surgery: A randomized study. Evid Based Complement Alternat Med. 2016; 2126416.





## PO-013: IN VITRO INHIBITION OF ANGIOTENSIN-CONVERTING ENZYME WITH EXTRACTS OF *JATROPHA GOSSIPYFOLIA* AND *HELIOTROPIMUM INDICUM*

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**Introduction:** Hypertension is a chronic multifactorial disease considered as the first cause of death in the world, for which approximately 7 million deaths die annually, whose pharmacological treatment is based on the inhibition of the Renin-Angiotensin-Aldosterone System, being one of the main Therapeutic pharmacological inhibition of Angiotensin converting enzyme, this is responsible for converting angiotensin I into angiotensin II, a potent vasoconstrictor, that is why we proposed to evaluate the inhibition of the Angiotensin Converting Enzyme with extracts of *Jatropha gossypifolia* and *Heliotropium indicum*, as possible therapeutic targets for the treatment of this pathology. **Methodology:** Used methanogenic extracts of *Jatropha gossypifolia* and *Heliotropium indicum*, the inhibition of the Angiotensin Converting Enzyme was evaluated with the method of Cushman and Cheung (1971), which is based on the release of hippuric acid from hippuryl-L-histidyl-L-leucine (HHL catalyzed by ECA) The ECA kit from Sigma Chemical (St. Louis, MO, USA) was used, the positive control of which is captopril, the assays were carried out in triplicate. The results were shown as the mean  $\pm$  standard deviation (EE), were processed using the GraphPad Prism (version 5.00 for Windows). The differences between the concentrations of the analyzed extracts were evaluated by means of the ANOVA test and for all the analysis the criterion of significance was established at  $p < 0.05$ . **Results:** Results were 1, 10, 100 and 1000 ppm, the highest inhibition of the ECA, it was for the 1000 ppm concentration of *Heliotropium indicum*, which inhibits 66%, compared to the positive control that inhibited 65%, result of the concentration of 100 ppm that produced an enzymatic inhibition of 62%, the *Jatropha gossypifolia* for its part an inhibition of 61% and 43%, with the concentration 1000 and 100 ppm respectively, both results below the positive control. **Conclusion:** Inhibition of the ECA was greater by the extract of *Heliotropium indicum*, which had a greater percentage of inhibition with respect to the positive target, in spite of the fact that the *Jatropha gossypifolia* caused less inhibition than the positive target is to highlight the action on this enzyme as a treatment for arterial hypertension.

### References

1. Ciau N, Acevedo J, Betancur D. (2018). *In vitro* renin-angiotensin system inhibition and *in vivo* antihypertensive activity of peptide fractions from lima bean (*Phaseolus lunatus* L.). J Sci Food Agric 98(2): 781-786.
2. Felix J, et al. (2014). Systemic and local anti-inflammatory activity of aqueous leaf extract from *Jatropha gossypifolia* L. (Euphorbiaceae). Int J Pharm Pharm Sci 6(6): 58-66.
3. Castillo E., Betancur D., Segura M. (2015). Proteínas de *Mucuna pruriens* con potencial de inhibir el sistema renina-angiotensina. Rev Latinoam Hipertens 10 (1): 123-131
4. Wu J, Liao W, Udenigwe, C. (2017). Revisiting the mechanisms of ACE inhibitory peptides from food proteins. Trends Food Sci Technol 69: 214-219.
5. Hafez M, Sayed A, Abdel-Aziz M, Ismail A. (2017). *In vitro* and *in vivo* hypolipidemic activity of spinach roots and flowers. Iranian J Pharm Res 16(4): 1509.



## PO-014: ENZYMATIC-COLORIMETRIC BIOASSAY TO STUDY GLUCOSE CONSUMPTION IN 3T3-L1 ADIPOSE CELLS

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**Introduction:** Bioassays to quantify glucose consumption in animal cells represent an important tool for *in vitro* evaluation of molecules with antidiabetic potential, and are mainly based on radioactive and fluorescent methods (1). In an attempt to have an economic alternative bioassay, we recently reported preliminary results on application of a colorimetric method to quantify glucose consumption in 3T3-L1 adipocytes (2). The aim of this work was to find optimal experimental conditions to evaluate glucose consumption with the colorimetric bioassay. **Methodology:** We worked with 3T3-L1 adipose cells that were differentiated into adipocytes for 7-8 days. After a 1 h glucose fast, the cells were exposed to different of initial glucose concentrations (1.4, 2.8 and 5.6 mM), either in the presence (+Ins) or in the absence (-Ins) of 100 nM insulin, and for different time. Glucose consumption was quantified from extracellular glucose measurements with the Glucose reagent (Biosystems) (2). Comparisons between basal (-Ins) and insulin-stimulated glucose consumption (+Ins) were made using *t*-test (parametric data), or Mann-Whitney test (non-parametric data). **Results:** With 5.5 mM glucose, statistically significant differences were observed between basal (-Ins) and stimulated (+Ins) consumption at 2, 6 and 8 h ( $p < 0.05$ ;  $n=5$ ); with 2.8 mM glucose, no significant differences were observed at any time; with 1.4 mM glucose, significant differences were observed at 4 h of incubation ( $p < 0.01$ ). In all cases, glucose consumption was linear over time. The consumption rate data as a function of glucose concentration was adjusted to a saturation model, and the maximum velocity ( $V_{max}$ ) and consumption constant ( $K_{app}$ ) values were determined: 4.1 nmol/mL/min and 1.1 mM (-Ins); 5.9 nmol/mL/min and 1.1 mM (+Ins). In addition, an  $EC_{50}$  of  $18.4 \pm 1.1$  nM was determined using an insulin concentration-response curve. These data are consistent with those reported with classical methods. **Conclusion:** The optimal conditions of the colorimetric bioassay were found, confirming its usefulness as an alternative for glucose quantification in 3T3-L1 adipocyte cultures. **Acknowledgment:** Colciencias (Convocatoria 727 Doctorados Nacionales 2015) and Universidad Nacional de Colombia-Vicerrectoría de Investigación, Dirección de investigación de la Sede Bogotá (Proyecto Hermes 39182).

### References

1. Yamamoto, N.; et al. Curr. Protoc. Pharmacol. 2015, 71, 12.14.1–12.12.26. DOI: 10.1002/0471141755.ph1214s71.
2. Pinzón García, AD; et al. Acta Bioquím Clín Latinoam. 2017;51(2):195–202.



## PO-015: CHEMOINFORMATIC ANALYSIS OF AGONISTS AND ANTAGONIST OF THE TRANSCRIPTIONAL REGULATORS OF LASR, PQSR AND RHLR IN *PSEUDOMONAS AERUGINOSA*

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**Introduction:** New agents against *P. aeruginosa* is an urgent necessity, mainly due to the resistance issues. In order to find the key features for the best antagonism activity, we built and analyzed chemoinformatically agonist and antagonist datasets (DS) of the transcription factors LasR, PqsR and RhlR related to the *quorum sensing* system in *P. aeruginosa*. *In silico* approaches were done to find key differences between agonists and antagonists. **Methodology:** DS were obtained from research articles, review papers, PubChem Bioassay and ChEMBL. Metrics quantification as the fraction of carbon  $Sp^3$  and chiral centers allow us the classification of molecular complexity. Calculations of molecular complexity based on DataWarrior<sup>1</sup> were also done. The three metrics were calculated for the transcription factors DS and also DrugBank database, classified into three categories based on relative distribution of the values<sup>2</sup>. Molecular similarities were generated using Tanimoto coefficients with 2D molecular fingerprints. For all calculations and analysis, DataWarrior<sup>1</sup>, MayaChemTools<sup>3</sup> and Activity Landscape Plotter<sup>4</sup> were used. Chemical space visualization was done by principal component analysis and comparisons with DrugBank DS<sup>5</sup> were also done. **Results:** LasR DS has 225 molecules, 63 compounds are in PqsR DS and 51 in RhlR. All metrics classify more than 50% of the antagonist molecules with intermediate complexity to PqsR, RhlR and DrugBank, whereas LasR DS with more than 25 % of antagonist molecules as high complex, these results are according with the work of Lovering *et al.* and Lopez-Vallejo *et al.*, they found a direct relationship between molecular complexity and success in clinical trial stages<sup>5,6</sup>. Structure-Activity Similarity Maps (SAS Maps) were generated for all fingerprints and some activity cliffs are shown (Fig. 1). Small structural changes show a high activity change; the most important modifications were in the lateral chain or ring type. The chemical space occupied by transcription factors DS are in the same space as DrugBank, making evident that agonists and antagonists have good drug-like properties. **Conclusion:** The chemoinformatic analysis done in this work allow us to generate parameters for the optimization of drug discovery process, with the aim of reducing time and cost of evaluation of multiple available databases.

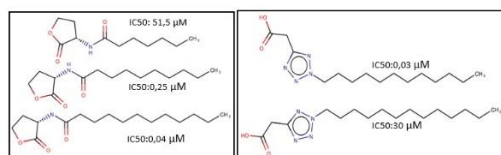


Figure 1: Activity cliffs found on LasR DS.

