

Abstract Book

4th International Conference on **Traditional Medicine, Phytochemistry and Medicinal Plants** (Online Meeting)

February 07-08, 2022

Meeting Time Zone

Central European Time (CET) (UTC/GMT +1:00 hours)

**DAY 01****Monday | February 07, 2022**

Keynote

D-Pinitol in Carob Products: Great Future is Ahead

Abdullatif Azab, Carobway, Israel

Abstract: D-pinitol is a cyclic polyol, found in several plants, mainly of the Fabaceae family. Carob (*Ceratonia siliqua*) has the highest content of this natural product that has very wide range of biological activities. In terms of chemical structure, it is an ether of D-*chiro*-inositol, which also has significant pharmacological activities.

Antidiabetic activity is among the most notable properties of D-pinitol, and it has been investigated for a few decades, and research is still conducted. In recent years though, there is an increasing interest in two major properties of this compound. First, its potential for treatment of aging and/or neurodegenerative diseases, such as Alzheimer and Parkinson. Second, whether it should be administered as pure compound in medical and food formulation, after isolation from Carob, or it must be part of its “natural habitat”, which means part of natural mixture of Carob components. Several recent studies concluded that there is a clear importance of the synergy between natural products found in Carob products. In this context, it is important to emphasize that D-pinitol can be part of first-step isolated or an enriched mixture, that can be obtained by using unique Carob cultivars or by processing of the first-step isolated mixtures.

In *Carobway* LTD we believe that Carob will be one of the future superfoods of humanity. We expect great future for D-pinitol as well as other Carob products.

Biography: Dr. Abdullatif Azab completed his PhD in Medicinal Chemistry, School of Pharmacy, Hebrew University, Israel, in 2012. He completed Post-Doctoral Research, MRI Department from School of Medicine, Hebrew University, Israel, in 2013. He received Neuroscience Excellence Award, in 2013. He was Chemistry High School Teacher, from 1980-2020. Director of Environmental Services Company from 1993-1999. He is Medicinal Plants Researcher, from 2015-Current.

The CORONA Pandemic - Ever, still a Case for Pyhtotherapy?

Rainer Stange, Charite University Medicine Berlin and Immanuel Hospital, Germany

Biography: Dr. Rainer Stange is an internist and expert in natural healing and physical therapy. He is also a graduate physicist. He has been working as a doctor in the field of natural medicine since 1984, since 2001 he belongs to the Department of Natural Medicine of the Immanuel Hospital Berlin, from 2009 to 2017 as Chief Physician. He also worked at the University Outpatient Clinic Wannsee and is currently researching at the Immanuel Hospital Berlin as part of the endowed professorship for clinical naturopathy at the Institute for Social Medicine, Epidemiology and Health Economics of the Charité Universitätsmedizin Berlin.

Session-1: Quality Control and Marketing of Herbal/Medicinal Products

Phytochemistry And Phytomedicine

Oral Presentations

Pesticides and Mycotoxins Evaluation in Medicinal Herbs and Spices from EU and Non-EU Countries

Dario Lucchetti*, Katia Russo, Daniela Triolone, Paolo Di Giustino, Marta Mancuso, Daniela Delfino and Bruno Neri

*Istituto Zooprofilattico Sperimentale del Lazio e della Toscana “M.Aleandri”, Italy

Abstract: In recent years, the growth of the field of medicinal herbs and the increased demand for plant-derived products have raised questions about their safety for consumer health. The evaluation of mycotoxins and pesticide residues in these matrices are among the major concerns. For this reason, forty-seven samples of different medicinal herbs were purchased from Italian herbal shops and the presence of these contaminants was assessed. AFB1, AFB2, AFG1, AFG2 and OTA A were characterised using high-performance chromatography with a FLD detector (LOQs were set at 0.375 µg/kg for aflatoxins and 1.0 µg/kg for ochratoxin A). A QuEChERS modified method was used for pesticide residue determination followed by GC-MS/MS and LC-MS/MS analysis (LOQ was set at 0.005 mg/kg). The two strategies proved to be complementary and contributed to a greater pesticide residues characterisation. About thirty percent of the samples analysed were found to be contaminated. Data suggest that further research with a higher number of analytes under examination is needed. Although an analytical challenge, particular attention must be paid to the metabolites of mycotoxins and to the so-called organic pesticides.

Biography: **Dr. Dario Lucchetti**, graduated in chemistry at the University of Rome “La Sapienza”, with the thesis “Studies of depletion of veterinary drugs with antibacterial activities in aquaculture fish products: enrofloxacin and ciprofloxacin in trout”, carried out at the Department of procedures and confirmation methods for the control of food products (Istituto Superiore di Sanità). He has been external consultant at the department of chemical contaminants of the national center for food quality and food risks (Istituto Superiore di Sanità). Currently, he works as an analytical chemist at the Department of chemistry of Istituto Zooprofilattico Sperimentale delle Regioni Lazio e Toscana “M.Aleandri”

Stingless Bee Honey as A Halal and Toyib Superfood: The Beekeeper’s Challenges

Adibah Amir*, Ahmad Suhairi Mat Jebah, Mohd Yazid Ahmad

*International Islamic University Malaysia, Malaysia

Abstract: This paper examines the stingless bee honey industry in Malaysia with a special focus on smallscale beekeepers. In the post-pandemic situation, beekeeping had been showing great potential as a sustainable income generator as well as contributing towards biodiversity and ecosystem. Stingless bee as the best pollinator agent on earth plays a significant role in the global food supply chain. Stingless bee honey high reputation as Malaysia local resource of superfood has been sought after following many scientific discoveries of its health and medicinal benefits. Despite all the glowing supremacy produced from stingless beekeeping, this paper identified real challenges faced by urban beekeepers in supplying stingless bee honey for a national and international market. To penetrate

the international market, the development of Malaysian Standard is pivotal to recognize the unique sugar profile and high moisture content in stingless bee honey as compared to a honeybee. This paper looks in detail at the golden potential to enhance and strengthen this superfood to be marketed as a *halalan toyyiban* superfood. Strategic marketing planning to promote authentic stingless bee honey as a *halalan toyyiban* superfood must be further increased and widespread to combat adulterated honey that flooded the local market. Harmonization of roles and responsibilities between government agencies, research institutes, the agricultural sector, and beekeepers are the key factors to ensure this industry stays resilient and continue to prosper.

Biography: Dr. Adibah Amir established university flagship project title “Stingless bee smart farming” in May 2021 to train students from a low-income background to become job creators using their knowledge and skill in stingless beekeeping. Have successfully conducted urban beekeeping projects with vulnerable urban communities to empower their economy, improve their healthcare and strengthen their social bonding. Innovated small scale dehydrator machine to assist small scale beekeepers to process their honey, currently developing a beehive management system using a mobile application with a QR code system to assist the beekeepers to have a centralized and systematic management system.

Attenuated Total Reflectance-fourier Transform Infrared Spectroscopy Coupled with Chemometrics as an Alternative Method for Identification and Classification of Essential Oils

Eleonora Truzzi*, Davide Bertelli, Stefania Benvenuti

*University of Modena and Reggio Emilia, Italy

Abstract: Essential oils (EOs) are valuable products commonly used in the food, pharmaceutical, cosmetic, and personal care industries. The EOs extracted from aromatic plants of the same genus, and in some cases the same species might extremely vary, conferring to the final product different activities and toxicities. At the industrial level, the quality assurance and control of the raw materials is an important issue to safeguard the consumers' health. The identification of an EO is usually performed by gas chromatography (GC), an expensive and time-consuming method. In the present work, the attenuated total reflectance-Fourier transform infrared spectroscopy (ATR-FTIR) coupled with chemometrics was proposed as an alternative method for the identification of the species and chemotype of the EOs. ATR-FTIR spectroscopy is a fast, low-cost, reproducible, and easy method usually employed at the industrial level for quality control of raw materials. Commercial samples of EOs belonging to *Mentha*, *Cymbopogon*, *Lavandula* genus, and *Salvia rosmarinus* were collected and analyzed by GC and ATR-FTIR. The GC and ATR-FTIR results were divided into different datasets depending on the EO type and the principal component analysis (PCA) was performed. The multivariate statistical analyses performed on both GC and ATR-FTIR datasets were able to differentiate the EOs belonging to different species. Therefore, the results suggested that the EOs might be recognized with the same efficacy based on both the relative abundance of the chemical components and the percentages of absorbance. In conclusion, ATR-FTIR spectroscopy might represent a valid alternative to the GC for classifying/identifying EOs.

Biography: Dr. Eleonora Truzzi received a master's degree in Pharmaceutical Chemistry and Technology in November 2015 and a PhD degree in Clinical and Experimental Medicine *summa cum laude* in March 2020 at the University of Modena and Reggio Emilia. During her research career, Dr. Truzzi worked also in renewed laboratories at the University of Navarra (Spain), Cardiff's University (UK), and Federal University of Goias (Brazil). Currently, she's a post-doc researcher at the Department of Life Sciences of the University of Modena and Reggio Emilia in the laboratory of Food

and Nutraceutical chemistry. Her fields of expertise are drug delivery and targeting, phytochemistry, food chemistry, and chemometric data analysis.

Dietary and Supplemental Polyphenols/Phytoestrogens on Multiple Health Outcomes

Zhao-min Liu, Sun Yat-sen University, China

Abstract: A number of plant-derived components have demonstrated to be associated with reduced risk of chronic diseases. Among them, dietary and supplemental polyphenols esp. phytoestrogens were mostly studied. Our presentation will review current research progress, explore potential mechanisms and future directions, and summarize our published findings on the basis of several randomized controlled trials and observational studies, with topics on dietary and supplemental polyphenols/phytoestrogens consumption with a range of health outcomes and related risk factors such as, glycemic control, insulin resistance, vascular and endothelial function, menopausal symptoms, thyroid function and bone mass, as well as their impacts on the risk of hypertension, type 2 diabetes, osteoporosis and hip fracture.

Biography: Dr. Zhao-min Liu obtained her PhD degree in 2009 from Jockey Club School of Public Health and Primary Care, the Chinese University of Hong Kong. She is currently working as professor in Department of Nutrition, School of Public Health, Sun Yat-sen University (North Campus). Dr. Liu has published more than 40 scientific papers in peer-review journals as either first or corresponding author. Her research interests and specialization are in nutritional epidemiology, woman and infant health, health care for aging population, food safety, infectious diseases prevention and management.

Banned or Not Banned? The Complex Regulatory Issue of Kava

Mathias Schmidt, Herbresearch, Germany

Abstract: In July 2021 the German regulatory authorities took the decision of withdrawing the marketing authorizations of anti-anxiety medications containing extracts of the roots and rhizomes of the Oceanian plant *Piper methysticum* ("Kava"). The decision was justified with the observation of case reports of liver toxicity, and the "ban" was soon taken over by all European member states. Due to the ban of medications for safety reasons, kava cannot be marketed as food in the EU. Although the regulatory decision was rejected in court as inappropriate (based on the low frequency of cases and the apparent use of plant material of questionable quality in extract manufacturing), the "ban" is still in force. This was widely misunderstood as a ban of kava itself, but in fact it only referred to medications containing kava preparations in the EU. Kava is still exported to the USA in huge quantities and consumed under food status as recreational drinks. Still, the quality issue remains and may lead to bans of kava under food status if poor quality leads to new cases of liver failure. This threat needs to be countered by strict quality control of kava imports. Efforts are being made to stop so-called "two-day kava" from being sold, but the corresponding legislation has loopholes. "Two-day" kava is suspected to have caused the cases of liver toxicity, and its trading may be seen as the proverbial sword of Damocles. Even single case reports caused by greed may destroy not only markets, but also whole Oceanic economies.

Biography: Dr. Mathias Schmidt has a PhD in pharmaceutical sciences and has been working in the field of medicinal plant research since 1992. He was involved in kava research since 1996 and participated in many quality-guided missions to the South Pacific origins of the plant funded by the ACP states and the EU. He was also directly involved as an expert in the court cases related to

kava medications and the regulatory issues. He has published scientific studies on clinical efficacy, toxicology and quality of kava.