### References

1. Sander T, et al. (2015) J Chem Inf Model.;55(2):460-473. DOI: 10.1021/ci500588j
3. Clemons PA, et al. (2010) Proc Natl Acad Sci U S A.;107(44):18787-18792. DOI: 10.1073/pnas.1012741107
4. Sud M. (2016) J Chem Inf Model.;56(12):2292-2297. DOI: 10.1021/acs.jcim.6b00505
5. González-Medina M, et al. (2016) J Chem Inf Model. DOI: 10.1021/acs.jcim.6b00776
6. López-Vallejo F, et al. (2012) Drug Discov Today.;17(13-14):718-726. DOI: 10.1016/j.drudis.2012.04.001
7. Lovering F, et al. (2009). J Med Chem.;52(21):6752-6756. DOI: 10.1021/jm901241e.



## PO-016: EFFECTS ON THE ORAL CAVITY OF MEDICATIONS USED IN PATIENTS WITH PSYCHIATRIC DISORDERS

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**Introduction:** Mental disorders are one of the leading causes of morbidity in Colombia, as oral diseases. The different side effects of psychiatric medications in the oral cavity are not well established. Studies that address the effects of psychiatric medications in the oral cavity are scarce at the international level and Colombia is no exception. It is therefore important to characterize the effects, in the oral cavity, of the medications used in patients with psychiatric disorders. **Methodology:** Descriptive cross-sectional study. In 28 institutionalized patients with mental disorder in Colombia. The information was collected by reviewing medical records and determining the effects of medications administered at the mouth level; supported with clinical dental evaluation and interview of patients. **Results:** The largest population was male, with an average age of 39 years old. According to the diagnosis, 50% suffer from indifferential schizophrenia and the medicine Biperideno and Piportil are the most consumed. As for the side effects generated in the oral environment are similar. An average of 15.2 missing teeth and a caries prevalence of 86% were determined at the oral assessment. 56% have some type of malocclusion and 64.3% periodontal disease. Other pathologies such as xerostomia, torus, gallbladder, tattoo, leukoplakia, among others, were also identified. 35.7% of patients are smokers and 86% require dental treatment. All patients show poor oral hygiene. **Conclusion:** The oral health status of the population is deficient; leading to a decrease in their well-being, the generalized side effect from the consumption of psychiatric medications was xerostomia.

### References

1. Federación Dental Internacional (FDI). The Challenge of Oral Diseases - A call to global action. Atlas of Oral Health. 2<sup>a</sup> ed. Ginebra; 2015.
2. Torales J, Barrios I, González I. Oral and dental health issues in people with mental disorders. Medwave 2017;17(8):7045 DOI: 10.5867/medwave.2017.08.7045



## PO-017: RELATED HABITS IN THE PRACTICE OF SELF-MEDICATION IN ADOLESCENTS

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**Introduction:** Self-medication, which is defined by the World Health Organization (WHO, 2009) as the affirmation of using medicines on one's own or on the recommendation of non-medical persons, is understood as a self-care practice that must be assumed with responsibility and knowledge, and requires efforts for the education of the population. Adolescents who, in the process of transition to adulthood, assume an autonomous behavior in their self-care tend to initiate self-medication at an early age. Social, family, and cultural aspects may influence this practice. Uninformed use may represent a health risk due to adverse reactions, drug interaction, and diagnostic complications. Therefore, a bibliographic review was carried out on the profile of self-medication in adolescents. **Methodology:** It was done a bibliographic revision through the review of journal articles, books and other related documents. The search scope was national and international, valid for 5 years. The analysis of these sources was carried out considering the following aspects: prevalence of self-medication, motive, medicines, source of information, place where it is acquired. **Results:** The review identified high prevalence of self-medication in adolescents, above 70%. In relation to the reason for self-medication, the main reasons identified were because of common symptoms, easy access and long waiting times in the consultation. Ávila. F et al (2017), identify that 100% do so, mainly if it is a question of removing discomfort felt by common ailments, because the medicine is easily accessible and avoids the medical visit. (1). Doctors, parents and pharmacists are the people who frequently consult for self-medication. The most commonly used medications are analgesics, flu and vitamins and the most visited places: pharmacy, home, shops. Toala D (2016) found that 50% have access to analgesics, in 33% the main source of information is a family member and 30% buy it in a pharmacy (2). **Conclusion:** It can be concluded that it is necessary to promote in the teenage population responsible behaviors in self-medication that allow to integrate knowledge, skills and attitudes in the adolescents, to change their lifestyle. It is also necessary for them to identify the therapeutic actions and risks that they face with the practice of self-medication.



## PO-018: SMOKING IN ADOLESCENTS IN PALMIRA, COLOMBIA 2018, CROSS-SECTIONAL STUDY

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**Introduction:** Smoking remains a public health problem without eradication. It is considered a pandemic of social transmission and that produces addiction, mainly due to the nicotine it contains, which acts by activating the neurotransmitter of dopamine in the brain that regulates feelings of pleasure and satisfaction. Additionally, it is a risk factor for prevalent diseases such as EPOC (Chronic Obstructive Pulmonary Disease), lung and trachea cancer, heart disease, cerebrovascular diseases, respiratory infections and tuberculosis. **Objective:** To estimate the prevalence of smoking and possible related factors in students of official educational institutions in the municipality of Palmira Valle del Cauca 2018. **Methodology:** Cross-sectional study. Total population 3,566 students enrolled between the sixth and eleventh grades of six public schools in the city of Palmira. Expected prevalence 17%, error 5%, for a sample of 205 students between the ages of 11 and 19 years old to whom 56 questions from the survey (EMTJ) promoted by WHO were applied. **Results:** The global prevalence of smoking products was 38.5% 95% CI (31.6 - 45.4), Cigarette 18.5% 95% CI (12.9 - 24.1), Narguila 17, 9% CI (12.1 - 23.0), Electronic cigarette 19.51 95% CI (13.8 -25.1). The average age for the onset of consumption was 13 years old (SD 1.86). Among the risk factors related to smoking is smoking friends (OR: 15 95% CI (4.42 - 53.24). However, no relationship was found with the fact that family members tell them about the harmful effects of smoking OR 2.35 IC (0.68 - 8.18). **Conclusion:** Smoking remains a public health problem with high prevalence in adolescents. It is related to factors such as having the possibility of easily accessing the product and being surrounded by friends who smoke.





## PO-019: PROBIOTICS AND PREBIOTICS IN CHILDREN'S DIARRHEA: CASE *L. RHAMNOSUS* GG

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**Introduction:** Gastrointestinal disturbances AGI occur due to morphological and physiological irregularities, impacting the intestinal flora (1). The sanitary condition, at the Colombian level, is precarious in endemic areas such as the Pacific coast and the Guajira, where there is a lack of public services and it is more likely that they suffer from diarrheal diseases, leading to an increase in children's vulnerability (2). In 2011, the AGI caused more than 700,000 deaths and it is estimated that about 72% of the mortality cases are found in children under 2 years of age (3). In the scientific literature, it is reported that, through *in vivo* and *in vitro* studies, probiotics and prebiotics can help improve some of these symptoms in children and in older adults, reducing the time of involvement and/or avoiding contracting the disease (4). This paper describes the effects of the use of probiotics and prebiotics in patients between the ages of 0 to 5 years with diarrhea, through scientific evidence.

**Methodology:** This work is theoretical-documentary. Analysis categories were established by directing the search through Descriptors in Health Sciences (DeCS). To achieve the related scientific literature, inclusion and exclusion criteria were applied. The material obtained was analyzed applying heuristic criteria (initiation, selection, exploration, formulation, collection, and organization) and hermeneutics (reading, analysis, interpretation, and classification). For the construction of the final document, a structural outline was established that allowed the writing to be ordered. The final report was peer-reviewed and corrected. **Results:** The effects were identified and the correlation of probiotics and prebiotics in children with diarrhea between 0 and 5 years was determined, through scientific evidence. It was found that for the management of diarrhea *L. rhamnosus* is the most used probiotic, with favorable evidence in the decrease of bowel movements and the stabilization of the organism. The relation of prebiotics with greater evidence is the FOS, GOS and FOS/GOS which allow better development of the intestinal microbiota. In relation to symbiotics, it has been observed that when applying the probiotic with the prebiotic, the efficiency on the reduction and elimination of diarrhea is increased, than when used separately. However, according to the reviewed research, it is concluded that the existing evidence is not sufficient and further experimentation is required.

### References

1. Drossman DA. (2016) Gastroenterology. 150(6):1262-79. e2.
2. CM MS. Análisis de Situación de Salud. Bogotá, Colombia: Ministerio de Salud y Protección Social; 2016. 163 p.
3. Walker CLF, et al. (2013) The Lancet. 381(9875):1405-16. DOI: 10.1016/s0140-6736(13)60222-6
4. Guzmán Calderón E, et al. (2012) Acta Méd Peruana. 29(2):92-8.



## **PO-020: DETECCIÓN DE RIESGOS ASOCIADOS A LA TERAPIA ANTIMICROBIANA DE UN PACIENTE HOSPITALIZADO CON POLIFARMACIA [DETECTION OF RISKS ASSOCIATED WITH ANTIMICROBIAL THERAPY OF A PATIENT HOSPITALIZED WITH POLYPHARMACY]**

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**Introducción:** La prescripción de antimicrobianos es compleja, el médico debe poseer sólidos conocimientos sobre el tema y considerar los múltiples factores que influyen en la decisión de cual antimicrobiano prescribir en una situación clínica concreta, tales como comorbilidades, la severidad de la infección y las características del microorganismo probablemente asociado con la situación clínica actual<sup>1</sup>. El fallo terapéutico o el uso inadecuado asociados al empleo de varios antimicrobianos para el control de una enfermedad infecciosa, que puede presentarse en pacientes hospitalizados, requiere identificar los factores asociados al uso de estos<sup>1</sup>. La farmacovigilancia es una disciplina que promueve la detección, evaluación, conocimiento y prevención de los diferentes efectos adversos asociados a medicamentos y cualquier otro problema relacionado con los mismos<sup>2</sup>. Se analizará un caso clínico durante la atención hospitalaria, verificando la evolución clínica, alteraciones en los exámenes paraclínicos realizados al paciente, problemas relacionados con los medicamentos, interacciones farmacológicas, resultados negativos asociados a esta terapia y errores de medicación; en el marco de una actividad académica (Ateneo de casos de uso de medicamentos) enfocada al aprendizaje de antimicrobianos.

**Presentación Caso Clínico:** Paciente de 70 años de edad con antecedentes de mieloma múltiple, cirrosis, hipertensión portal y EPOC. Presenta síntomas de un mes de evolución caracterizados por tos húmeda, disnea y expectoración amarillenta; posterior a las sesiones de quimioterapia. Se confirma diagnóstico de neumonía por radiografía de tórax; le realizan lobectomía segmentaria izquierda. Posteriormente, hospitalizado en la UCI presenta choque séptico; los cultivos resultaron negativos para bacterias, y el cultivo para hongos reportó *Aspergillus Fumigatus*. Presenta ascitis y peritonitis espontánea. Posteriormente presenta una falla renal aguda, que progresa a un síndrome hepato-renal que le ocasiona la muerte. Los paraclínicos reportaron: hiperglicemia, aumento de transaminasas, nitrógeno uréico (BUN) y creatinina; hiponatremia e hipocalcemia, hiperkalemia e hipercloremia; neutrofilia, linfopenia, anemia y trombocitopenia. Los antimicrobianos administrados durante la estancia hospitalaria fueron: piperacilina- tazobactam, trimetoprim/sulfametoxazol, aciclovir, fluconazol, meropenem, vancomicina y anfotericina B.

### **RIESGOS ASOCIADOS AL USO DE ANTIMICROBIANOS**

#### **Problemas relacionados con medicamentos (PRM)**

Recibió piperacilina/tazobactam como antibiótico de primera línea; por ser un paciente de alto riesgo (inmunosuprimido por cáncer), debió recibir terapia de amplio espectro como vancomicina + meropenem.

Recibió aciclovir como profilaxis para el virus como herpes zóster o CMV; al ser un paciente inmunodeprimido debió recibir valaciclovir.

Riesgo de potenciación de nefrotoxicidad debido al uso simultáneo de vancomicina, anfotericina B y aciclovir.

No recibió un antimicótico profiláctico desde el principio del tratamiento para hongos oportunistas.

Suspensión de vancomicina y formulación de linezolid, sin que este fuera administrado.

Piperacilina tazobactam puede ocasionar hipokalemia y acidosis metabólica.

#### **Interacciones medicamentosas**

Trimetoprim-Sulfametoxazol y cloruro de potasio: hiperkalemia.

Fluconazol y midazolam: depresión del sistema nervioso central.

Fluconazol y fentanilo: depresión del sistema nervioso central.

Anfotericina B y vancomicina: incrementa la nefrotoxicidad.



### Errores de medicación

Administración de una doble dosis de midazolam no justificada en historia clínica, en un intervalo de tiempo de 2 horas.

### Resultados negativos asociados la medicación (RNM)

RNM	Examen paraclínico	Valor mínimo	Valor máximo
Deterioro de la función renal	Nitrógeno ureico (mg/dL)	21	75
	Creatinina (mg/dL)	1.0	3.1
Trombocitopenia	Recuento plaquetario (mm <sup>3</sup> )	60.000	94.000
Anemia	Hemoglobina (g%)	9.3	10.3
Hiperkalemia	Potasio sérico (mEq/L)	3.5	5.3
Hipercloremia	Cloro sérico (mEq/L)	93	120
Hiponatremia	Sodio sérico (mEq/L)	133	149

### Análisis de causalidad de las reacciones adversas con algoritmo de la OMS

Lesión renal aguda: La creatinina y el Nitrógeno ureico empezaron a aumentar abruptamente, esto podría estar asociado al uso simultáneo de anfotericina B, aciclovir y vancomicina los cuales están asociados a nefrotoxicidad. Luego que se suspendió la vancomicina y disminuyeron los valores. **Categoría Posible.**

Hiperkalemia: Con la administración de trimetoprim-sulfametoxazol, se evidenció un aumento en los valores séricos de potasio, los cuales volvieron a los valores normales posterior a la suspensión del medicamento. La falla renal aguda puede también producir hiperkalemia. **Categoría Posible.**

Anemia: La administración de piperacilina tazobactam, aciclovir, meropenem; así como su patología de base y el mieloma múltiple en el paciente, pueden estar asociados a disminución de niveles de hemoglobina. **Categoría Posible.**

Trombocitopenia: El uso de aciclovir está relacionado al desarrollo de trombocitopenia. En este caso podemos ver que en los días donde estuvo suspendido hubo un incremento en las plaquetas, pero luego, fue prescrito nuevamente y de la misma manera las plaquetas volvieron a disminuir. Otros antibióticos como piperacilina tazobactam, vancomicina, meropenem y el mieloma múltiple pueden estar asociados a la disminución de los niveles plaquetarios. **Categoría Posible.**

**Discusión:** Un gran grupo de antimicrobianos tienen como reacción adversa *nefrotoxicidad*, el paciente recibió 3 medicamentos nefrotóxicos, tales como: Vancomicina produce alteración de la función renal en el 7 a 16% de los pacientes, aumentando este riesgo al 35% si se asocia con otros medicamentos nefrotóxicos; el rango terapéutico de vancomicina es de 10 a 15 mg/l, los efectos tóxicos se reflejan con niveles >39 mg/l<sup>3</sup>. La anfotericina B induce alteraciones de la membrana en las células tubulares que conllevan a la formación de poros transmembrana, de este modo se generan pérdida de electrolitos y de igual forma muerte celular<sup>3</sup>. La insuficiencia renal asociada a la administración de Aciclovir se debe al acúmulo de cristales en el riñón. Aciclovir también puede ocasionar importantes alteraciones a nivel medular: leucopenia, trombocitopenia<sup>3</sup>. El mecanismo por el cual trimetoprim sulfametoxazol se produce la hiperkalemia se debe a la inhibición de canales de sodio en el epitelio tubular distal, el cual induce una secreción alterada de potasio y la reabsorción de sodio<sup>4</sup>. La trombocitopenia inducida por medicamentos puede resultar por tres procesos: Daño directo a la médula ósea, afectando directamente su función trombopoyética, procesos inmunomediados por la producción de anticuerpos y formación de haptenos (usualmente estos pacientes presentan un cuadro agudo de trombocitopenia <20.000/mm<sup>3</sup> sin etiología clara secundario al uso de 5-7 días por primera vez del medicamento<sup>5</sup>. Anfotericina B muestra efectos de disfunción renal después de los 9 días de administración, precedida de una hipokalemia (4 días antes de la disfunción). Anfotericina B se encuentra directamente relacionada con nefrotoxicidad y anormalidades en las



concentraciones séricas de potasio, debido a la vasoconstricción que produce en la irrigación renal y el daño en el túbulo distal que termina causando: hipokalemia, hipomagnesemia, disminución de aminoácidos y bicarbonato. La disfunción renal y las anormalidades del potasio surgen como resultado de isquemia glomerular y toxicidad tubular<sup>6</sup>. Piperacilina tazobactam se comporta como aniones no absorbibles mejorando la electronegatividad transepitelial en la nefrona distal, llevando a un aumento del aporte sódico distal y la excreción de potasio. También aumenta la secreción de iones de hidrógeno en el túbulo distal y estimula la producción de amoníaco en el túbulo proximal. La producción de amoníaco resultante aumenta la excreción renal de iones de hidrógeno que contribuyen a la alcalosis metabólica.