Discovery of the Anti-gout Effect of a Miao's Ethnic Herb *Persicaria capitata* from its Traditional Usage

Shang-Gao Liao, Guizhou Medical University, China

Abstract: Hyperuricemia (HUA) is a key risk factor for gout. Long-lasting HUA can cause the deposition of monosodium urate crystals (MSUCs) in joints and soft tissues to induce acute arthritis and to trigger the onset of gout. Elimination of gout flares and proper control of hyperuricemia are the prime strategies for gout treatment. Nonsteroidal anti-inflammatory agents, colchicine, and analgesics are used for acute gouty arthritis treatment, while inhibition of uric acid overproduction and increase of uric acid excretion are two effective strategies for hyperuricemia treatment. Nevertheless, most of these drugs have been reported to have distinct side effects. Encouraged by the fact that the Chinese ethnic herb *Persicaria capitata* possessed potent therapeutic effects on urinary tract infections and urinary calculus and that urinary calculus may be uric acid calculus, the ethanol extract (EP) and water extract (WP) of the herb were evaluated for their antihyperuricemia and antigouty arthritis effects. The results showed that both WP and EP showed pronounced antihyperuricemia activities, with a remarkable decline in serum uric acid and a marked increase in urine uric acid in hyperuricemic mice. Unlike allopurinol, WP and EP did not show any distinct renal toxicities. The underlying mechanism involves the inhibition of the activity and expression of XOD and the downregulation of the mRNA and protein expression of GLUT9 and URAT1. The extracts of *P. capitata* herba also demonstrated remarkable anti-inflammatory activity in MSUC-induced acute gouty arthritis mice. The mechanism might involve inhibitory effects on the expression of proinflammatory factors.

Biography: Dr. Shang-Gao Liao is currently a Professor from Guizhou Medical University of China. In 2007, he got his Ph.D. in Medicinal Chemistry from Shanghai Institute of Materia Medica, Chinese Academy of Sciences. He was invited to be reviewers of about 30 SCI journals like European Journal of Medicinal Chemistry, Journal of Ethnopharmacology, and Journal of Agricultural and Food Chemistry. His research areas include medicinal chemistry of natural products; chemical analysis and pharmacology of Chinese herbal medicines. He has already published more than 130 peer-reviewed papers such as Chemical Reviews, Journal of Ethnopharmacology, Phytomedicine, and Journal of Natural products.

Cocoa Phytochemicals and Phytotherapy Role in Human Health

Raffaele Pezzani, University of Padova, Italy

Abstract: Cocoa is derived from the seeds of *Theobroma cacao* L., an evergreen tree typical of tropical regions. It contains numerous phytochemicals, with polyphenols representing the largest groups of compounds inside the seed, and has been implicated in numerous biological properties, such as antioxidant, antiproliferative, antiapoptotic, anti-inflammatory, anti-cancer. Moreover, cocoa has been investigated in different health conditions, including heart diseases, dyspepsia, nervous system diseases, circulation problems, and many others. Given its high consumption in many countries all over the world, it is important to know and understand its effects on human health. In addition, the cocoa bean shell, a by-product of the process of cocoa preparation, has been gaining remarkable interest due to its high content of phytochemicals. This presentation focuses on the health benefits of cocoa investigating its possible therapeutic roles in human diseases and cancer.

Biography: Dr. Raffaele Pezzani is both a biologist and a physician with a PhD in Neuroscience. He has over 70 scientific publications that have more than 1000 citations. He has been serving as an editorial board member and as an editor of reputed impacted journals. He is the principal investigator of his research group and directs the Phytotherapy Lab, Dept. Medicine, University of Padova, Padova, Italy having a long lasting and effective experience (more than 20 years) in biology and medicine.

Discovering Inhibitor Molecules for Pathological Crystallization of CaOx Kidney Stones from Natural Extracts of Medical Herbs

Si Li*, Weiwei Tang, Junbo Gong

*Tianjin University, China

Abstract: Developing inhibitor molecules to retard crystallization of calcium oxalate (CaOx) is the main strategy to prevent pathological kidney stone formation. Current research efforts pursuing high inhibition efficacy by synthesizing macromolecules including peptide and polymers lead to high manufacturing cost and great risks in drug regulation approval. An alternative approach is developing and identifying green and environmentally friendly inhibitors from natural medical herbs, informed from a library of kidney stone prescriptions in traditional Chinese medicines. Herein, we practiced this approach by recording CaOx crystallization kinetics and comparing inhibition performance of herb extracts. Two extracts from 20 kinds of herbs were found showing even greater inhibition performance than commercial drug, citrate. Twenty-one molecule candidates were identified from these extracts, and among them polyphenols display the best inhibition efficacy to retard CaOx crystallization. The high-throughput colorimetric assay and morphology examinations reveals thirteen out of 21 molecules show inhibition potential and interfere CaOx monohydrate crystal growth by interacting with Ca²⁺ and C2O₄²⁻ exposed on the surfaces. Moreover, the cell experiments show the pronounced performance of these inhibitors to protect cells and inhibit CaOx crystal nucleation and adhesion to cells, thus reducing stone formation. We further examined the structure-performance correlations among 19 candidates, and it was found that those having pKa<3.5, logD (pH=6) <0, H-number>0.1mmol are the best inhibitors to suppress CaOx crystallization. Our findings provide a novel non-synthetic solution to design and manufacture inhibitor drugs from natural medical herbs for preventing pathological kidney stones formation.

Biography: Ms. Si Li is a Ph.D. student at Tianjin University, China. She is currently working on Molecular inhibition mechanism of Active Ingredients from Chinese Herbs on the Crystallization of Calcium Oxalate Stones

Reverse Pharmacology and CADD as a Bridge Between Alternative and Evidence-Based Medicine - A Case Study on the Alkaloids of *Adhatoda vasica* Nees.

Prasanth Ghanta^{1*}, Shweta Sinha², Mukesh Doble², Basavaraju Ramaiah¹

¹Sri Sathya Sai Institute of Higher Learning, India;

²Indian Institute of Technology Madras, India

Abstract: Inflammation plays a major role in the onset and progression of respiratory ailments (ex: asthma, COPD, etc.,). Eicosanoid pathway enzymes and its products are known to play a major role in the progression of inflammation. For centuries, majority of the alternative systems of medicine have employed *Adhatoda vasica* Nees. (Malabar nut) to treat respiratory ailments.

Objective: The current study applies tools of CADD (Computer Aided Drug Design) and in-vitro enzyme inhibition studies to evaluate the potential of the alkaloids from *A. vasica* as inhibitors of the eicosanoid pathway enzyme – 5-LOX (5 – lipoxygenase).

Methodology: (In-vitro) Semi-purified fractions of 5-LOX extracted from *Escherichia coli* (BL 21) bacteria harboring recombinant human 5-LOX (in pT3 plasmid), were incubated with arachidonic acid in the presence of Vasicine and Vasicinone to evaluate their inhibitory potential. (In-silico) Alkaloids were docked with human 5-LOX (PDB: 3O8Y), followed by carrying out molecular dynamics studies to identify the interactions responsible for the stability of the complexes.

Results: *In-silico* and *in-vitro* results indicated that vasicinone has the potential to act as a competitive inhibitor while, vasicine is capable of acting as allosteric inhibitor via modification of the catalytic pocket.

Biography: Mr. Prasanth Ghanta completed his M.Sc in 2009) and M.Phil in 2011 from the Sri Sathya Sai Institute of Higher Learning, Puttaparthi, India. He is currently pursuing Ph.D. degree and has submitted his thesis. His work involves application of CADD to obtain an insight into the phytochemicals and their role in the medicinal properties exhibited by the plant.

Phytochemical Study and Evaluation of the Antiviral Activity of Aqueous Extracts of Three Medicinal Plants Used in Cote d'Ivoire: *Xylopiia aethiopica*, *Gliricidia sepium* and *Ocimum gratissimum*

Bouagnon Julie José-Rita, Institut Pasteur Côte d'Ivoire, Côte d'Ivoire

Abstract: The aim of this study was to carry out the phytochemical analysis, cytotoxicity and antiviral activity of extracts from three Ivorian medicinal plants (*Gliricidia sepium*, *Ocimum gratissimum* and *Xylopiia aethiopica*) against poliovirus 1, one non-enveloped virus. The precipitation or staining technique was used to highlight the chemical groups in the three extracts while the polyphenol content of each extract was assessed only by the colorimetric method. Cytotoxicity and antiviral activity tests were performed in 96-well plates. Cytotoxicity of each extract towards and L20B (a genetically engineered mouse cell line) were determined by observation of the cell line carpet. Antiviral activity of three extracts against poliovirus type I was determined after 72 hours using an assay that measures inhibition of the cytopathic effect on cell culture. Three plant extracts contain polyterpenes, sterols and polyphenols, flavonoids, catechetical tannins, saponosides and quinones. On the other hand, no extract contains gallic tannins. With the exception of *O. gratissimum*, alkaloids are found in extracts from other plants. The extract of *G. sepium* is richer in polyphenol than the other two extracts. The cell carpet of L20B after 72 hours contact period with three extracts remained intact at concentrations ranging from 2 to 1000 µg/ml. The aqueous extract of *G. sepium* showed higher antiviral activity on poliovirus 1 (74.569%) at 2µg/ml than the extracts of *O. gratissimum* (45.6112%) and *X. aethiopica* (44.5247%) after 72 hours of incubation.

Biography: Dr. Bouagnon Julie José-Rita holds a PhD in Biotechnology-Biosafety-Bioresources option Pharmacology of natural substances obtained in 2016 at the University Félix Houphouët-Boigny Abidjan, Ivory Coast. Since February 2017, she has been a Research Associate at the Centre de Ressources Biologiques/Biobanque of the Institut Pasteur de Cote d'Ivoire with the mission of:

- Collect, prepare, make available and distribute biological resources,
- Elaborate strategies for the conservation and cultivation of the genetic material of medicinal species on small areas and define the needs for the acquisition of this genetic material,
- Train interested parties (students, health professionals) in biobanking techniques.

Phytochemicals in the Diet and their Contribution to the Prevention and Treatment of Diseases of Civilization

Andres J. Ursa Herguedas, Clinica Naturista e Instituto de Medicina Integrativa, Spain

Abstract: The Western-type diet, with its abundance in saturated fats and refined carbohydrates and low in dietary fiber, is prone to an intestinal microbiota that produces systemically low-grade chronic inflammation that is associated with cardiovascular diseases, obesity, diabetes mellitus type 2, dyslipidemias, metabolic syndrome and other inflammatory pathologies.

Through the phytochemicals contained in the diet, such as the polyphenols abundant in numerous products of plant origin, the above conditions can be prevented and / or treated, which pose great suffering to those who suffer from them, put stress on health systems and produce a great environmental impact.

Biography: **Dr. Andrés J. Ursa Herguedas** received his Doctor of Medicine and Surgery from the Complutense University of Madrid in 1992. He is director of the Naturopathic Clinic and Institute of Integrative Medicine (Valladolid). He is Member of the Illustrious Academy of Health Sciences Ramón y Cajal (Madrid, 2018). He has received Dr. Gómez Ulla Award for Health Excellence (Madrid, 2019).

E-Posters

Quantitative Analysis of Glycyrrhizin Using Rapid Magnetic Particles-Based Enzyme Immunoassay for the Quality Control of Glycyrrhiza spp.

Seiichi Sakamoto^{1*}, Kei Minami¹, Gorawit Yusakul², Waraporn Putalun³, Hiroyuki Tanaka⁴, Satoshi Morimoto¹

¹Kyushu University, Japan;

²Walailak University, Thailand;

³Khon Kaen University, Thailand;

⁴Sanyo-Onoda City University, Japan

Abstract: Glycyrrhiza spp. is one of the most important crude drugs in Japan which has been used in Kampo medicines. Various pharmaceutical activities of Glycyrrhiza spp. were exerted by its major triterpenoid saponin, glycyrrhizin (GC). Therefore, GC content in Glycyrrhiza spp. was normalized in the Japanese pharmacopoeia as 2% (weight/dry weight), and the quality of Glycyrrhiza spp. was controlled on the basis of GC content. In this study, we developed rapid magnetic particles-based enzyme immunoassay (MPs-EIA) using specific monoclonal antibody against GC (MAb 2H2) for the detection of GC. Optimization of MPs-EIA revealed that assay time was shortened to one third of that of conventional enzyme-linked immunosorbent assay (ELISA) by taking advantage of wide reaction area between antibodies (MAb 2H2 and secondary antibody) and GC exposure on the surface of MPs. In addition, the detectable range of GC was exhibited at 97.7-781.3 ng/mL, with a limit of detection of 71.4 ng/mL. Further validation analyses support the reliability and accuracy of the developed MPs-EIA for the detection of GC in Glycyrrhiza spp. Development of MPs-EIA and its application to quality control of GC in Glycyrrhiza spp. is present in the presentation.

Biography: **Dr. Seiichi Sakamoto**, received Ph.D. degree in Pharmacy in 2011 from Graduate School of Pharmaceutical Sciences, Kyushu University, Japan. Then, he joined Faculty of Pharmaceutical Sciences, Nagasaki International University, Japan as Research Associate. In 2013, he moved to

Graduate School of Pharmaceutical Sciences, Kyushu University as Assistant Professor, and promoted to Associate Professor in 2020. His research interest includes allelopathy, phytochemical analysis, plant tissue culture, and anti-cancer activity of natural products. He has authored over 80 peer-reviewed papers.