#### Referencias

1. [https://www.paho.org/hq/index.php?option=com\\_content&view=article&id=7895:2012-pharmacovigilance&Itemid=39715&lang=es](https://www.paho.org/hq/index.php?option=com_content&view=article&id=7895:2012-pharmacovigilance&Itemid=39715&lang=es)
2. Narbona I, et al. Factores asociados al empleo de varios antibióticos en pacientes clínicos. Rev Cubana Farm 2012; 46(4).
3. Morales J. Drug-Induced nephrotoxicity. Rev Méd Clín Condes 2010; 21(4): 62-628.
4. Barrera-Salas M, Hernández-Salcedo DR, Valencia-López R. Hipercalemia inducida por trimetropim-sulfametoxazol. Med Int Méx. 2019; 35(2): 308-312.
5. Gaudel P, Qavi AH, Basak P. Life-threatening Thrombocytopenia Secondary to Trimetropim/Sulfamethoxazole. J Med Cureus. 2017; 9(12).
6. Hiroyuki Y, Tadakazu K, Kazunaj A, Kouhei Y, Akifumi T-K. Occurrence and improvement of renal dysfunction and serum potassium abnormality during administration of liposomal amphotericin B in patients with hematological disorders: A retrospective analysis. Diag Microbiol Infect Dis. 2018; 90(2): 123-131.
7. Syed ZA, Vijay L. Piperacilin-tazobactam-induced hypokalemia and metabolic alkalosis. Indian J Pharmacol. 2011; 43(5). 609-610.



## PO-021: PHARMACOLOGICAL MANAGEMENT IN ODONTOGENIC ABSCESES AT THE FIRST LEVEL OF CARE

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**Introduction:** The spread of infections due to odontogenic abscesses is huge. These include dental caries, periodontal diseases, a poorly performed endodontic treatment and gingival inflammation. These facts justify the importance of preventing and treating these diseases and avoiding their consequences. Most odontogenic infections are usually managed without complications. However, its management includes the possibility of antibiotic therapy, in order to avoid diseases that might go from odontogenic sinusitis, periorbital infections, cavernous sinus thrombosis, bacterial endocarditis, Ludwig's angina, cervical necrotizing fasciitis, brain abscess, meningitis, mediastinitis, until death. Ignorance in the origin and pathophysiology of the infection by the dental professional can lead to errors in the formulation of antibiotics; therefore, it is necessary to review the literature to show the first three alternatives of choice for the management of odontogenic abscesses. **Methodology:** A review of specialized literature from the last ten years was carried out, with the search for keywords such as antimicrobial therapy, odontogenic abscess and anaerobes. This searching was done in databases such as Medline, EBSCO, ProQuest and Science Direct. The review was based on articles in English and Spanish. The information, taken from the last five years, shows the first three most useful alternatives for the management of odontogenic infections. **Results:** in the case of antibiotic therapy, the most frequent prescribed is penicillin due to its high effectiveness in the oral cavity. Antibiotics are also combined to broaden the spectrum, such as metronidazole with penicillin. In case of penicillin allergy, clindamycin prescription is shown to be efficient, despite being resistant to some anaerobes, with minor restriction; finally, it is azithromycin. At a hospital level, a combination of beta-lactam antibiotic with a beta-lactamase inhibitor is required as the first line of treatment against odontogenic infections. **Conclusion:** Despite the existence of the use of various antibiotic alternatives, they should be handled with caution in order to decrease bacterial resistance to these medications. The apparent association between virulence and odontogenic infections requires further investigation.

### References:

1. Pérez Ayala D. Acute dentoalveolar abscess as a stomatological emergency in adult patients. *Rev Ciencias Méd* 2015; 19(3): 433-442.
2. Robles Raya P., Javierre Miranda A.P., Moreno Millán N., Mas Casals A., de Frutos Echániza E., Morató Agustí M.L. Management of odontogenic infections in primary care consultations: ¿Antibiotic? *Rev Aten Prim* 2017; 49(10): 611-618. DOI: 10.1016/j.aprim.2017.05.003.



## PO-022: ADVERSE EVENTS OF DIPYRONE: HYPOXIC ENCEPHALOPATHY. CLINICAL CASE

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**Introduction:** Dipyrone is positioned in several countries as one of the first pain management alternatives. Adverse effects are known worldwide. However, there are no studies of hypoxic encephalopathy as an outcome. In this study, it is reported a case of hypoxic encephalopathy after the application of dipyrone. **Methodology:** Case report of hypoxic encephalopathy. **Results:** 55-year-old patient history of bronchial asthma for 10 years. The patient is controlled with Salbutamol Inhaler Prednisolone 5mg/d. This person is transported to the emergency department on February 28, 2016, with a diagnose of pain and inflammation of the testicles with two days of evolution. There were not abnormal findings consigned in the medical record. After the administration of Dipyrone, the following severe reactions were presented: vagal symptoms, loss of muscle tone, emesis of food content, universal wheezing, respiratory distress and the patient entered into a cardiorespiratory arrest. After about 10 minutes of resuscitation, the person recovers pulse and respiration. Measures that involved the bladder and rectal sphincter (enuresis and encopresis), acute tonic clonic convulsions and cerebral TACs as well as presence of brain edema and anti-brain edema measures were taken (mechanical ventilation assistance, induced coma, neuro-infection coverage). Additionally, observation on the admission of paraclinics with leukocytosis, mixed Acidemia and pathological analysis was done. There was also an evaluation by a nutritionist, who points out that the patient in regular clinical conditions, requires entire nutritional support (nutrition by probe as the only way of feeding). An electroencephalogram carried out on 14 March 2016 was requested in which it was seen generalized cortical dysfunction anomaly GIII encephalopathy type, without pattern epileptiform and without isoelectric trace. On the part of neurosurgery, it is considered that the patient is quadriphasic without external contact and severely sensory affected. Finally, it was found a patient with "hypoxic encephalopathy" in coma vigil, with functional tracheostomy, gastrostomy and malnutrition. **Conclusion:** Dipyrone generated in JS adverse liver events requiring discussion in applied clinical pharmacology<sup>1, 2</sup>. **Acknowledgment:** To the JS family for agreeing to participate.

### References

1. Lutz M. J Clin Pharmacol. 2019. DOI: 10.1002/jcph.1512.
2. Andrade S.; et al. J Clin Pharm Ther. 2016; 41(5):459-77. DOI: 10.1111/jcpt.12422.





Table 1. Allelic and genotypic frequencies of polymorphism related at the metabolism, transport and pharmacological target of drugs in Peruvian population

Polymorphism	Genotypes	n (%)	Allele	n (%)	Polymorphism	Genotypes	n (%)	Allele	n (%)
CYP2C9*2	CC	505 (93.87)	C	1041 (96.75)	AGT M235T	CC	124 (49.40)	C	357 (71.12)
(n=538)	CT	31 (5.76)	T	35 (3.25)	(n=251)	CT	109 (43.43)	T	145 (28.88)
	TT	31 (5.76)				TT	18 (7.17)		
CYP2C9*3	AA	521 (96.48)	A	1045 (96.76)	ACE G2350A	GG	132 (51.16)	G	360 (69.77)
(n=540)	CA	3 (0.56)	C	35 (3.24)	(n=258)	GA	96 (37.21)	A	156 (30.23)
	CC	16 (2.96)				AA	30 (11.63)		
CYP2C8 C35322T	GG	232 (76.07)	G	537 (88.03)	AGTR1 A1116C	AA	131 (52.82)	A	357 (71.98)
(n=305)	GA	73 (23.93)	A	73 (11.97)	(n=248)	AC	95 (38.31)	C	139 (28.02)
	AA	0 (0)				CC	22 (8.87)		
CYP4A11 C8590T	CC	276 (51.69)	C	675 (63.20)	NR3C2 C810T	CC	130 (48.15)	C	348 (64.44)
(n=534)	CT	123 (23.03)	T	393 (36.80)	(n=270)	CT	88 (32.59)	T	192 (35.56)
	TT	135 (25.28)				TT	52 (19.26)		
CYP4F2 V433M	CC	445 (85.91)	C	951 (91.80)	ABCB1 1236 T>C	GG	29 (33.33)	G	83 (47.70)
(n=518)	CT	61 (11.78)	T	85 (8.20)	(n=87)	GA	25 (28.74)	A	91 (52.30)
	TT	12 (2.32)				AA	33 (37.93)		
CYP2C19*2	GG	154 (83.24)	G	320 (86.49)	ABCB1 C3435T	GG	61 (33.70)	G	168 (46.41)
(n=185)	GA	12 (6.49)	A	50 (13.51)	(n=181)	GA	46 (25.41)	A	194 (53.59)
	AA	19 (10.27)				AA	74 (40.88)		
CYP2C19*3	GG	185 (99.46)	G	370 (99.46)	ABCB1 2677 G>T/A	GG	29 (35.37)	G	95 (57.93)
(n=186)	GA	0 (0)	A	2 (0.54)	(n=82)	GA	29 (35.37)	T	11 (6.71)
	AA	1 (0.54)				GT	8 (9.76)	A	58 (35.37)
OCT1 SLC22A1	CC	149 (41.85)	C	451 (63.34)		AA	13 (15.85)		
(n=356)	CG	153 (42.98)	G	261 (36.66)		TT	0 (0)		
	GG	54 (15.17)				AT	3 (3.66)		