Prussian Blue Nanoparticles Based Lateral Flow Assay for Detection of the Sport-prohibited compound, Higenamine

Poomraphie Nuntawong*, Hiroyuki Tanaka, Seiichi Sakamoto, Satoshi Morimoto

*Kyushu University, Japan

Abstract: Higenamine (HM) is an alkaloid found in various medicinal plants. (S)-higenamine ((S)-HM) is produced by condensing the dopamine and 4-hydroxyphenylacetaldehyde in plant. HM is an all-time-banned compound in the sport games categorized by The World Anti-doping Agency. The unintended use of the medicinal plants containing HM is the point of concern. Here, we develop the detection kit based on the lateral flow assay principles. The kit comprised of 2 components i.e., strip and lyophilized detection mixture. The detection method was simple as the detection strip was ready to read after dipped in sample (100 μ L), in which detection mixture was dissolved. The result was obtained within 15 mins. The detection sensor was an anti-HM mAb1 labelled with prussian blue nanoparticle ($\text{Fe}_4[\text{Fe}(\text{CN})_6]_3 \cdot n\text{H}_2\text{O}$) which gave the vivid blue color response on the test (HM-OVA) and control zones (rabbit anti-mouse IgG antibodies) of the strips. The price was relatively lower than the widely used colloidal gold nanoparticle. The (S)-HM detection limit of the strip was 0.625 $\mu\text{g/mL}$. The detection kit could be stored in 37°C, at least 2 months without the sensitivity losses. The sensitivity, selectivity, and the reliability of the strip was ensured by various validation methods. Thus, the developed (S)-HM detection kit was a user-friendly tool for (S)-HM detection in the plant samples.

Biography: Mr. Poomraphie Nuntawong was graduated from faculty of pharmaceutical science, Chulalongkorn University, Bangkok, Thailand. Now, he is studying for a PhD at Graduate School of Pharmaceutical Sciences, Kyushu University, Fukuoka, Japan.

Synthesis of Harringtonine Ester Derivatives Possessing Potent Anti-leukemia Activities

Akihiro Ochi^{1*}, Makoto Yoritake¹, Tomofumi Miyamoto¹, Hiroyuki Tanaka², Go Hirai¹, Seiichi Sakamoto¹, Satoshi Morimoto¹

¹Kyushu University, Japan;

²Sanyo-Onoda City University, Japan

Abstract: Harringtonine (HT), an alkaloid isolated from the plant genus *Cephalotaxus*, is known as the protein synthesis inhibitor against myeloid leukemia cells. HT inhibits the binding of aminoacyl-tRNA to the ribosome by binding with the A-site of the ribosomal subunit, and this mechanism preferentially works to eukaryote. Furthermore, HT was reported to exhibit antiviral activities against some RNA virus. Our previous study using HL-60 acute promyelocytic leukemia (HL-60) cells raised the possibility that C-5' methyl group of HT plays an important role in regulating antiproliferative activity. In this study, C-5' methyl group was replaced with various straight- and branched-chain hydrocarbons using corresponding alcohols, and their antiproliferative activities against HL-60 and Hela cells were evaluated to investigate the effect of hydrocarbon chains at C'-5 on the activity. As

a result, 4'-n-heptyl-4'-demethylharringtonine (n-heptyl derivative) showed strongest cytotoxicity among HT ester derivatives with IC₅₀ values of 9.4 nM and 0.4 μ M for HL-60 and Hela cells, respectively. Interestingly, the cytotoxicity of the derivative against HL-60 and Hela cells respectively exhibited \sim 5 (IC₅₀ = 50.5 nM) and \sim 10 times (IC₅₀ = 4.0 μ M) stronger than original HT, and \sim 2 (IC₅₀ = 21.8 nM) and \sim 4 times (IC₅₀ = 1.7 μ M) stronger than homoharringtonine (HHT), used for treatment of chronic myeloid leukemia (CML). Our results indicated the potential of n-heptyl derivative as a lead compound for CML.

Biography: Mr. Akihiro Ochi received his B.S. degree in Pharmacy from Kyushu University in 2019. Then, he received his M.S. degree in Pharmacy from Kyushu University in 2021. Furthermore, he advanced the D.S. degree in Graduate School of Pharmaceutical Sciences, Kyushu University. He is expected to receive D.S. in Pharmacy from Kyushu University in 2024. He has authored two papers.

Production of Anti-hesperidin Monoclonal Antibody and Establishment of Quantitative Analysis Method by ELISA

Kanta Noguchi^{1*}, Shunsuke Fujii², Hiroyuki Tanaka³, Seiichi Sakamoto¹, Satoshi Morimoto¹

¹Kyushu University, Japan;

²Nagasaki International University, Japan;

³Sanyo-Onoda City University, Japan

Abstract: Hesperidin (HP) is major flavonoid glycosides found in the herbal medicine, Citrus unshiu Marcowicz. Hesperidin possesses the important pharmacological effects especially on the metabolic syndrome. Hesperidin was evidenced to have glucose-lowering, obesity-preventing, and antihypertensive effects. The Japanese Pharmacopoeia 18th (JP18) defines hesperidin as the biological marker for quality analysis. However, for the current quantitative analysis in JP18, highperformance liquid chromatography (HPLC) has been mainly used despite of various disadvantages, such as high organic solvent consumption, labor intensity, and time-consumption. In this study, we aimed to produce monoclonal antibodies against HP and establish a quantitative analytical method namely indirect competitive ELISA (icELISA). The proposed icELISA would overcome the disadvantages of the mentioned chromatographic method and can be a useful tool for hesperidin detection in plant samples.

Biography: Mr. Kanta Noguchi graduated from Faculty of Pharmaceutical Sciences, Fukuoka University, Japan (2021). He is a licensed pharmacist in Japan. Now, he is studying the doctoral program at the Graduate School of Pharmaceutical Sciences, Kyushu University, Japan.

The Effect of Puffing Process in Extraction of Active Ingredients of *P. lactiflora* and *A. membranaceus*

Hyojin Lee*, JiHwa Seo, KyuHyun Kim, HyunJi Kim, KyungJun Lee, GoEun Lim, Kyoung won Jang

*Daewon University College, South Korea

Abstract: The root of (*Paeonia lactiflora*) and Astragalus (*Astragalus membranaceus*) has been used as a therapeutic medicine in Asia. They are revealed by the effect of immune strength and improve health conditions according to traditional remedies. Once the medicinal plants are harvested, they

normally dried and extracted by heat-mediated reflux extraction before consumption or analysis. However, the condensed structure of organic products especially roots are the main obstacles to improve the extraction level of bioactive components. Here, we adopted the puffing method which using high temperature and pressure before the extraction process and the effects of this treatment on the profile of active ingredients and antioxidant level were investigated. Puffed Paeony and Astragalus showed more active ingredients, polyphenols, and antioxidants than non-puffed root samples.

Biography: Dr. Hyojin Lee has PhD in Biochemistry, and now studying the extraction methods of natural products from Jaechon, local area in South Korea.

Antibacterial and Anticancer Activities of *Eupatorium cannabinum* Extracts

Deniz Oylumlu^{1*}, Hüseyin Servi¹, Cansu Vatansever¹, Ece Oylumlu²

¹Altınbaş University, Turkey;

²Istanbul Technical University, Turkey

Abstract:

Objective/Purpose: *Eupatorium cannabinum* has antimicrobial, anti-inflammatory, antioxidant, cytostatic activities [1-2]. In the previous studies, acetone, ethanolic and aqueous extracts of the plant were studied, and extracts showed anti-inflammatory, cytostatic and hepatoprotective activity, respectively [3,4,5,6]. The objective of this study is to determine the antibacterial and anticancer activities of *E. cannabinum* extracts.

Material/Methods: The plant material was macerated with hexane, ethyl acetate, and methanol, respectively. MeOH extract was fractionated with liquid-liquid chromatography using hexane, ethyl acetate, and BuOH:H₂O (70:30) as eluents. For anti-bacterial study, the experiments began with 8 mg/mL for broth microdilution assay and 10 mg/disc extracts were used for disc diffusion assay. For the anticancer study, A549 cells cultured in RPMI-1640 medium were incubated at 37°C in 5% CO₂. The cell viability was confirmed by using an automated cell counter, after treating the cells with 50 µg/mL of the extracts.

Results/Conclusion: The ethyl acetate and methanol extracts showed inhibitory activity against the tested microorganisms. Both extracts were susceptible against *B. cereus* ATCC 14579. The MIC values of ethyl acetate and methanol extracts were 0.5 mg/mL and 4 mg/mL and the inhibition zone diameters were 20 mm and 13 mm, respectively. The hexane extract showed inhibitory activity against *S. aureus* ATCC 29213, *B. cereus* and *P. aeruginosa* ATCC 27853 at 8 mg/mL. According to results of anticancer assay, the concentration of 50 µg/mL of hexane, ethyl acetate, methanol and methanol/ethyl acetate extracts were effective on A549 human lung adenocarcinoma cell viability in both 24 and 48 hours exposure. The cell viabilities were 54,1%, 66,3%, 23,2% and 24,8% in 24 h and 48,6%, 36,9%, 38,5% and 34,2% in 48 h. for hexane, ethyl acetate, methanol and methanol/ethyl acetate extracts, respectively. However, methanol/hexane and methanol/butanol extracts were not significantly effective on A549 human lung adenocarcinoma cell viability in both 24 and 48 hour.

Biography: Ms. Deniz Oylumlu is a master's degree student in the Pharmacognosy programme of the Health Science Institute of the University of Health Sciences in Turkey. She also working as a pharmacist in a government hospital, since 2019.

Antibacterial, Antioxidant Activities and Total Phenolic Content of Endemic *Gypsophila eriocalyx* Extracts

Busra Gundogdu^{1*}, Huseyin Servi², Esra Yildirim Servi³, Ali Sen⁴

¹Yıldız Technical University, Turkey;

²Istanbul Yeni Yuzyil University, Turkey;

³Istanbul Sabahattin Zaim University, Turkey;

⁴Marmara University, Turkey

Abstract:

Objective/Purpose: The objective of this study is to determine the antibacterial, antioxidant activities, and total phenolic content of hexane, ethyl acetate, methanol, and methanol:water (7:3 v/v) of endemic *Gypsophila eriocalyx* from Turkey.

Material/Methods: Antioxidant, antibacterial activities, and total phenolic content of extracts were tested by DPPH radical scavenging, broth microdilution, and Folin-Ciocalteu methods, respectively. The antibacterial activity of the extracts was evaluated against *Staphylococcus aureus* ATCC 25923, *Bacillus cereus* ATCC 14579, *Enterobacter aerogenes* ATCC 13048, and *Escherichia coli* ATCC 14169 bacteria.

Results/Conclusion: The ethyl acetate extract with an IC₅₀ value of 0.195 mg/mL exhibited the highest antioxidant activity against DPPH radical, followed by methanol:water (0.268 mg/mL), methanol (0.415 mg/mL), and hexane extracts (2.605 mg/mL). The total phenolic content stated as gallic acid equivalent per gram of extract (GAE /g extract) in ethyl acetate extract was found to be highest (69.310 mg GAE/g extract) followed by methanol:water (43.750 mg GAE/g extract), methanol (41.550 GAE/g extract), and hexane extracts (7.815 mg GAE/g extract). The ethyl acetate extract with a MIC value of 1.250 mg/mL exhibited the highest antibacterial activity against *Bacillus cereus* and *Escherichia coli* at 5 mg/mL.

Biography: Ms. Busra Gundogdu graduated from Yıldız Technical University Molecular Biology and Genetic Department in July 2021 and continuing her masters from same department. She completed her internships in cancer and pharmacognosy research laboratories. Her research interest includes cancer and herbal medicine.

Comparison of Phenolic Profile and Antioxidant Activity in Three Various Species of *Hypericum* Derived from Poland

Natalia Dobros*, Katarzyna Zawada, Katarzyna Paradowska

*Medical University of Warsaw, Poland

Abstract: St. John's wort (*Hypericum perforatum*) is a perennial plant from the Hypericaceae family. It has been used for centuries to treat a variety of ailments. It has spasmolytic, choleric, antiinflammatory, antibacterial, antidepressant and antioxidant properties. Secondary metabolites which are responsible for the therapeutic properties belong to different chemical groups. These are naphthodianthrone, phloroglucinol derivatives, flavonoids, phenolic acids, condensed tanins, xanthones, and essential oil ingredients.

The aim of this work was to investigate and comparison of phenolic profile and antioxidant activity in three various species of *Hypericum* derived from Poland. The herbal raw material were dried flowering

tops and aerial parts of *Hypericum perforatum*, *Hypericum prolificum* and *Hypericum androsaemum*, harvested during the flowering period. Phenolic profile was determined by chromatographic method (HPLC) and nuclear magnetic resonance (NMR). The antioxidant assays: FRAP and DPPH-EPR were performed to measure the antioxidant capacity of plant extracts.

Polyphenols, including flavonoids and phenolic acids, were found in all extracts. All the extracts were shown to possess antioxidant activity as well. The highest antioxidant activity was found for the extract of *Hypericum androsaemum*, slightly lower for the extract of *Hypericum prolificum*, while the lowest for the extract of *Hypericum perforatum*. HPLC and NMR analysis confirmed the presence of neochlorogenic and chlorogenic acid, as well as rutin, hyperoside, isoquercitrin, quercitrin and quercetin. In the presented studies, the extracts of *Hypericum prolificum* and *Hypericum androsaemum* were characterized by a much higher content of chlorogenic acid than extract of *Hypericum perforatum*, which may indicate their potential healing properties.

Biography: Ms. Natalia Dobros is a PhD student at the Faculty of Pharmacy at the Medical University of Warsaw, Poland. Her research is mainly focused on secondary metabolites in medicinal plants. Her co-authors; Katarzyna Zawada has the doctoral degree in chemistry and she is a specialist in the field of physical chemistry and electron paramagnetic resonance spectroscopy (EPR). Katarzyna Paradowska has the post-doctoral degree in pharmacy and she is a specialist in the field of physical chemistry and nuclear magnetic resonance spectroscopy (NMR).

Exploitation and Study of the Phytochemical Properties of Two Species of Sage for the Development of Cosmetic Formulations

Sarra Jelidi^{1*}, Olívia R. Pereira², Andrea F. Afonso³, Luís Pedro⁴, Susana M. Cardoso³, Maria João Sousa^{2*}

¹Polytechnic Institute of Bragança, Portugal;

²Instituto Politécnico de Bragança, Portugal;

³LAQV-REQUIMTE, University of Aveiro, Portugal;

⁴Centro de Biotecnologia Vegetal (CBV), Portugal

Abstract: The field of Cosmetics is nowadays affected by a change of interest due to the growing awareness of consumers about the repercussions of the use of chemical-based products.

In this work, we aimed to improve the cream formulation previously developed for a daily moisturization of the skin, via the use of natural ingredients from Trás-Os-Montes. The Formulations were developed with beeswax for its repairing and antimicrobial properties, of hives in the region, *Thymus zygis* subsp. *Zygis* essential oil as a natural preservative, an endemic sub-specie.

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Biography: Ms. Sarra Jelidi is a Tunisian biological engineer currently registered for a post diploma in applied research internship in the Polytechnic Institute of Bragança (IPB), Portugal. Her cursus at the preparatory school of Bizerte, IPEIB allowed an acceptance to engineering school through a national competition which helped the pursue of engineering curriculum at the private polytechnic institute of Tunis, ULT and a master's degree in biotech engineering with the development of the thesis

in cosmetology in IPB. She is certified in the training of Bioinformatics << Gene expression (through microarray & next-generation sequencing) and functional analysis >> and cold saponification.

Session-2: Complementary, Alternative or Integrative Medicine

Homeopathy: Pharmacodynamics and Pharmacokinetics

Oral Presentations

Unusual Applications of Homeopathy

Felicia-Carmen Andrei, University of Medicine and Pharmacy, Romania

Abstract: Homeopathy is a system of medicine that has been used across the world for more than 200 years. It is controversial and clouded by diverse beliefs and opinions. Pharmacists, medical doctors and other health care personnel might be asked to counsel patients and other care providers about this branch of integrative or complementary and alternative medicine.

A significant barrier to homeopathic use by the public, health care practitioners, and scientists, alike, is the seemingly paradoxical concept that ultra-small doses are capable of producing clinical effects. This is an area of important, but still nascent, emerging research. Many other barriers to use stem from misconceptions and misunderstandings about homeopathy.

A background in Chemistry and Pharmacy offers little context to begin to understand homeopathy and other systems outside of conventional medicine. But also, music can be effective in building bridges for the better understanding of this art of healing.

When the Vital Force is able to regulate all bodily and mental/emotional functions optimally, there is harmony. In such a healthy state of being the person can utilize his mind for higher purposes of existence. (Hahnemann: The Organon of Medicine, Aphorism 9). This harmony which exemplifies a healthy human being can be called the Human Song.

And every remedy can have its own melody or better his own symphony exemplified by my own musical composition for Pulsatilla.

Biography: **Dr. Felicia-Carmen Andrei** is a MD with PhD in Medicine and a Pharmacist specialized in Clinical Pharmacy and Homeopathy with two Masters degrees: one in the “Victor Babes” University of Medicine and Pharmacy, Faculty of Pharmacy-Formulation and evaluation of the dermatocosmetic product and the other in Polyethnica University of Timișoara Faculty for Automation and Computer-Informatic Systems for Health Care. Holder of the Diploma of the International Academy for Classical Homeopathy in Alonissos, Greece, she is an active member in The UDIHOP Union for Diplomate International Homeopathic Physicians. As an Assistant Professor of the Faculty of Pharmacy in Timisoara with expertise in Cell Biology she is active in the laboratory of Dermatopharmacy, Cosmetology and Pharmaceutical industry and biotechnology.

20-Week Study of Clinical Outcomes of Over-the-counter COVID-19 Prophylaxis and Treatment

Leon Margolin, Comprehensive Pain Management Institute, LLC, USA

Abstract: As the lethal COVID-19 pandemic enters its second year, the need for effective modalities of alleviation remains urgent. This includes modalities that can readily be used by the public to reduce disease spread and severity. Such preventive measures and early-stage treatments may temper the

immediacy of demand for advanced anti-COVID measures (drugs, antibodies, vaccines) and help relieve strain also on other health system resources.

We present results of a clinical study with a multi-component OTC “core formulation” regimen used in a multiply exposed adult population. Analysis of clinical outcome data from our sample of over 100 subjects – comprised of roughly equal sized regimen-compliant (test) and non-compliant (control) groups meeting equivalent inclusion criteria – demonstrates a strong statistical significance in favor of use of the core formulations.

While both groups were moderate in size, the difference between them in outcomes over the 20-week study period was large and stark: Just under 4% of the compliant test group presented flu-like symptoms, but none of the test group was COVID-positive; whereas 20% of the non-compliant control group presented flu-like symptoms, three-quarters of whom (15% overall of the control group) were COVID-positive.

Offering a low cost, readily implemented anti-viral approach, the study regimen may serve, at the least, as a stopgap modality and, perhaps, as a useful tool in combating the pandemic.

Biography: Dr. Leon Margolin MD, PhD, FAPMR, FAPM, has more than 30 publications (including a research manuscript), recent original study performed at the practice accepted for presentation at the national meeting, request for 2nd manuscript being processed. He got Physician’s Recognition Award from the American Medical Association (2008, 2014), Resident/ Fellow Award from the American Society of Regional Anesthesia and Pain Medicine. He has Two Certificates of Merit of the American College of Physicians, the Medical Society of Pennsylvania Award, the Pfizer Scholars in Pain Management Award, Patient’s Choice Award (several years including 2019). He received Most Compassionate Physician Award (several years), “Top Ten Physicians” Award in Pain Medicine (2014) and America’s Most Honored Professionals Award (2017, 2018, 2019) 1% percent ranking.

E-Posters

Evaluation of a Mexican propolis as a Candidate for a Wound-healing Model

Marco Aurelio Rodriguez-Monroy^{1*}, Daniela Balderas-Cordero¹, Octavio Canales-Alvarez², Mario Rodriguez-Canales¹, Maria Margarita Canales-Martinez¹

¹Universidad Nacional Autónoma de México, Mexico;

²Escuela Nacional de Ciencias Biológicas, México

Abstract: Wound healing is a complex biochemical process of tissue repair and remodeling in response to injury. Currently the drugs used to promote the healing process are inaccessible for the majority of the population, have high costs and side effects, making necessary the search and development of new treatment alternatives. Propolis, it is a natural product produced by bees, widely recognized and used in folk medicine for its biomedical activities. Otherwise, the therapeutic information regarding Mexican propolis is very limited. The purpose of this study was to evaluate whether the ethanolic extract of Chihuahua propolis (ChEEP) can be considered as a candidate to be used as a wound-healing agent; for this, its toxicity, antimicrobial and anti-inflammatory activities, and antioxidant capacity were evaluated. With the results obtained, it can be concluded that ChEEP can be used in a wound healing model since it was demonstrated macro and microscopically, that it is not toxic when applied topically at a concentration of 12% w/v. ChEEP has antimicrobial activity, mainly on Grampositive bacteria and on *Candida albicans*. Furthermore, in the mouse ear edema model induced by 12-O-tetradecanoylphorbol-13-acetate (TPA), ChEEP showed excellent anti-inflammatory activity.

Similarly, when evaluating the antioxidant capacity of ChEEP by the DPPH method, it was possible to determine that it has good antioxidant capacity.

Biography: Dr. Marco Aurelio Rodriguez-Monroy is a Biologist, has Ph.D. in Experimental Biology. He is Professor of the Faculty of Medicine, UNAM. He is the head of the Laboratory for Biomedical Research in Natural Products. His line of research is Evaluation of the antimicrobial, antiparasitic, immunomodulatory and hypoglycemic activity of different medicinal plants and natural products.

Antimicrobial Activity of *Prosopis laevigata* Inflorescences and its Relation with some Edaphic Parameters

Maria Margarita Canales-Martinez*, Uriel Nava-Solis, Ana Bertha Hernandez-Hernandez, Mario Rodriguez-Canales, Marco Aurelio Rodriguez-Monroy

*Universidad Nacional Autónoma de México, Mexico

Abstract: *Prosopis laevigata* is a widely extended species in Mexico arid areas. In the present study, the antimicrobial activity of *P. laevigata* inflorescences was obtained in two areas of Zapotitlan Salinas, Puebla (Open Mezquital (OM), and Abandoned Cultivation Field (ACF)), and their relationship with edaphic variables was evaluated.

The inflorescences and soil samples were collected in March 2018. The methanolic extracts of the inflorescences were obtained. Total phenols, flavonoids, alkaloids, and antioxidant capacity were evaluated characterized by TLC, HPLC-DAD, and GC-MS. The antimicrobial activity was evaluated by the agar diffusion method, microdilution in broth, bioautography, and radial growth inhibition.

The results indicate that the OM presents, on average, a higher concentration of phenols, flavonoids, alkaloids, and the presence of groups of metabolites such as flavones, isoflavones, flavonols, and fatty acids. Regarding antibacterial activity, the extracts from this zone have on average higher activities than those from the ACF zone on *Staphylococcus aureus* (MIC in a range of 0.312 to 1.25 mg/mL), *Vibrio cholerae*, and *Candida albicans* (CF50 range from 5 to 10 mg / mL) and potent inhibition on *Fusarium sporotrichoides* (CF50 of 0.51458 mg/mL). However, no significant differences were found between the two zones.

Finally, a Path Analysis was made to identify the possible influence between edaphic parameters and the chemical composition of the extracts, identifying that the most influential edaphic characteristics in the production of secondary metabolites are the content of organic matter, the soil structure, and salinity.

Biography: Dr. Maria Margarita Canales-Martinez is a Biologist, has Ph.D. in Experimental Biology. She is Professor of the Faculty of Biology, Universidad Nacional Autónoma de México. Facultad de Estudios Superiores Iztacala. She is the head of the Pharmacognosy Laboratory. Her line of research is the pharmacognosy and nutritional properties of plants, fungi, and animals are used by rural communities, mainly from Puebla, Oaxaca, and Mexico state.

DAY 02**Tuesday | February 08, 2022**

Keynote

Ethnopharmacology & Traditional Medicine with Special Reference to Cucurbitaceae in Health Promotion

Pulok K. Mukherjee, Institute of Bioresources and Sustainable Development, India

Abstract: Ethnopharmacology stands for a unique viewpoint for extensive and multidisciplinary research with the integrated approaches for development of newer drug from natural resources especially from Medicinal Plants. Medicinal plants are used in diverse traditional systems of Medicine. Ethnopharmacology have been using from the ancient time to manage and treat human ailments. Evidence based validation of the ethnopharmacological claims on traditional medicine is the need of the hour for its globalization and promotion.

Medicinal plants of Cucurbitaceae family consist of several edible fruits and vegetables including *Benincasa hispida* (Wax Gourd), *Benincasa fistulosa* (Apple Gourd), *Coccinia grandis* (Ivy Gourd), *Lagenaria siceraria* (Bottle gourd), *Cucumis melo* (Musk melon), *Cucumis sativus* (Cucumber), *Cucurbita maxima* (Pumpkin), *Cucurbita pepo* (Field pumpkin) *Citrullus lanatus* (Watermelon), *Luffa acutangula* (Ridge gourd), *Luffa cylindrica* (Sponge gourd) *Trichosanthes dioica* (Pointed gourd), *Trichosanthes cucumerina* (Snake gourd), *Momordica dioica* (Spine gourd), *Momordica charantia* (Bitter gourd) consumed worldwide since ancient times. The plants of this family have played an essential role in the ethnopharmacological as well as traditional medicinal system globally and their evidence is well established in several traditional literatures. Traditional literature suggests that various plant parts have been used to treat several human ailments viz. Pandu (anemia), Pliharoga (splenomegaly), Sopha (inflammation), Gulma (tumor growth), Adhmana (indigestion. acidity), Garavisa (poisoning) etc.