## PO-023: TYPE 1 DIABETES AND INSULIN CONTINUOUS SUBCUTANEOUS INFUSION THERAPY

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**Introduction:** Diabetes mellitus (DM) encompasses a group of metabolic diseases characterized by chronic hyperglycemia due to a defect in the secretion and / or action of insulin. Type 1 diabetes is a chronic disease that occurs when the pancreas does not produce enough insulin or when the body does not efficiently use the insulin that it produces. As more individuals require insulin as treatment, technology evolves to optimize delivery and reduce dosing errors. **Objective:** Determine the level of evidence that exists on the use of continuous glucose monitoring and continuous subcutaneous insulin infusion in patients with type 1 diabetes mellitus. **Methodology:** Descriptive integrative review. Articles were searched in the databases BVS, PubMed, Science direct, Scielo and Scopus between 2008 and 2018. The searching was done under the terms DeCS and MeSH of diabetes, type 1 diabetes, Continuous subcutaneous insulin infusion, this search was done both in English and in Spanish. **Results:** When organizing the information, they were organized into 9 groups in relation to following topics: Criteria for admission to therapy, Insulin requirements, HbA1c control, hypoglycemia episodes, perception of the use of therapy, quality of life, costs in the therapy, CSII vs MDI (daily multiple dose insulin injections) and other criticisms. According to scientific evidence, the CSII has a better behavior in the decrease of HbA1c, reported in 15 articles, better metabolic control, described in 7 articles and less Episodes of hypoglycemia, recorded in 7 of the articles that were evaluated. In terms of CSII vs MDI therapy, 9 registered articles will be more suitable CSII for the treatment of type 1 diabetes. **Conclusions:** Continuous infusion of subcutaneous insulin CSII, according to scientific evidence, has a better behavior in the management of type 1 DM.

### References

1. Zhong A, et al. Effectiveness of automated insulin management features of the MiniMed® 640G sensor-augmented insulin pump. *Diabetes Technol Ther.* 2016; 18(10): 657-663.
2. Saylor J et al. Experiences of college students who are newly diagnosed with type 1 diabetes mellitus. *J Pediatr Nurs* 2019; 44: 74-80.



## PO-024: IMPLEMENTATION OF A RISK MANAGEMENT MODEL IN PATIENTS WITH RHEUMATOID ARTHRITIS WHO RECEIVE THERAPY WITH DISEASE MODIFIER DRUGS IN A SPECIALIZED CENTER OF THE CITY OF BARRANQUILLA, COLOMBIA

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**Introduction:** Rheumatoid arthritis (AR) is a multifactorial condition characterized by inflammation and hyperplasia of the synovial membrane of the diarthrodial joints, predominantly of hands and feet, in which there is production of autoantibodies, destruction of the cartilage and sub-condral bone, and is accompanied by systemic manifestations such as nodulosis, cardiovascular disease and pulmonary involvement. Proper and early management improves disease evolution and prognosis. Management includes synthetic and biologic Disease-modifying antirheumatic drugs (DMARD), which come with serious side effects and, in the case of biological therapy, poses a serious risk of developing infectious diseases and other side effects, associated with their mechanism of action. The overall objective of this study is the identification of drug-related problems (DRP) and classification of Negative outcomes associated with medication (NOM) according to its Need, and Effectiveness and Safety in pharmacological therapy, through implementation of a risk management program that could prevent or minimize adverse health outcomes for patients with rheumatoid arthritis. **Methodology:** A descriptive, prospective study of active Pharmacovigilance and pharmacotherapeutic monitoring was conducted using the DADER methodology to a group of patients with rheumatoid arthritis, in treatment with disease-modifying drugs made of biotechnological and chemical synthesis, in a specialized IPS in the city of Barranquilla. **Results:** Data obtained from 41 patients were taken. The average age of the patients was 57 years, 93% were women and 7% were male. All patients were treated with disease-modifying, synthetic and biological antirheumatic drugs, of which ETANERCEPT and TOCILIZUMAB were the most commonly used with a percentage of 61.76 and 26.47 respectively. The remaining 11.7% corresponds to RITUXIMAB, ADALIMUMAB, TOFACITILIB and ABATACEP. 34 NOM were detected, 59% correspond to problems of necessity, of which, a high percentage are for administrative reasons, the rest correspond to untreated health problems; 20.5% corresponds to effectiveness problems mostly due to lack of adherence to treatment by patients and 20.6% to safety problems caused by adverse events with medicines. 22 possible pharmacological interactions were detected, of which 72.72% corresponded to pharmacodynamic interactions and 27.27% to pharmacokinetic interactions, which may cause adverse events. **Conclusion:** Risk management through pharmacotherapeutic monitoring is necessary to perform active pharmacovigilance in drugs with high potential to generate adverse events; The DADER method proved effective for the detection of DRP, therefore due to the high prevalence and type of NOM found, it was shown that these could have been avoided if there wasn't such a large volume of problems belonging to administrative processes that delay drug delivery, and also if patients didn't have problems adhering to proper therapy which reflects poor patient education in drug care. Moderate and severe pharmacokinetic and pharmacodynamic drug-drug interactions can cause other types of health problems associated with the safety and effectiveness of pharmacotherapy, so it is recommended that it be revalued from the medical party monitoring the patient's clinical conditions and establishing a drug treatment where there is the lowest risk of such interactions. **Acknowledgment:** University of Cartagena, Universidad del Atlántico, IPS Promosalud Barranquilla.

### References

1. Ruiz de Adana Pérez R., et al. Aten. Primaria. 2011;44(3): 135-137. DOI: 10.1016/j.aprim.2011.11.008.
2. Girona Brumós L., Juárez Giménez J. C., Lalueza Broto P., et al. Farm Hosp. 2014;38(3):151-153. DOI: 10.7399/fh.2014.38.3.7494.
3. Social Ministerio de Salud y Protección, Colciencias.; et al. (2014). Guía de Práctica Clínica artritis reumatoide.



## PO-025: VIRTUAL SCREENING OF PHYSALIN ANALOGUES AS POTENTIAL INHIBITORS OF *TRYPANOSOMA CRUZI*

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**Introduction:** American trypanosomiasis or Chagas disease is a tropical condition transmitted by insects of the Triatominae family (bedbugs) carrying the *Trypanosoma cruzi* protozoan. In recent epidemiological reports it has been established that approximately 6 million individuals are affected by the disease, with a high prevalence in Latin American regions<sup>1</sup>. This disease has two phases such as acute and chronic, with lymphatic complications, behavioral disorders and cardiovascular disorders. Thus, as an alternative to usual treatments, traditional medicine has established the applicability of natural sources, such as *Physalis angulata*, presence of active metabolites such as physalin, with reports of inhibitory activity against the parasite<sup>2</sup>. **Methodology:** The study was based on the selection of structural physalin analogues as possible protein inhibitors involved in the development and infectious activity of *Trypanosoma cruzi*. For the research development, different physalin analogues were used through bibliographic search in databases such as ChemBL, continuation of the selection and obtaining of crystallized structures in Protein Data Bank, identified as 5NTG and 4YRF. Likewise, through the implementation of tools such as Autodock Vina with a PyRx.0.8-based visualizer, high affinity molecular docking was obtained, as well as the most predominant interactions. **Results:** 36 analogues molecules were found, with a structural similarity of 99%, of which a affinity energy for the structures ChEMBL2374120, ChEMBL2408036, ChEMBL2408035 were similar with respect to the two proteins, however, some analogues such as ChEMBL435984 interacted with 4YRF and ChEMBL501438 with 5NTG, obtaining binding energy of -12.3 Kcal/mol and -11.2 Kcal/mol, respectively. **Conclusion:** Therefore, different physalin molecules reported in the literature with considerable energy affinity against proteins present in the parasite were identified, which could lead to the search for selective molecules to counteract the development of the parasite from promising sources.

**Keywords:** physalin analogues, *Trypanosoma cruzi*, molecular docking.

### References

1. OMS. La enfermedad de Chagas (Tripanosomiasis americana). Abril de 2019. p. 1
2. Pereira et al. Applicability of plant-based products in the treatment of *Trypanosoma cruzi* and *Trypanosoma brucei* infections: a systematic review of preclinical *in vivo* evidence. Parasitology, Page 1 of 13.