The plants of Cucurbitaceae family are rich in phytochemicals like terpenoids, glycosides, alkaloids, saponins, tannins, steroids, etc., responsible for the therapeutic effect. Various parts of these plants such as leaves, stems, flowers, fruits, seeds, roots etc. exhibit a plethora of pharmacological activity viz. hypolipidemic, antihyperglycemic, anticancer, antimicrobial, analgesic, anti-inflammatory, anti-stress and immunomodulatory activities. Also, in-vitro and in-vivo scientific studies suggest strong inhibitory potential against α -glucosidase, α -amylase, lipase, carbonic anhydrase enzyme along with antioxidant, anti-inflammatory, antidiabetic, anti-tumour, antifungal, etc. Furthermore, these plants are beneficial for nutritional, economical and ethnoveterinary uses. The phytochemical and pharmacological potential indicated the popularization of this family as a potential source of novel therapeutic agents and functional foods. The wide range of therapeutic activities resulting from the plethora of medicinally important phytochemicals suggests developing the concept of food as medicine for the development of new generation value added therapeutics towards the promotion of human health and wellness.

Biography: Dr. Pulok K. Mukherjee is working as the Director, Institute of Bioresources and Sustainable Development (IBSD), having its presence at DBT-IBSD Imphal; Gangtok; Shilong and Aizwal. He worked as the Director of the School of Natural Product Studies and Professor (On lien),

Department of Pharmaceutical Technology, Jadavpur University, Kolkata, India. He has made several innovative and outstanding contributions in academic/research on development of Bioresources particularly on traditional medicine inspired drug discovery from Indian medicinal plants, Ethno pharmacology and evidence-based validation of herbs used in medicine and food to make them available from 'Farm to Pharma'.

Prof. Mukherjee is serving as the Consulting Editor of Pharmacological Research, Associate Editor of Phytomedicine Plus Elsevier Science. He is the member of the editorial board of several International journals including Phytomedicine, Pharmaceutical analysis, Synergy; Phytochemical Analysis, World Journal of Traditional Chinese Medicine, India J Traditional Knowledge and many others. He is associated as advisor/member to different organizations and administrative bodies of Government of India and abroad.

Session 1: Traditional Medicine Chinese, Japanese and Korean Traditional Medicine

Oral Presentations

TCDO: A Community-based Ontology for Integrative Representation and Analysis of Traditional Chinese Drugs and their Properties

Yan Zhu^{1*}, Lihong Liu¹, Bo Gao¹, Jing Liu¹, Xingchao Qiao¹, Chaojie Lian², Yongqun He³

¹China Academy of Chinese Medical Sciences, China;

²National Institutes for Food and Drug Control, China;

³University of Michigan Medical School, USA

Abstract: Traditional Chinese drugs (TCDs) have been widely used in clinical practice in China and many other regions for thousands of years. However, the lack of standardized terminologies or ontologies for the description of TCDs has hindered the interoperability and deep analysis of TCD knowledge and data. By aligning with the Basic Formal Ontology (BFO), an ISO-approved top-level ontology, we constructed a community-driven TCD Ontology (TCDO) with the aim to support standardized TCD representation and integrated analysis. TCDO provides logical and textual definitions of TCDs, TCD categories, and the properties of TCDs (i.e., nature, flavor, toxicity and channel tropism). More than 400 popular TCD decoction pieces (TCD-DPs) and Chinese medicinal materials (CMMs) are systematically represented. The logical TCD representation in TCDO supports computer-assisted reasoning and queries such as Description Logic (DL) and SPARQL. Our statistical analysis of the knowledge represented in TCDO revealed scientific insights about TCDs. A total of 36 TCDs with medium or high toxicity are distributed most densely distributed, primarily in Aconitum genus, Lamiids clade, and fabids clade. TCD toxicity is mostly associated with the hot nature, pungent or bitter flavors, and have liver, kidney and spleen channel tropism. The three pairs of TCD flavor-nature associations were identified. TCDO has also been used to support the development of a web-based traditional Chinese medicine semantic annotation system that provides comprehensive annotation for individual TCDs. As a novel formal TCD ontology, TCDO lays out a strong foundation for more advanced TCD studies in the future.

Biography: Dr. Yan Zhu received Ph.D. degree from China Academy of Chinese Medical Sciences in 2016. Now, he is an associate professor in Institute of Information on Traditional Chinese Medicine,

China Academy of Chinese Medical Sciences. His current research focuses on data mining and knowledge representation of Traditional Chinese Medicine.

The Synthesis, Characterisation and Antibacterial Activity of Plant-Mediated Silver Nanoparticles Using Extracts of *Barleria albostellata*

Yougasphree Naidoo* and Serisha Gangaram

*University of KwaZulu-Natal, South Africa

Abstract: Silver nanoparticles (AgNPs) have progressively gained popularity due to their unique physicochemical and biological properties. Synthesised AgNPs, using leaves and stems methanolic crude extracts of *B. albostellata*, were characterised using UV-visible spectroscopy, scanning electron microscopy (SEM), transmission electron microscopy (TEM), energy-dispersive X-ray (EDX) analysis and Fourier transform infrared (FTIR) spectral analysis. Preliminary antibacterial analysis of the synthesised AgNPs was assessed using the disk diffusion method using various bacterial strains. The results suggest that *B. albostellata* extracts can aid as environmentally friendly biofactories for AgNPs synthesis. EDX analysis showed that leaf extracts produced the highest concentration of elemental Ag⁺. Synthesised AgNPs from leaf and stem extracts displayed a spherical shape. AgNPs synthesised from the leaf extracts (23.21 nm) were larger than those from the stem extracts (16.41 nm). Furthermore, FTIR analysis confirmed the presence of various functional groups and revealed the capping and stabilising properties of AgNPs. Silver nanoparticles synthesised from leaf methanolic extracts displayed the greatest antibacterial activity against both Gram-positive and –negative bacteria than those from the stems. Overall, synthesised AgNPs obtained from *B. albostellata* have great potential in the nanotechnology industry and may be used as an affordable, eco-friendly alternative to conventional medicine.

Biography: Dr. Yougasphree Naidoo is a researcher at the University of KwaZulu-Natal in South Africa. Her research interests include the specialised salt glands of marsh grasses and mangroves, secretory structures (trichomes, oil cells, mucilage cells, laticifers) in medicinal plant species and the phytochemistry and ethnopharmacology of selected southern African medicinal plants.

Cellular Label-free Integrative Pharmacology Assays Identify active compounds in Traditional Chinese Medicines

Jixia Wang, Chinese Academy of Sciences, China

Abstract: Traditional Chinese medicines (TCMs) have been used in clinic for thousands of years. These TCMs display reliable therapeutic efficacy and are important resources for drug discovery. Elucidating mechanisms of action (MOAs) of active compounds is essential to the development and clarification of TCMs. As one of new generation pharmacological assays, Cellular label-free integrative pharmacology (CLIP) assays can provide a holistic view of ligand-receptor interactions in living cells with wide pathway coverage, high throughput and high temporal resolution, thus enabling effectively elucidating the MOAs of TCMs. For identifying active compounds from TCMs, effective separation and purification methods are indispensable since TCMs usually contain hundreds or even thousands of compounds. This work provides a general protocol of preparative techniques and label-free cell phenotypic assays to determine the target engagement of active TCM fractions and compounds.

Biography: Dr. Jixia Wang, PhD, associate researcher, master supervisor, Dalian Institute of Chemical Physics, Chinese Academy of Sciences. Her research area is clarifying effective components and molecular mechanism of clinically effective Traditional Chinese medicine using high-performance chromatographic separation technique and integrative pharmacology technique. She published more than 30 research papers in international journals, including J. Med. Chem., Org. Lett., Pharmacol. Res., J. Ethnopharmacol. etc., applied for 10 China invention patents and 1 PCT patents, led the National Science Foundation of China and participated in enterprise projects.

***In vitro* and *In vivo* Effects of Traditional Chinese Medicine Formula T33 In Human Breast Cancer Cells**

Yu-Te Liu, Chung Shan Medical University, Taiwan

Abstract:

Background: Breast cancer is the leading cause of cancer-related death in women worldwide. Although traditional Chinese medicine (TCM) is commonly used by patients with breast cancer, little is known about TCM prescriptions for breast cancer. This study investigated the effects of a new TCM formula, T33, comprising *Radix Kansui*, *Rheum rhabarbarum*, *Paeonia lactiflora*, Jiangbanxia, and Zhigancao on breast cancer cells in vitro and in vivo.

Methods: To evaluate the effects of T33 on human breast cancer, HMEpiC, MDA-MB231 and MCF-7 cells were treated with different concentrations of T33 and then analyzed using MTT and Transwell migration assays. To elucidate the involvement of autophagy in the T33-induced death of MDA-MB231 and MCF-7 cells, immunofluorescence staining with LC3-II-specific antibodies was performed. Tumor xenografts were generated by subcutaneously injecting either MDAMB231 or MCF-7 cells into BALB/c nude mice to determine the effects of T33 on these cell lines in vivo.

Results: The experimental results revealed that 0.1 mg/mL, 0.5 mg/mL, 2.5 mg/mL, 5 mg/mL and 10 mg/mL T33 significantly inhibited the proliferation and invasion of MDA-MB231 and MCF-7 cells. Moreover, significant autophagy was observed in MDA-MB231 and MCF-7 cells in the presence of 2.5 mg/mL, 5 mg/mL and 10 mg/mL T33. An animal study further revealed that both low (200 mg/kg) and high (600 mg/kg) doses of T33 inhibited the proliferation of xenografted breast cancer cells in BALB/c nude mice.

Conclusion: These findings demonstrate for the first time that T33 has potential in the treatment of breast cancer owing to its antiproliferative effects and induction of autophagy.

Biography: Mr. Yu-Te Liu is a PhD student at Institute of Medicine, Chung Shan Medical University, Taichung, Taiwan. He is Clinical TCM doctor at De-Yi Chinese Medical clinic.

Wuweijiangyasan Regulates Blood Pressure in Spontaneously Hypertensive Rats via Renin-angiotensin-aldosterone System (RAAS)

Ling Zuo^{1*}, Zijuan Zhang¹, Dong Deng¹, Yaxing Cheng¹, Xueli Li¹, Xiaoyun Ma², Ming Gong¹, Peipei Wang¹, Juan Wang¹, Jianguo Zhou¹, Huihui Zhao¹

¹Beijing University of Chinese Medicine, China;

²Beijing Youjian Medical Research Institute, China

Abstract:

Background: We investigated the chemical composition and pharmacodynamic effects of Wuweijiangyasan (WWJYS) in regulating the blood pressure, emotion and blood lipid of spontaneously hypertensive rats (SHRs), and further explored the depressurization mechanism of WWJYS.

Methods: We used UHPLC-MS/MS to identify the origins of WWJYS. Softron BP-2010A rat noninvasive tail artery pressure gauges were used to measure systolic blood pressure (SBP) and heart rate (HR). real-time qPCR and Western blot were employed to determine mRNA and protein levels. Acetic acid torsional body, tail suspension test and heat stimulation experiment were adopted to examine analgesic sedation. Network pharmacology and molecular docking are used to further predict targets and mechanisms.

Results: In the WWJYS group, the SBP level significantly was decreased, and the HR was stable. The irritability became stable after the 5-week treatment compared with the model group ($p < 0.05$). Rats' rotation tolerance time increased after 2 weeks' stabilization. WWJYS lowered lipid obviously, reduced target organ damage and enabled a lowered dosage of analgesic sedation. Compared with the model group, angiotensin converting enzyme 2 (ACE2) protein and mRNA of the WWJYS group increased significantly ($p < 0.05$).

Conclusions: The data indicated that WWJYS had significant depressurization, analgesic and sedative, as well as lipid-lowering effects, and the depressurization mechanism of WWJYS may function via renin-angiotensin-aldosterone system (RAAS).

Biography: Ms. Ling Zuo received her BS Med of traditional Chinese medicine from Beijing University of Chinese Medicine, Beijing, China in 2020. She is currently a PhD student of pharmacology of integrated Chinese and western medicine in Beijing University of Chinese Medicine. The objectives of her research are (i) to understand the fundamental theory of TCM from modern pharmacology perspective and (ii) to explore the genetic characteristics of TCM phenotypes and their interactions with diseases.