## PO-026: PHARMACOLOGICAL TREATMENT OF FIBROMYALGIA<sup>xiv</sup>

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**Introduction:** Fibromyalgia (FM) has increased its prevalence, becoming a public health problem with difficult diagnosis and an ineffective and insecure treatment, causing a negative impact on the quality of life, with high costs in the health system. The main objective is to describe the pharmacological management of FM, compared by the guide of the European League against Rheumatism (EULAR). The prescribed medication schemes for the treatment of FM are described, determining psychological risk factors, evaluating changes in the Visual Analogue Scale and changes in symptoms that classify severity and calculating medication costs. **Methodology:** Study of the use of medicines of the indication type descriptive observational prescription, of retrospective longitudinal section. All medical records were reviewed from January 1, 2016 to December 31, 2017 with multiple associated diagnoses, 75 medical records were obtained. For the costs, the medications used, the formulation schemes were identified, cost per milligram was calculated in the R program and the other data were obtained from the Excel spreadsheet (average consumption time per patient in a month, and the average of consumption per milligram. **Results:** The most used medication was acetaminophen, followed by opioids and anticonvulsants, of the most prescribed antidepressants was duloxetine, the majority of medications used are classified (UNIRS), Uses not included in the sanitary registry, schemes Prescription were divided into monotherapy, dual therapy and triple therapy, resulting in increased adverse reactions, interactions, with a therapeutic failure in 89%. Associated symptoms, a history of childhood abuse and psychiatric illness continue to accompany this syndrome. When comparing the costs of the different therapies used in this study, it is found that the costs of triple therapy are the most expensive and the most risky, combined therapy and monotherapy do not differ much from their costs. **Conclusion:** The formulation of patients with FM is not in accordance with the EULAR 2016 guideline. The risks for this population are high, medications are formulated that are contraindicated and there are alarms due to prescription of opioids in chronic non-oncological pain and the increase in pregabalin formulation associated with central nervous system depressants which causes problems of abuse, dependence and withdrawal syndrome. The lack of information in the medical records prevents better monitoring, having more robust information and making better decisions. The pain management paradigm must be changed and other therapies that allow a comprehensive management to be able to impact all the areas affected by chronic pain should be involved.

**Keywords:** Fibromyalgia, Medications, Safety.

### References

1. Theoharides TC, Tsilioni I, Arbetman L, Panagiotidou S, Stewart JM, Gleason RM, et al. Fibromyalgia syndrome in need of effective treatments. *J Pharmacol Exp Ther.* 2015;355(2):255-63.
2. Fibromyalgia. En: The Difficulties in Developing and Implementing Fibromyalgia Guidelines [Internet]. Disponible en: <http://www.intechopen.com/books/new-insights-into-fibromyalgia/the-difficulties-in-developing-and-implementing-fibromyalgia-guidelines>

<sup>xiv</sup> The Scientific Articles Program Committee of the XVII Colombian Congress of Pharmacology and Therapeutics 2019 and the XXII Latin American Congress of Pharmacology 2019 recognizes this work with the FOURTH POSITION in AUDIFARMA S.A. AWARD in the section of PHARMACOEPIDEMOLOGY AND PHARMACOVIGILANCE.



## PO-027: PHARMACOVIGILANCE IN ANTIBIOTICS 2007-2017 IN A HOSPITAL OF HIGH LEVEL OF COMPLEXITY OF MEDELLIN COLOMBIA<sup>xv</sup>

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**Introduction:** WHO seeks to reduce antimicrobial resistance, promoting a rational use of antibiotics, and one of its strategies is pharmacovigilance. The objective of this work is to characterize the adverse reactions associated with antibiotics in a period of 10 years in a hospital of high complexity level. **Methodology:** an active pharmacovigilance follow-up was carried out for 10 years from 2007 to 2017, a database was obtained with 10,690 reports of adverse reactions, of which 44.5% were due to antibiotics, which we focused on. **Results:** 4,760 adverse reactions to antibiotics were found, of which 45% of the patients were over 65, and 57% had comorbidities; The antibiotics that caused the most adverse reactions were beta-lactams, followed by macrolides. The most frequent adverse reaction was chemical phlebitis and skin lesions, its classification by causality was definitive 12.3%, probable 52.7% and 35% possible and by severity 5.8% were serious. The distribution of adverse reactions by years peaked in 2013 and since then has decreased 52%, coincides with the start of the antibiotic follow-up group by interdisciplinary group, pharmacovigilance and infectology that began to intervene in the prescription. **Conclusion:** antibiotics are in the first causes of adverse reactions in general of medications, beta-lactams with toxicodermias being much more frequent per group, followed by macrolides with chemical phlebitis due to their characteristics of these medications (pH, osmolarity); In addition, it was observed that by impacting the appropriate prescription of antibiotics, the proportion of adverse reactions to them was reduced by more than 50%; more studies are required to determine that other variables influenced their decrease.

### References

1. Saravdekar S, et al. (2019) J Family Med Prim Care; 8 (6): 1987-1993. DOI: 10.4103 /jfmprc.jfmprc\_287\_19.
2. Bonaldo G, et al. (2019) Farmacoepidemiol Drogas Saf. 1-7. DOI: 10.1002 / pds.4873.
3. González B, et al. (2014) Med Int Méx 30:520-530.
4. Alvaro Vallejos (2007) Biomedica; 27:66-75 DOI: 10.7705/biomedica.v27i1.234.
5. Romero Vianmonte K. et al. (2019) Rev Ciencias Salud, 17(1). DOI: 10.12804/revistas.urosario.edu.co/revsalud/a.7613.
6. Maguina Vargas C, et al. (2006) Acta Médica Peruana 23 (1), 15-20.
7. Lo Giudice I, et al. (2019) BMC Pharmacol Toxicol; 20 (1): 21. DOI: 10.1186 / s40360-019-0297-7.
8. Wong SX, et al. (2019) Pharmacol Res Perspect; 7 (2): e00469. DOI: 10.1002 / prp2.469.

<sup>xv</sup> The Scientific Articles Program Committee of the XVII Colombian Congress of Pharmacology and Therapeutics 2019 and the XXII Latin American Congress of Pharmacology 2019 (LATINFARMA 2019) recognizes this work with the FIFTH POSITION in AUDIFARMA S.A. AWARD in the section of PHARMACOEPIDEMOLOGY AND PHARMACOVIGILANCE.





## PO-028: ETIOLOGY AND PROFILE OF ANTIMICROBIAL RESISTANCE IN PATIENTS WITH URINARY INFECTION OF A HEALTH INSTITUTION OF THIRD LEVEL OF CARTAGENA, COLOMBIA JANUARY 2016-JUNE 2019

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**Introduction:** Urinary tract infections (UTIs) are one of the most frequent pathologies and cause of increased morbidity in both hospitalized and outpatients. Objective of this study is to determine the main etiological agents and the antibiotic resistance profile of microorganisms isolated in urine cultures and antibiograms of patients from a third level health institution in the city of Cartagena. **Methodology:** A descriptive cross-sectional study was carried out based on a sample of 301 positive urine cultures from hospitalized patients between January 2016 and June 2019 at an institution in Cartagena, Colombia. The isolated microorganisms in all urine cultures and the results of the antibiograms were evaluated. Prevalence of UTI, uro pathogens was calculated and the microbial resistance profile was analyzed. The statistical analysis was developed with the Microsoft Excel 2016 software and through the statistical analysis software Whonet 5.6 2016. **Results:** 1577 urine cultures were performed during the study period, of which 301 (19.09%) showed growth  $> 10^5$  CFU. The most frequent isolated pathogens were *Escherichia coli*, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. The highest resistance frequency for *Escherichia coli* and *Klebsiella pneumoniae* were observed for ampicillin/sulbactam 45.9% and 42.4% respectively and for *Pseudomonas aeruginosa* 56.2% for imipenem. Finally, the isolation of multi-resistant *Escherichia coli* ESBL and *Klebsiella pneumoniae* ESBL is highlighted. **Conclusion:** The broad spectrum of isolated uropathogens and the antibiotic resistance profile reported in this study suggest the importance of properly orienting antibiotic treatment in health institutions to better select the antimicrobial to be used and avoid the development of multiresistance.

**Keywords:** antimicrobial, urinary, resistance (DeCS source).

### References

1. Castrillón Spitia J.D. (2019). Rev. Infect. 23(14): 45-51. DOI: 10.22354/in.v23i1.755.
2. Cáceres Rojas R. (2019). An. Fac. Ciencias Medicad Asuncion. 52(2): 17-22. DOI: 10.18004/anales/2019.052(02)17-02.
3. Alvarez Villarraga J.D. (2018). Rev. Urol. Colomb. 27(2): 126-131. DOI: 10.1055/s- 0038-1660528.



## PO-029: DRESS SYNDROME ASSOCIATED WITH PHENYTOIN

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**Introduction:** DRESS syndrome (drug reaction with eosinophilia and systemic symptoms) is an infrequent late adverse reaction, triggered by multiple medications, the most frequently associated are carbamazepine, sulfasalazine and allopurinol. The associated incidence varies from 1: 1,000 to 1: 10,000 people (of these cases, by phenytoin have been described around 4%)<sup>1</sup> and with a mortality rate of 10%, mainly associated with liver dysfunction. This case report describes the clinical manifestations and relevant laboratory findings for the diagnosis of *DRESS*. The early detection and suspension of the causative drugs together with corticosteroids, are the pillars in the treatment and resolution of this syndrome. **Methodology:** A case report description was made based on the analysis of the medical history, as well as the review of the literature related to *DRESS syndrome*. The clinic, laboratory tests, evolution and treatment given to the patient during hospitalization are described. **Clinical description of the case:** A 53-year-old male patient who has been diagnosed with neurocysticercosis a month and a half ago, presenting seizures; for which they start treatment with phenytoin 300 mg/day and albendazole 400 mg/day. 3 weeks later he is treated in the emergency department for presenting symptoms of community-acquired pneumonia and macular rash in the dorsal region. They start handling with amoxicillin / clavulanate and continuing phenytoin. After four days, there is a diffuse rash of the papular macular type that extends to the anterior thorax and extremities that in the following days are generalized to the whole body accompanied by a fever of 38.8°C and an increase in the values of hepatic function tests. Paraclinics showed: leukocytosis (23,100 x mm<sup>3</sup>), eosinophilia (8,000 x mm<sup>3</sup>), alanine aminotransferase (249 IU/L), aspartate aminotransferase (88 IU/L), urea nitrogen (29 mg/dL) and creatinine (1.0 mg/dL). With these findings a *DRESS syndrome* is diagnosed. Phenytoin is suspended and levetiracetam 500 mg is started every 12 hours, acetaminophen 1 gr every 6 hours and prednisolone 1 mg/kg/day, and a week later hospital discharge. **Discussion:** *DRESS syndrome* is associated with several medications such as: carbamazepine, sulfasalazine, allopurinol, phenytoin, multiple antibiotics, and some antivirals, among others<sup>1,2,7</sup>. Its pathophysiology is not fully clarified, however, three theories have been proposed: Genetic predisposition that alters the immune response, viral infections as a trigger and alteration in the metabolism of drugs<sup>2,8,9</sup>. The clinical manifestations appear 2 to 6 weeks after contact with drug, the most frequent symptoms being persistent fever for weeks and focused onset rash that progresses rapidly to generalization. The dermatological commitment manifestations itself with erythroderma, exfoliative dermatitis and pustulosis. The liver condition clinical manifestations as hepatomegaly, elevated transaminase, hepatitis or liver failure. It has haematological alterations such as leukocytosis, marked eosinophilia that increases in the time of use of the causative drugs<sup>2,5</sup>. For the diagnosis of *DRESS syndrome*, scales such as RegiSCAR (*European Registry of Severe Cutaneous Adverse Reaction*) and J-SCAR (*Japanese Research Committee on Severe Cutaneous Adverse Reaction*) are used to differentiate it from other pathologies such as Stevens-Johnson syndrome and epidermal necrolysis toxic<sup>2,3,9</sup>. In the treatment of this adverse reaction, it is essential to identify it early and withdraw the suspect drug. Symptomatic management is performed for hydroelectrolytic disorders, antipyretic and corticosteroid alterations (both topical and systemic), where these are the pillar of symptomatic treatment since they inhibit interleukin-5, producing a decrease in eosinophil recruitment and the consequent improvement of the different clinical manifestations<sup>4</sup>. If there is no response to systemic corticosteroids, other drugs such as cyclophosphamide, cyclosporine, interferons, mycophenolate and rituximab are used with good results<sup>2,5</sup>. When assessing the causality of the adverse reaction *DRESS syndrome*, both with the Naranjo algorithm and with that of the World Health Organization, its obtained in the category of "probable"; obtaining a Naranjo score 6 (range 5-8) and with the World Health Organization "probable" too, as there were alterations in the laboratory tests mentioned after the administration of the drug; it cannot be explained by other diseases of the patient or other drugs he was receiving; and upon withdrawal of the drug a clinically reasonable response was presented. From the beginning of the clinical manifestations related to *DRESS syndrome*, until the diagnosis was made, approximately 3 weeks passed; probably because sensitivity is needed in the medical group for the detection of adverse reactions, although had the florid symptoms of this syndrome. **Conclusion:** *DRESS syndrome* is more than a drug-induced



hypersensitivity reaction<sup>3</sup>, due to its pathogenesis and multiorgan involvement (evidenced in the patient) that can be lethal in certain cases. Although the incidence of this adverse reaction from the use of phenytoin is relatively low, it is vital to detect it in a timely manner, suspend it and start treatment; thinking that it is a rare reaction, but that it can occur.

**Keywords:** Drug-Related Side Effects, Adverse Reactions; Phenytoin; Eosinophilia.

### PO-030: EFFECTS OF KIWI ON ORAL CAVITY: ANTIBACTERIAL AND ANTI-INFLAMMATORY

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**Introduction:** Kiwi fruit is viewed a source of bioactive molecules with positive effects beyond its nutritional aspects. This fruit has been considered for oral disease and control prevention. Oral diseases such as caries, periodontopathies and oral cancer are related to systemic diseases. This is evidenced by epidemiological studies. That is why; it is required to inquire about the effects of kiwi in the oral cavity. **Methodology:** A review of specialized literature of the last ten years was carried out, with the search for keywords like kiwi- benefits, kiwi-oral cavity, kiwi properties, kiwi health, dentistry kiwi, kiwi- dentistry and caries-kiwi. This search was conducted in Science Direct, ProQuest and EBSCO databases. That revision was done with the purpose of determining greater evidence of the protective factor of the kiwi fruit. The review was based on complete articles in English and Spanish, published in quality journals with studies that used the kiwi fruit for general and oral health with a preventive approach. For the exclusion criteria, duplicate articles and articles with insufficient information were taken into account. The information was collected year by year, analyzing the benefits in oral health. **Results:** it was evident that the kiwi fruit provides antioxidant properties due to its phenolic compounds that provide protection against disease-free radicals. Vitamin C, which is necessary to increase the production of saliva that acts as a protective factor for caries, and also prevents the deterioration of enamel, as in periodontal disease, induces the production of collagen. This vitamin also has a significant relationship with different proliferative inhibitory effects against some types of cancer cells. **Conclusion:** It is evident that kiwi fruit has positive results in general health, despite being allergenic in some cases. In oral health, there is no accuracy of scientific information about its preventive and inhibitory action of oral morbidity. These results serve as the basis for the development of natural products based on kiwi due to its benefits.

#### References

1. López-Sobaler A.M., Aparicio Vizuete A., Ortega Anta R.M. (2016) Nutritional and health benefits associated with the consumption of kiwi. *Nutr. Hosp.* 33(Suppl 4): 21-25.
2. D'Evoli L., Moscatello S., Lucarini M., Gabrielli P., Proietti S., Battistelli A., Famiani F., Böhm V., Lombardi-Boccia G. (2015) Nutritional characteristics and antioxidant capacity of kiwi (*Actinidia deliciosa* Planch., Cv. Hayward) cultivated in Italy. *Food Composition and Analysis Magazine*; 37: 25-29.



## PO-031: STORAGE OF DRUGS IN HOUSES OF A COMMUNE IN SANTIAGO DE CALI

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**Introduction:** The storage of medicines at home is a practice that involves risks due to improper use by its consumers (1). The objective was to determine the storage conditions of medicines in the homes of a commune in Santiago de Cali. **Methodology:** The study was cross-sectional observational. The sample size was calculated, using the proportions formula, for a sample of 90 dwellings. A survey with closed questions about storage of medicines at home was designed, and a pilot test was carried out. The survey was applied randomly to a person in the household, after signing the informed consent. The percentages and their 95% confidence intervals were calculated. The Student's t-test was also estimated for quantitative variables and Fisher's exact test for qualitative variables, establishing a value of  $p < 0.05$  as significant. **Results:** The respondents are on average 40 years old, 96% of the houses keep medicines, as in other studies (2,3) being 53% purchased. Those who come mostly for advice is the pharmacy seller at 46%, as other research has found (4). The most stored medications are acetaminophen with 39%, followed by Losartan with 14%. 97% are careful that these are not available to children, as indicated by other work (5), which can prevent poisoning (6). The preferred storage place is the kitchen (34%), followed by the bedside table (25%), although in other studies it has been found that it is the bedroom (7) or the refrigerator (5.8). 96% check the expiration date and 84% read the instructions of the medications, as indicated by other works (5), although it has also been found that people do not read and even discard the insert (8). To destroy the medicines 82% throw them in the trash, 12% to the toilet and only 2% return them to the pharmacy. What has been found in other studies, is that they are thrown into the laundry room (2) or trash (7.2), without measuring the environmental impact that this would cause. 22% said they have never received advice from health professionals. Those who do not read the instructions on average have more medications at home than those who read, this difference being statistically significant ( $p < 0.05$ ). This shows that those who have more medications are at greater risk of improperly using them because they do not know about them. **Conclusions:** It was identified that most people keep medications at home, which increases the risk of self-medication and the consequences of misuse (9). Several factors are related to inappropriate medication management at home, so it is proposed to carry out educational interventions (10). Having more medications at home increases the likelihood of not reading the instructions and the risks associated with it.