Anti-Inflammatory and Antibacterial Potential of Qicao Rukang Powder in Bovine Subclinical Mastitis

Bereket H. Imam^{1,2*}, Ayodele O. Oladejo^{1,3}, Xiaohu Wu¹, Jie Yang¹, Xiaoyu Ma¹, Wenxiang Shen¹, Jiang Wei¹, Zuoting Yan¹, Xuezhi Ding¹

¹LIHPS, Chinese Academy of Agricultural Science, China;

²Hamelmalo Agricultural College, Eritrea;

³Oyo State College of Agriculture and Technology, Nigeria

Abstract: Subclinical mastitis is an economical reproductive disease in dairy cows. The Chinese herbal component mixture, Qicao Rukang powder was developed to treat subclinical mastitis in dairy cows

by clearing heat, tonifying qi, and improving blood and milk circulation. This study aimed to determine the anti-inflammatory and antimicrobial efficacy of Qicao Rukang powder in treating subclinical mastitis. Forty (40) Holstein dairy cows with milk somatic cell count (SCC) $\geq 500,000$ cell/ml were randomly assigned to treatment ($n = 20$) and control ($n = 20$) groups. The treatment group were administered with 150 grams of Qicao Rukang powder orally for five days, while the control group received no treatment. The authors analyzed the milk SCC, milk composition, bacteriological cure rate, and blood serum levels of interleukins (IL-6, IL-1 β , and IL-8), tumor necrosis factor (TNF- α), and interferon gamma (INF- γ) quantified by ELISA kits on day 0 and day 6. SCC of the treated cows reduced significantly ($P < 0.001$) compared with the control group. Milk fat, protein, and total solids increased significantly ($P < 0.05$) after treatment, whereas lactose and milk urea nitrogen showed a non-substantial rise. The bacteriological cure percentage of the drug was 77.8% for *Aeromonas* spp. (14 of 18), 75% for *Pseudomonas* spp. (6 of 8), and 100% for *Acinetobacter* spp. and *Enterococcus* spp. giving 81.8% cured for all isolates (27 of 33). Only 26.7% (8 of 30) of untreated cows recovered spontaneously. Analysis of IL-1 β , IL-6, and INF- γ in the treated cows revealed a significant decrease ($P < 0.01$) with non-significant rises in TNF- α and IL-8 levels. This research demonstrates that Qicao Rukang powder has potent antibacterial and anti-inflammatory actions, supporting its use as an alternative to conventional treatment for subclinical dairy cow mastitis. Further investigations are required to explain the role of the active ingredients and the pharmacological actions of the Qicao Rukang powder.

Biography: **Mr. Bereket Habte**, a master's scholar at Lanzhou Institute of Animal Husbandry and Veterinary Medicine, China, worked as an assistant lecturer in Eritrea's Hamelmalo Agricultural College's Department of Veterinary Science. Veterinary public health, veterinary clinical medicine, veterinary pharmacology and toxicology, were among the subjects he taught. He assisted students with senior research projects as a co-advisor. He worked as a veterinary technician in the Ministry of Agriculture Zoba Gash Barka Eritrea from 2007 to 2011, where he was in charge of delivering veterinary services in the livestock and crop health welfare section. At present, Bereket is studying the pharmacological action of another (formulae) Chinese herbal compound mixtures on mice models under the supervision of prof. Zouting.

He is the author of;

1. Prevalence of gastrointestinal nematodes in donkeys and Mule's species in Anseba Region, Eritrea
2. Anti-Inflammatory and Antibacterial Potential of Qicao Rukang Powder in Bovine Subclinical Mastitis
3. Evaluation of Analgesic and anti-inflammatory potentials of Gong Ying Qiao Lu San extract in vivo mice models (under review)

And Co-author; four articles

Vaso-protective Effect of *Panax notoginseng* in Diabetic and Obese Mice

Wai San Cheang*, Xutao Zhang, Chunxiu Zhou, Hua Yu

*University of Macau, Macau

Abstract: Previous studies showed that *Panax notoginseng* relieves acute myocardial infarction and focal cerebral ischemia-reperfusion. However, whether *P. notoginseng* protects endothelial function in diabetes and the underlying mechanisms remain unknown. Saponins are commonly believed as the major bioactive ingredients of *P. notoginseng*. The present study aimed to investigate and compare the vaso-protective effects of the ethanolic extract of *P. notoginseng* (PNE) and total saponin (PNS).

Diet-induced obesity was established by feeding C57BL/6J mice with high-fat diet (45% kcal% fat) for 12 weeks while PNS and PNE were administered by oral gavage at 20 mg/kg/day for another 4 weeks. Vascular reactivity was determined by wire myograph. Protein expressions and levels of reactive oxygen species were detected by Western blotting and fluorescence imaging respectively.

Ex vivo exposure to high glucose and tunicamycin impaired acetylcholine-induced endothelium-dependent relaxations (EDRs) in mouse aortas, decreased AMPK and eNOS phosphorylation, and induced endoplasmic reticulum (ER) stress and oxidative stress. These effects were reversed by co-treatment of PNS and PNE where PNS showed more potent effects. Furthermore, the vaso-protective effects were abolished by Compound C (AMPK inhibitor). Chronic treatment with PNS and PNE improved EDRs and alleviated ER stress and oxidative stress in aortas from high-fat diet-induced obese and diabetic mice.

The present results showed that PNS and PNE reduced ER stress and oxidative stress, and subsequently improved endothelial function in diabetes through AMPK activation. This study provides new inspiration on the therapeutic potential of *P. notoginseng* extract against diabetic vasculopathy.

Biography: Dr. Wai San Cheang obtained her PhD degree at the Chinese University of Hong Kong in 2014. She received postdoctoral training at the Chinese University of Hong Kong and University of California, San Diego. She is now Assistant Professor in Institute of Chinese Medical Sciences, State Key Laboratory of Quality Research in Chinese Medicine, University of Macau. She has published more than 40 original research papers and reviews (h-index 21). Her research interests are implying the importance of endothelial cells in vasculopathy associated with metabolic disorders and the therapeutic potentials of biologically active components of Chinese herbs and natural plants.

Medicinal Plants in the Treatment of Diabetes and Its Complications

Begum Rokeya, Bangladesh University of Health Sciences, Bangladesh

Abstract: *Diabetes mellitus* is the most challenging public health problem of the 21st century. The long-term consequences of type 2 diabetes are severe and diabetes related complications are increasing unabated. Existing oral hypoglycemic agents have got prominent side effects. Therefore it is crucial to develop new medications or strategies to counter the huge increase in cases expected in the future. Plant-based medicinal products have been known since ancient times and several medicinal plants and their products have been used to control diabetes in the traditional medicinal systems of many cultures worldwide. Collaborative studies conducted by various institutes in Bangladesh and neighboring countries have revealed the potential of some regional plants in this regard. Various plant extracts have been found to be sufficiently active warranting consideration for developing into antidiabetic drugs, both for Type I and Type II diabetes. Some of them have multiple modes of action. Further studies on insulin secretion from perfused pancreas and isolated islets, calcium mobilization in single living beta cells, glycogen breakdown from liver, inhibition of carbohydrate absorption through GI Tract in rats and inhibition of platelet aggregation indicate the presence of various active principle(s) in hypoglycemic plant extracts. In addition to the management of diabetes itself, plants seem to be an important source for agents to be used in diabetic complications, particularly in those which are mediated through platelet aggregation.

A concerted effort of scientists from diverse scientific disciplines will be required to transform the traditional wisdom on antidiabetic plant materials to a modern therapeutic tool.

Biography: Dr. Begum Rokeya is Head of Dept of Pharmacology and Dean of Faculty of Basic Sciences & Research Coordinator at Bangladesh University of Health Sciences (BUHS). Her research interest

includes Plant materials as a source of antidiabetic agents, diabetes & its complications.

The Safety Evaluation of Formulated *Thunbergia laurifolia* Extract Capsules in Healthy Thai Volunteers

Nanthakarn Woottisin^{1*}, Sophida Sukprasert¹, Korbtham Sathirakul², Thipaporn Tharavanij¹

¹Thammasat University, Thailand;

²Mahidol University, Thailand

Abstract:

Background: *Thunbergia laurifolia* (TL), commonly known as “Rang Chuet”, is a herbal medicine listed on the Thai National List of Essential Medicines. It has been traditionally used to treat fever, alcohol intoxication, and serve as an antidote to pesticide poisoning.

Objective: To determine the concentrations of the key components in TL capsules and the safety of their usage in healthy individuals.

Methods: TL aqueous leaf extract were formulated into a capsule dosage form (500 mg/capsule). The main active ingredients were analyzed by using HPLC. The short-term safety of the capsules was monitored in healthy adult volunteers. Twenty volunteers were divided into 2 groups. Each group comprised 5 males and 5 females (n=10). They received the capsules 500 and 1,000 mg/day orally, once a day for consecutive 3 days. General measures of health were recorded during the study, such as hematological and biochemical parameters done in pre- and post-treatment periods.

Results: The results revealed that one capsule contained 1.59, 0.39 and 12.30 mg of caffeic acid, vitexin and rosmarinic acid, respectively. After the intervention, a clinical assessment revealed no significant changes in all the volunteers. Throughout the trial, no side effects were observed. Some significant changes in hematological and biochemical parameters were within normal limits and were not important clinically.

Conclusion: Our findings suggest that the formulated TL extract capsules at the doses of 500 and 1,000 mg/day given to normal volunteers for 3 days were safe and could be used as the safety dosage in the future for clinical purposes.

Biography: **Mrs. Nanthakarn Woottisin;** M.Sc. (Applied Thai Traditional Medicine): is currently a PhD candidate in Integrative Medicine Program, Chulabhorn International College of Medicine, Thammasat University (Rangsit campus), THAILAND. Presently work as lecturer in the department of Applied Thai Traditional Medicine, School of Integrative Medicine, Mae Fah Luang University, Thailand. Her research is focused on the development of Thai medicinal plants or recipes used in Thai traditional medicine by conducting preclinical and clinical research.

The Efficacy of Thai Traditional Massage in Lower Urinary Tract Symptoms: A Randomized Controlled Trial

Ongart Sinsomboon, Thammasat University, Thailand

Abstract: Benign prostatic hyperplasia (BPH) is one of the most common urological diseases in men worldwide. Thai traditional massage has long been a part of Thailand's healing culture and is a potential treatment for several ailments. The purpose of this study is to compare the efficacy of Thai traditional

massage technique (Sen Sib massage) from the Wat Pho marble inscription to standard treatment using Tamsulosin in Thai men aged 50–75 years old with BPH associated LUTS. Participants were divided into two groups at random. The control group (n=25) received 0.4 mg Tamsulosin daily, while the study group (n=20) received 4 weeks of Thai traditional massage. To assess efficacy at the start and end of the trial, the International Prostate Symptoms Score (IPSS), a Thai version of the World Health Organization Quality of Life Questionnaire (WHO-QoL Brief), Uroflowmetry, and Post-void residual urine (PVR) were used. Both treatments reduced LUTS in the total IPSS, improved severity, and the quality-of-life score associated with urination after 4 weeks of intervention. Interestingly, Thai traditional massage improves total IPSS and voiding score significantly ($p < 0.05$). Furthermore, with no statistical significance, the time to peak flow rate, peak flow rate (Q_{max}), average flow rate (Q_{ave}), and voided volume of both interventions improved. Both interventions resulted in a decrease in PVR. The WHO-QoL brief score was used to improve the overall score. There was no significant difference between groups in terms of uroflowmetry, PVR, and WHO-QoL brief scores.

Biography: Mr. Ongart Sinsomboon completed his Bachelor of Science in Applied Thai Traditional Medicine. His work experience from the present position to the former ones:

1. Thai traditional medicine practitioner at Rajamangala University of Technology Thanyaburi Applied Thai Traditional Clinic, Rajamangala University of Technology Thanyaburi, Thailand
2. Thai traditional medicine practitioner at Department of development of Thai Traditional and Alternative medicine, Ministry of Public Health, Thailand

Neutralize Spike Glycoproteins? A New Discovery That Helps the Body Make Its Own IgG Efficiently

Nguyen Thi Trieu^{1*}, Tran Minh Duc², Tran Minh Cam Tu³

*Saigon Biopharma Company, Vietnam

Abstract: The purpose of this research is to develop a new formulation that neutralizes spike glycoproteins and destroys the shell containing these spikes, including the core containing the genetic material of the virus. Spike glycoproteins are the cause of disseminated intravascular coagulation, damage to organ tissues, create a violent inflammatory response when foreign objects enter the body, cause necrosis of organ tissues and lead to death or left with severe sequelae after infection with Sars-CoV-2. The product is effective in eliminating viruses early, not allowing them to have enough time to multiply. This new treatment formulation does not depend on the mutated forms of Sars-CoV-2. The formulation should be applied early when exposure is suspected or in high-risk areas to prevent and reduce mortality as well as reduce health damage to patients after infection. The product is safe, 100% effective, and has been retrospectively accounted for in individuals diagnosed with natural or acquired immunodeficiency who have been identified with underlying diseases. Observationally, all of the patients who had previously used the ingredients in the formulation for various therapeutic purposes had no known cases of Sars-CoV-2 infection, nor when they are living in an epidemic area. All of these patients, when they had close contact with their infected member in the family, were safe and not infected, while all the rest of their family members were infected to some different degree. The formulation helps the body make its own IgG efficiently, easily eliminating Sars-CoV-2.