### References

1. Leila PB, Zenith PB. (2015) Estudio de las condiciones de almacenamiento de medicamentos en los hogares del barrio la pradera del municipio de Pitalito. Universidad Nacional Abierta y a Distancia
2. Kusturica MP, et al. (2012). Storage and disposal of unused medications: knowledge, behavior, and attitudes among Serbian people. *Int J Clin Pharm*. 34: 604-610. DOI: 10.1007/s11096-012-9652-0
3. Sahebi L and Gholi VR. (2009). Self-medication and storage of drugs at home among the clients of drugstores in Tabriz. *Curr Drug Saf*. 4(2):1-6.
4. Castro EJ, et al. (2014). Prevalencia y determinantes de automedicación con antibióticos en una comuna de Santiago de Cali, Colombia. *Rev Cubana Farm*. 48(1):43-54
5. Abdallah QM. (2014). Medicines use among general public in Taif, KSA. *Arch Pharm Practice*. 5(3):125-131.
6. Xiang Y, et al. (2007) ED visits for drug-related poisoning in the United States. *Am J Emerg Med*. 30:293-301. DOI: 10.1016/j.ajem.2010.11.031.
7. Kheir N, et al. (2011) An exploratory study on medications in Qatar homes. *Drug Healthc Patient Saf* 3: 99-106.
8. Foroutan B, and Foroutan R. (2014). Household storage of medicines and self-medication practices in south-east Islamic Republic of Iran. *East Mediterr Health J*. 9:547-553.
9. Sorensen L, et al (2005). Medication management at home: medication-related risk factors associated with poor health outcomes. *Age and Ageing* 2005;34: 626-632. DOI: 10.1093/ageing/afi202.
10. Achana FA, et al (2015). The effectiveness of different interventions to promote poison prevention behaviours in households with children: A network meta-analysis. *Plos ONE*. 10(4): e0121122. DOI: 10.1371/journal.pone.0121122.



## PO-032: FREE TIME AND THE CONSUMPTION OF ALCOHOL IN SCHOOL TEENS IN CALI, COLOMBIA, PHENOMENOLOGICAL STUDY

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**Introduction:** Alcohol, as a substance that it is used in alcoholic beverages, creates addiction and dependence. It promotes the release of endorphins and opioid chemical compounds that are adhered to receptors in the reward centers of the brain, causing the sensation of pleasure. During the last century, the topic is of great debate at different levels such as social, economic, and health, among others. The debate is focused on teenagers, that is an age sector of the population identify for being more vulnerable due to its own characteristics and to be susceptible to the influences of society. On the other hand, the perception that the adolescent has about the use of free time is important, since in this spare time, which is beyond the reach of family control, they can get into practices such as alcohol consumption. **Objective:** determine the relationship between the use of free time and alcohol consumption in adolescents of an educational institution in the city of Cali. **Methodology:** A qualitative, phenomenological research was conducted on 60 students of an educational institution in the city of Cali. The students were divided into focus groups coordinated by a moderator who was responsible of conducting the interview. The researches recorded the sessions and designed an instrument to compile their findings. **Results:** 60% of the adolescents studied were male and were between 12 and 17 years old. No differences were found between genders in the perception of free time. Adolescents consider alcohol consumption as one of the activities to be performed in the free time. Additionally, it was found that men are exposed more frequently to places of alcohol consumption. The more used intoxicating drink is mainly beer. **Conclusion:** alcohol consumption remains a latent problem in adolescents and may be related to the perception of the use of free time.



## PO-033: CONDITIONS OF ANTIDEPRESSANTS AND BRONCHODILATORS IN THE SWALLOWING OF OLDER ADULTS

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**Introduction:** The goal was to identify pharmaceutical medicine supplied that interfere in an elderly population in the different stages of swallowing. **Methodology:** To this end, this study was carried out by using a descriptive exploratory method and a framework of hermeneutic interpretation. It was based on the review of 39 medical records. The universe of the total population in the first half of 2019 was 150 patients. The sample was 39 patients, which is equivalent to 26% of the total population. **Results:** It was found that (24 patients) 61.53% have a diagnosis of senile dementia, while (2 patients) 5.12% have Cerebrovascular accident (CVA). Of these patients, 41.2% of the sample has antidepressant medication: 9 patients with sertraline, 2 with clonazepam; 2 with amitriptyline; 1 with fluoxetine; and 2 traxadone. It should be noted that these medications cause drowsiness, which affects the alertness of people that interferes with the voluntary phases of swallowing. On the other hand, 12.32% have medication with bronchodilators, where there were found 3 patients with ipratropium bromide and 3 with salbutamol. This affects the preparatory and pharyngeal phase of swallowing by generating xerostomia and laryngeal spasms. **Analysis:** This means that although medicaments of general and prolonged use are administered, side effects in swallowing are not taken into account. **Conclusions:** It is considered necessary to review in the prescription the side effects that these two types of medication generate in the swallowing and quality of life of patients.

### References

1. Shin S., Shutoh N., Tonai M., et al. The effect of capsaicin-containing food on the swallowing response. *Dysphagia*. 2016; 31(2): 146-153  
DOI: 10.1007/s00455-015-9668-4.
2. Miarons M., Campins L., Palomera E., et al. Drugs related to oropharyngeal dysphagia in older people. *Dysphagia*. 2016; 31(5): 697-705.  
DOI: 10.1007/s00455-016-9735-5.





## PO-034: TRENDS IN OPIOID USE IN A COHORT OF PATIENTS WITH RHEUMATOID ARTHRITIS

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**Introduction:** To determine the trend in the use of opioid analgesics in a cohort of patients diagnosed with and treated for rheumatoid arthritis (RA) in 24 cities in Colombia. **Methodology:** This retrospective cohort study included adult patients diagnosed with RA, which was managed in IPS Especializada in Colombia between January 2011 and December 2012. The first rheumatology visit was recorded as an index date, and monthly monitoring of the analgesic medication received was performed until December 2017. Sociodemographic variables, the use of opioids and concomitant prescriptions were evaluated. **Results:** A total of 1,329 patients diagnosed with and treated for RA were included, who had an average age of  $61.2 \pm 11.8$  years and were predominantly females (n=936; 82.9%). A total of 1,129 (84.9%) subjects used opioids, and a growing trend, from 13.5% to 21.4%, was observed in patients who received opioids every month throughout a 7-year follow-up of the cohort. In total, 46.7% of the cases used opioids for more than 12 months. The most commonly used opioids were codeine (76.3%) and tramadol (71.1%). All patients received conventional disease-modifying antirheumatic drugs (DMARDs), 85.6% received systemic corticosteroids, 73.9% received non-steroidal anti-inflammatory drugs and 15.9% received biological DMARDs. **Conclusion:** A high proportion of opioid use was shown for pain management in patients with RA, in many cases for more than 12 months, in whom the efficacy and especially safety, related to the risk of dependence, should be monitored.

### References

1. Lee YC, Kremer J, Guan H, Greenberg J, Solomon DH. Chronic opioid use in rheumatoid arthritis: Prevalence and predictors. *Arthritis Rheumatol.* 2018.
2. Han B, Compton WM, Blanco C, Crane E, Lee J, Jones CM. Prescription opioid use, misuse, and use disorders in U.S. Adults: 2015 National Survey on Drug Use and Health. *Ann Intern Med.* 2017;167(5):293-301.



## PO-035: DRUGS WITH ANTICHOLINERGIC POTENTIAL AND RISK OF FALLS WITH HIP FRACTURE IN THE ELDERLY PATIENTS- A CASE-CONTROL STUDY

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**Introduction:** To determine the association between the use of anticholinergic drugs and the risk of falls with hip fracture in a population older than 60 years. **Methodology:** A case-control study was performed in 2015 in patients over 60 years of age with a diagnosis of hip fracture. Two controls were obtained per case and were paired by age, sex, and date of the event. All drugs dispensed during the previous 30 days were identified. Sociodemographic, clinical, pharmacological (drugs according to the anticholinergic risk scale [ARS]), and polypharmacy variables were analyzed. Multivariate analysis was performed. **Results:** A total of 300 patients with hip fracture and 600 controls were included. The mean age was  $81.6 \pm 8.9$  years, with female predominance (71.3%). The use of drugs with low ARS scores in the month prior to the fall did not result in a significant increase in fracture risk, but in those who received drugs with moderate (odds ratio [OR]: 1.97, 95% confidence interval [CI]: 1.19–3.27) or high scores (OR: 1.83, 95%CI: 1.13–2.96), there was an increased probability of fracture. The drugs associated with increased risk were proton pump inhibitors (OR: 1.58, 95%CI: 1.08–2.32), systemic corticosteroids (OR: 1.81, 95%CI: 1.01–3, 24), and conventional antipsychotics (OR: 3.30, 95%CI: 1.13–9.63). **Conclusion:** There was an association between the use of drugs with anticholinergic properties and the risk of hip fracture in elderly patients, and it was possible to establish the level of risk. It is necessary to define policies in public health and to strengthen medical training programs, seeking the appropriate prescription of drugs in the geriatric population.

### References

1. Salahudeen MS, Duffull SB, Nishtala PS. Anticholinergic burden quantified by anticholinergic risk scales and adverse outcomes in older people: a systematic review. *BMC Geriatr.* 2015; 15:31.
2. Rudolph JL, Salow MJ, Angelini MC, McGlinchey RE. The anticholinergic risk scale and anticholinergic adverse effects in older persons. *Arch Intern Med.* 2008; 168(5):508-513.



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