Biography: Dr. Nguyen Thi Trieu is CEO/Scientific Manager, *In-vivo* Research in Saigon Biopharma Company. Her research area focuses on Medical, Healthcare, and Life Sciences. She has Peer reviewed and published 6 papers. Her other remarkable points are, there is 1 invention in Vietnam, many patents are pending, and 3 patents are pending in the US.

Using the Akabane Test for An Individual Assessment of the Effect of Drugs on the Body

Valery Muzhikov, Med Byte Ltd., Russian Federation

Abstract:

Background: a new principle is shown that makes it possible to assess the individual action of drugs at the level of various organs and systems of the body.

Currently, the assessment of the effect of drugs on various pathologies is carried out on the basis of long-term studies on a large group of subjects. However, at the individual level, various complications and side effects often arise, which requires a new conceptual solution to this problem.

Methods: As an example of this technique, the Akabane test was performed in 225 patients with type 1–2 diabetes before and after insulin administration to assess the state of symmetry in the body.

Results: it was found that in diabetic patients, under the influence of glycemia, the symmetry in the body is disturbed at the level of individual acupuncture channels, and the degree of asymmetry is proportional to the level of glycemia. On the other hand, the right drug, such as insulin, selectively neutralizes this asymmetry. New individual devices are used to control the violation of symmetry.

Conclusion: Using the fundamental principle of evaluating symmetry in the body at the level of acupuncture channels to assess the effect of drugs, we get a new theoretical approach, technology, and tool for monitoring patients. This principle is universal, and it can be used to assess the effect of various drugs its optimal dose and time of administration based on new physical principles.

Biography: Dr. Valery Muzhikov has been developing new diagnostic and treatment methods based on the Akabane thermopuncture test, since last 30 years. Author of over 10 versions of devices, over 60 articles, three monographs and 21 patents for inventions.

Nigella sativa Extract Kills Oral Squamous Cell Carcinoma Cells

A. Selma Dagtas^{1*}, Robert J. Griffin²

¹University of Arkansas at Pine Bluff, USA;

²University of Arkansas for Medical Sciences, USA

Abstract: The potential of *Nigella sativa* was evaluated in the management of pre-malignant and malignant oral cancer through assays designed to mimic conditions expected when chewing whole seeds. *N. sativa* seed extract prepared mimicking the chewing process demonstrated significant cytotoxic effect on oral cancer and pre-cancerous leukoplakia cells in vitro at much lower concentration than the predicted oral concentration achieved upon seed chewing. Surprisingly, only modest quantities of thymoquinone was detected in this water-based extract, and at this concentration, pure thymoquinone did not induce the same morphologic changes observed with the seed extract on oral cancer cells, suggesting the presence of another active constituent in the seed extract. Further studies indicated that α -hederin was responsible from the effects of the seed extract inducing the same morphologic changes observed on the oral cancer cells. In conclusion, chewing *N. sativa* seeds may be an inexpensive, easy and effective option for patients with pre-cancerous leukoplakia lesions who are receiving no other preventive treatment.

Biography: Dr. Selma Dagtas is a medical doctor, a graduate of Istanbul University School of Medicine, Turkey. She received her Masters degree from Yeshiva University Albert Einstein College of Medicine,

NY in Microbiology and Immunology. She then received her PhD in the same field from University of Arkansas for Medical Sciences. She thought at the University of Arkansas at Pine Bluff as an assistant and associate professor for about nine years. She has published in peer-reviewed journals in topics of autoimmunity, T cell tolerance, and cancer. Her research interests include effects of dietary herbal compounds on cancer cells, immunoregulation, autoimmunity.

E-Posters

Advance in Experimental and Clinical Research of the Gouty arthritis Treatment with Traditional Chinese Medicine

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¹Beijing University of Chinese Medicine, China;

²Beijing University of Chinese Medicine Third Affiliated Hospital, Beijing, China

Abstract: Gouty arthritis (GA) is a multifactorial disease whose pathogenesis is utterly complex, and the current clinical treatment methods cannot wholly prevent GA development. Western medicine is the primary treatment strategy for gouty arthritis, but it owns an unfavorable prognosis. Therefore, the prevention and treatment of GA are essential. In China, Traditional Chinese medicine (TCM) has been adopted for GA prevention and treatment for thousands of years. Gout patients are usually treated with TCM according to their different conditions and long-term results can be achieved by improving their physical condition. And TCM has been proved to be an effective method to treat gout in modern China. Nevertheless, the pharmacological mechanism of TCM for gout is still unclear, which limits its spread.

In this article, Chinese herbs and ancient formula for gout were summarized firstly. A total of more than 570 studies published from 2004 to June 2021 in Pubmed, Medline, CNKI, VIP and Web of Science databases, Chinese Pharmacopoeia, and traditional Chinese books were searched; the current status of TCM in the treatment of GA were summarized from the following aspects: articular chondrocyte apoptosis inhibition, antioxidative stress response, inflammatory cytokine levels regulation, uric acid excretion promotion, immune function regulation, uric acid reduction, intestinal flora improvement in subjects with gout.

Biography: Ms. Huan Liang is a doctoral student at Beijing University of Chinese Medicine, China. Her research interest focuses on Chinese medicine for orthopedic and traumatic diseases.

The Characteristics and Regularities of Cardiac Adverse Drug Reactions Induced by Chinese Materia Medica: A Bibliometric Research and Association Rules Analysis

Dan Zhang, Jintao Lyu*, Bing Zhang, Xiaomeng Zhang, Hao Jiang, Zhijian Lin

*Beijing University of Chinese Medicine, China

Abstract: Chinese materia medica (CMM) has been widely used as an approach of ethnomedicine worldwide. Recently, there are growing concerns related to the potential cardiotoxicity of herbal medicines but comprehensive studies are limited. Therefore, comprehensive literature retrieval via publicly available electronic databases was performed to identify the case reports that focused on cardiac adverse drug reactions (ADRs) triggered by oral CMMs. And a bibliometric survey was

conducted to analyze the most commonly suspected risk factors in terms of responsible CMMs, susceptible patients and clinical administration of cardiac ADRs. Moreover, the techniques of data mining were utilized to investigate the regularities and association between the ADRs status and major contributory factors. The available evidence of current research indicated that many influential factors were strongly associated with cardiac ADRs caused by oral CMMs inevitably, including pediatric patients, poisonous CMMs (especially Aconitum herbs), overdose and self-medication. Specifically, the timely and effective resuscitation could attribute their favorable capacity to reduce mortality for cardiac ADRs. Notably, the cardiac ADRs cases had often concomitant the ADRs of the nervous system and digestive system. In conclusion, the comprehensive features and risk factors of cardiac ADRs induced by oral CMMs can be discovered and elucidated through the approaches of bibliometric research, association rules analysis, and data mining technology, which raise the profile and awareness of the rational applications of CMMs and pharmacovigilance within relevant heart side effects.

Biography: Mr. Jintao Lyu has completed his bachelor's degree from Beijing University of Chinese Medicine, China. He is now studying for his doctorate in School of Chinese Materia Medica, Beijing University of Chinese Medicine. He conducted research mainly in the field of Chinese medicine pharmacovigilance and was involved in more than 15 published papers.

Study of Pharmacological Properties of the Methanolic Extract of *Dichrostachys cinerea* bark (L.) Wightet Arn (Leguminosae) in Isolated Myometrium from Pregnant Rats

Reine Raïssa Rolande Aworet Samseny^{1*}, Sophie Aboughe Angone¹, Noreen Koumba Madingou¹, Marlaine Boukandou Mounanga¹, Jacques Yao Datté²

¹National Scientific Research and Technology Center, Gabon;

²University Felix Hophouet Boigny, Ivory Cost

Abstract: This paper investigates the pharmacological properties of *Dichrostachys cinerea*, the plant barks are traditionally used by Gabonese and Ivorian populations to treat bronchial asthma, rheumatism, and other various diseases. In the present study, we investigated the pharmacological properties of *D. cinerea* methanolic extract, on isolated uterine smooth muscle and compared its effects to those of oxytocin, which is used by obstetricians to facilitate childbirth. We also explored the possible mechanism pathways of the in vitro uterine contraction induced by *D. cinerea*. These effects were compared to those of oxytocin (8.4 x10⁻⁵ mg/ml, 8.4 x10⁻⁴ mg/ml, 8.4 x10⁻³ mg/ml, 8.4 x10⁻² mg/ml). The EC (50) and E (max) was determined graphically and statistically analysed using one-way ANOVA and Dunnett post hoc test. Cumulative concentrations of *D. cinerea* have caused rise in the contractile force of the uterine fragments that were isolated from the pregnant rats, as seen with oxytocin concentrations. We observed contractions amplitude of 30.41mN at 80 mg/ml and amplitude of 39.68mN at 400 mg/ml for *D. cinerea*. In parallel, oxytocin concentration of 8.4 x 10⁻³ mg/ml induced contractions of 45.82 mN with the highest concentration (8.4 x 10⁻² mg/ml) that induced contractions of 55.82 mN. Our results revealed that *D. cinerea* increased the contractile force and the frequency of muscle contractions. These findings support the use of *D. cinerea* to facilitate childbirth, as it has been used in traditional medicine.

Biography: Dr. Reine Raïssa Rolande Aworet Samseny has Doctorate in Animal Physiology with specialty: Nutrition, Pharmacology and Toxicology and in Pharmacy. Her research focuses on Pharmacology-Experimental Toxicology of Natural Substances and Pharmacognosy. She works at Pharmacopeia and Traditional Medicine Institute: National Scientific Research and Technology Center, Libreville, Gabon

Session 2: Medicinal Plants

Pharmacognosy and Naturopathic Medicine

Oral Presentations

Food as Medicine: The Future of Past Foods [A Special Reference to Ethnomedicinal Plants of Pirpanjal]

Mohd Ashaq, Govt PG College Rajouri, India

Abstract: Food is best medicine provided it is healthy. Traditional foods are usually obtained from plants free from chemical fertilizers and pesticides. The concept of food as medicine across the globe is steeped in history, complex belief and value systems, and strongly interwoven. Several foods were known and cherished due to their use in preventing or treating diseases and this practice was carefully passed down the generations. The ancient Greece and Rome belief, nearly 2,000 years ago, used to maintain balance between the four main fluids or humors (blood, yellow bile, black bile and phlegm) through food and drink as well as by the process of 'blood letting'. Many fruits and vegetables and other plant foods have been used, recommended and/or avoided for their supposed medicinal properties across ages.

The Asian Okinawan people, one of the longest living people in the world, had strong beliefs and practices about the longevity achieved through diet. Likewise, people in other parts of world treated food as medicine till the covid-19 pandemic. Indian System of medicine, Unani and other alternate medicine systems across globe mainly relied on concept of food as medicine. Habitants of Pirpanjal in Indian state of Jammu and Kashmir like many other cultures had several special foods that were used to treat or prevent various diseases. But due to modernization, over population and demand-supply imbalance, many important foods with medicinal properties are now lost or forgotten. In the present study an attempt has been made to evaluate the forgotten foods and ethnomedicinal plants that can be supplement, alternate or potential future medicine.

Biography: **Dr. Mohd Ashaq** is Sr. Assistant Professor of Botany working in Higher Education Department of Jammu and Kashmir (India) since October 2009 and currently posted at Govt. PG College Rajouri. Before joining this job, he served as Assistant Prof. of Botany and Director of Research at Eritrea Institute of Technology, Asmara in the Ministry of Education, State of Eritrea from 2004-2008. He has 20 research publications, 3 books, 5 book chapters, 50 popular articles and 3 patents to his credit. He has participated in over 150 conferences/seminars, workshops as presenter/invited speaker/resource person/chairperson and organized over dozen mega events including conferences, seminars, webinars, workshops etc. He is life member/board member and reviewer of over 2 dozen professional bodies/societies/journals.

Effect of Salt Stress and Soil Amendments on *Stevia rebaudiana* Bertoni

Li Ma^{1*}, Basanti Bandekar¹, Andres Torres¹, Deborah Henderson¹, Lily Zou²

¹Kwantlen Polytechnic University, Canada;

²NutraEx Food Inc., Canada

Abstract: *Stevia* (*Stevia rebaudiana* Bertoni), is becoming increasingly important due to the worldwide demand for low-calorie sweeteners for use as sugar substitutes. *Steviol glycosides* (SGs) synthesized in stevia leaves are about 250-300 times sweeter than sucrose and their concentration varies among genotypes, plant ages, and environmental conditions. A greenhouse study was carried

out to determine the effects of salt stress and soil amendments on plant morphology and SGs (stevioside, Rebaudiosides A, B, D.) content in stevia leaves at the Kwantlen Polytechnic University. A completely randomized design with three salt stress levels, three types of soil amendments [water, *Trichoderma atroviride*, and humic acid (HA)], and ten replicates was used. Treatments were applied once per week for five weeks. Plant growth parameters and the concentration of SGs in the third pair of leaves were measured. Our results showed that while plant height was not affected, both fresh and dry weight decreased significantly under salt stress. The addition of *Trichoderma atroviride* and HA appeared to increase fresh and dry weight under no salt stress, but increases were not statistically significant. The application of *T. atroviride* promoted root growth across all salt stress treatments. Stevioside concentration decreased significantly with the increase of salt stress, and the addition of soil amendments did not affect the concentration of stevioside. Reb D was not detected in any treatment. This study suggests that stevia is moderately tolerant to salt stress and *Trichoderma* could enhance the salinity tolerance of stevia plants but not through the impact on SGs.

Biography: Dr. Li Ma obtained her Ph.D. in plant science in 2017 from the University of British Columbia (Canada). After completing her postdoc training at UBC, she joined the Institute for Sustainable Horticulture, Kwantlen Polytechnic University (Canada) as a research scientist in 2019 and a faculty member at the School of Horticulture in 2020. Her research at the Institute for Sustainable Horticulture has focused on four broad areas: plant disease management, biological control, fungal secondary metabolites, and medicinal plants. In the latter area, she studies how environmental conditions affect plant growth and secondary metabolites of medicinal plants.

Medicinal Plants in the Classroom: Exploring Antimicrobial, Stimulatory or Anti-Cancer Properties of Plants Through a Set of Simple Lab Experiments

Tatiana Kuzmenko, Loyola Marymount University, USA

Abstract: We have developed a multi-week project-based teaching laboratory module in which Undergraduate students with little to now prior experience are able to setup experiments to test antimicrobial, stimulatory and anti-cancer properties of various plants. Some of the plants are well-known for their medicinal properties while others are less studied such as California native species historically used by Native American tribes for healing. This module incorporates all the components of the real-world research including group work, scientific literature review, individual scientific paper writing and group presentation of the findings. This approach provides a unique opportunity to not only introduce students to the laboratory research process and teach them basic lab techniques but also helps them learn about and appreciate the importance of plants and biodiversity in general for human. In this talk I'd also like to share the highlights of our findings after four years of experimentation during which more than 40 plant species were tested. Additionally, as a future development of this project we are looking into collaborating with Organic Chemistry Lab courses to proceed to separating the plant extract compounds, identifying and testing them individually as part of their teaching curriculum as well.

Biography: Ms. Tatiana Kuzmenko earned her MS from Moscow State University where she studied the evolution of social behavior in ants. Then she has continued her research at the University of Southern California on the molecular mechanisms of memory and learning in animals. Now she is teaching General Biology courses at the Loyola Marymount University and working on numerous research projects with students. Tatiana uses her background to improve student comprehension through stimulating their interest in the subject. This is what led to the collaborative development of the Plant-derived drug discovery experimental module and the establishment of the medicinal garden on campus.

E-Posters

Investigation of Antifungal Activity of some Medicinal Plants in Northern Vietnam Against the Postharvest Pathogen *Penicillium digitatum* and Other Fungi

Hanh My Tran^{1,2*}, Van-Anh Thi Nguyen¹, Tao Xuan Vu³, Do Hoang Giang⁴, Thanh Thi Kim Nguyen¹, Diep Hong Le¹, Marc Muller², Van-Tuan Tuan^{1,5}

¹Vietnam National University, Viet Nam;

²University of Liege, Belgium;

³Ministry of Science and Technology, Viet Nam;

⁴Vietnam Academy of Science and Technology, Viet Nam;

⁵Vietnam National University, Viet Nam

Abstract: As pathogens are increasingly becoming resistant to current antibiotics, the study of natural medicinal sources to find new active ingredients is important. In this study, among all extracts obtained from 12 medicinal plants collected from Northern Vietnam, extracts from *Mahonia bealei*, *Ficus semicordata*, and *Gnetum montanum* demonstrated the most potential in growth inhibitory activity against *Penicillium digitatum*, which is known to cause one of the most common and serious post-harvest diseases in citrus. *M. bealei* 95% ethanol extract, showed the best efficacy and broad spectrum against two more pathogenic fungi, which were *Aspergillus fumigatus* and *Candida albicans*. Subsequently, berberine and palmatine were determined as the major metabolites of the *M. bealei* extract, and berberine might appear to be the major active constituent in producing the antifungal activity of the plant. Finally, we found that 800 µg/ml of *M. bealei* extract fully inhibited the green mold in oranges up to 6 days of infection.

Biography: Ms. My Hanh Tran is now working as a researcher in the Faculty of Biology, Vietnam National University, Hanoi (VNU). She got the Master of Science degree in Medicine in 2012 from Inje University, South Korea. She has been contributing to a joint project between Vietnam and Belgium about medicinal plants in Northern Vietnam as a PhD candidate since 2018. Her thesis mainly focuses on the antimicrobial activity and the toxicity of traditional medicine.

Antioxidant Capacity, Phenolic, Flavonoid and Ascorbic Acid Contents of *Gunnera perpensa* from Lesotho, Southern Africa

Poloko Stephen Kheoane*, Mokonyana Mohale

*National University of Lesotho, Lesotho

Abstract:

Background: Antioxidants play a vital role in oxidizing some harmful reactive oxygen species (ROS) that develop in the human body due to several body physiological functions and due to the materials that are ingested into the body. Plant materials provide a good source of antioxidants. The known antioxidants from plant sources include phenolics, flavonoids, and vitamin C. *Gunnera perpensa* has been used as a traditional medicine to treat various ailments for several decades in the Southern African region. Its use as an antioxidant is not well studied.

Methods: The 2,2-diphenyl-1-picrylhydrazyl radical scavenging activity of methanolic extract of *Gunnera perpensa* was determined against the ascorbic acid positive control. The phenolic content was quantified using Folin-Ciocalteu reagent colorimetric method against garlic acid positive control while the flavonoid content was investigated using the aluminium chloride colorimetric method

against quercetin as a positive control. The ascorbic acid content of the extract was determined using the iodine titration calorimetric method.

Results: *Gunnera perpensa* extracts showed a significant ($p < 0.05$) free radical scavenging effect. The total phenolic content was 146.40 ± 1.94 mg/g GAE equivalent, and its antioxidant activity was mainly due to high content of phenolics as compared to the flavonoids and ascorbic acid. The total flavonoid content was 26.54 ± 2.07 mg/g quercetin equivalent while ascorbic acid content was 1.56 ± 1.54 mg/100 g of crude plant sample.

Conclusion: *Gunnera perpensa* could be an alternative natural source of both phenols and flavonoids which could be used as antioxidants for eradicating ROS in the human body.

Biography: Dr. Poloko Stephen Kheoane is a Lecturer at the Department of Pharmacy, Faculty of Health Sciences, National University of Lesotho, Southern Africa. He is a Lecturer and research in the field of Pharmaceutical Sciences. His areas of specialties are Nanotechnology in drug delivery, Biopharmaceutics, Pharmaceutics, Nutraceuticals, Medicinal plants, and Drug Toxicology.

Identification of *Diospyros villosa* root by Macroscopic and Microscopic Characterization

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Abstract: *Diospyros villosa* L. (De Winter) root is used as toothbrush and to treat oral infections in Mozambique. Previous botanical studies in our laboratory allowed the identification of microscopic characteristics useful to the identification of this herbal medicine. Now we present additional work made to complete the identification of macroscopic and microscopic botanical markers in whole, fragmented and powdered plant material by standard optical microscopy. The quantitative study was also performed. Macroscopically, the root samples are cylindrical, with fragments of 9-21 cm in length and 2-11.5 cm in diameter. Their outer surface is longitudinally wrinkled, with colors ranging from black to dark brown, and yellowish in the inner layers. The most useful microscopic markers for root identification include the periderm composed of six layers of flattened phellem cells, with slightly thickened walls and few layers of phelloderm. The cortical parenchyma has several layers of cells with brachysclereids with a short roughly isodiametric form with a ring of prismatic calcium oxalate crystals, also with groups of 4 to 10 sclereids, phloem crossed by uniseriate medullary rays and prominent vessels of the xylem occurring in single form or double, with bordered holed vessel walls associated with fibers, libriform fibers with calcium oxalate crystals, numerous single and clustered starch grains, within the cortical parenchyma, the medullary ray cells and the medullary parenchyma. The establishment of these botanical markers for the identification of *D. villosa* dried root are according to the pharmacopoeia standards for the identification of herbal medicines.

Biography: Ms. Adriana Ribeiro is a PhD student in Pharmacy (Pharmacognosy and Ethnopharmacology) at Faculty of Pharmacy, Universidade de Lisboa (FFUL) and completed her Master in Pharmaceutical Sciences (2017) at FFUL. She is coordinator and trainer of Phytotherapy at the Cooperative of Integrative and Complementary Medicine (COOPMIC). Research areas of interest are Pharmacognostic characterization and pharmaceutical development of medicinal plants. She collaborated in Studies and Utilization of Native Medicinal Plants from Portuguese Speaking Countries (2018), studies for the Establishment of botanical diagnosis criteria (2017) and Detection of constituents in unknown samples in medicinal plants and their Identification and Dosing (2014/2017).

Application of Botanical Markers in the Quality Control of the Main Species of Ayahuasca

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Abstract: Ayahuasca is a South American traditional herbal preparation typically produced by decoction of a mixture of *Banisteriopsis caapi* stem, and *Psychotria viridis* leaf. In the last decades, the use of this herbal preparation has been studied for its different potentially therapeutic effects, however in the literature there is still a gap concerning botanical diagnosis of these two species. Now we present the botanical identification of *B. caapi* dried stem and *P. viridis* dried leaf, according to the pharmacopeia standards for the identification of herbal drugs. The quantification of the distinctive botanical markers and histochemical tests was also presented. The most typical characters for *B. caapi* stem are: the presence of a developed central cylinder, presenting in the inner zone a hollow medulla; the phellem is constituted by rectangular cells; in the zone of the secondary xylem, are common xylem vessels of different single and double diameters; the sclereids of polygonal forms, in the xylem parenchyma cells and also in the medullary parenchyma; the presence of tyloses in some xylem vessels and prismatic calcium oxalate crystals in the medullary cells and calcium oxalate druses in the periderm and in the cortical parenchyma are also typical; and for *P. viridis* leaf are: asymmetric organization of the mesophyll, a lower epidermis with anomocytic stomata, unicellular covering trichomes, raphide and prismatic crystals in the mesophyll zone. Domatia were typical in the central vein axil. The results obtained allowed the identification of the botanical markers for the quality control of the main species of Ayahuasca.

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The Hypoglycemic and Anti-Inflammatory Effects of *P. decompositum* May Be Associated with the Saccharolytic Fermentation and the Prebiotic Effect of Fructooligosaccharides of the Plant

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Abstract:

Introduction: *Psacalium decompositum* is a shrub that grows in Northern Mexico and the Southwestern United States. A decoction of the root is used as a remedy for various pains and diseases, including type 2 diabetes. Experimentally, a fructooligosaccharides (FOS) fraction of this species exhibited hypoglycemic and anti-inflammatory effects.

Objective: To determine if the FOS fraction from *P. decompositum* modify the normal rats intestinal biota.

Methods: Normal rats were grouped as follow (n=8): 1) control (isotonic saline solution, ISS), 2) positive control (chicory inulin) and 3) experimental group (FOS). The treatments were intragastrically daily administered, to complete 15 days. The feces were collected for DNA extraction, and then the V3-V4 region of the 16S rRNA gene was sequenced. The assignment of microbial operational taxonomic units (OTU) was carried out in a QIIME environment.

Results: The OTU assignment corresponding to genera considered probiotics and butyrate producing was abundant mainly in the FOS experimental group. Species-level diversity was similar in the positive control and FOS group, remain both differing from the SSI group.

Conclusions: The anti-inflammatory and hypoglycemic effects of the studied FOS fraction can benefit the growth and abundance of genera and species that help to maintain intestinal homeostasis through the production of butyrate, a short-chain fatty acid that stimulates the absorption of sodium in the colonocytes, contributing to reduce the intestinal permeability to pathogens, and improve insulin sensitivity. The data support the idea that the intestinal biota might be participating in the hypoglycemic and anti-inflammatory effects of this fraction, which should be explored in further studies in experimental diabetes models.

Biography: Ms. Guadalupe Juárez Pérez works at Universidad Autónoma Metropolitana, Mexico.



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