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**ASPECTOS BÁSICOS TRASLACIONALES
EN CIENCIAS BIOLÓGICAS**

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Simposio 4: Plantas Aromáticas y Medicinales, presente y futuro

Selección de especies vegetales para evaluación biológica: implicaciones de la biodiversidad y funcionalidad

Dr. Edison Osorio. Universidad de Antioquia, Colombia. Grupo de Investigación en Sustancias Bioactivas, Facultad de Ciencias Farmacéuticas y Alimentarias, Universidad de Antioquia, Calle 70 No. 52-21, Medellín, Colombia. Email: edison.osorio@udea.edu.co

The development in the search for pharmacologically active compounds has enabled the use of many approaches for the selection of the plants for biological evaluation. These can be grouped into five, namely (1) the random approach, which involves the collection of many plants with a common characteristic found in a study area; (2) the chemotaxonomic approach, which entails the collection of all members of a plant family known to be rich in certain class(es) of compounds; (3) the ecological approach, in which the relationship between the plant and its ecosystem is used as a means of selection; (4) the ethnobotanical-directed sampling approach, based on traditional medicinal use(s) of a plant; and (5) the information-driven approach that utilizes a combination of ethnobotanical and chemotaxonomic data or a database that contains all relevant information concerning a particular species. These different methods will be briefly described and discussed in detail in particular cases from the Colombia biodiversity. Colombia is a country rich in biodiversity and endemism, inhabited by different types of population. Just like Central and South American countries, Colombia also has rich and diverse healing cultures, which are poorly known and have not been properly recorded. All this wealth allows that the approaches available for the selection of plants can be applied in our territory, some more than others, or in combination thereof. This work attempts to present these strategies in context looks from the perspectives of the research done in recent years. The exploration of the anti-inflammatory effects from traditional medicinal plants, neuroprotective substances from the Amaryllidaceae family following a chemotaxonomic approach, the enzymatic inhibition activities related to cosmetic functionality from various botanic families and the search for antiprotozoal compounds from Annonaceae species may be displayed. Given that nature has performed a pre-selection of molecules that influence specific metabolic roles in all living things, it is likely that the search for pharmacologically active compounds following integrated studies will play an important role in the future.

Avances en el estudio de la planta patagónica *Nardophyllum brioydes*

Dra. Marianela Sanchez. UMYMFOR-Dpto. de Química Orgánica, FCEN-UBA, CONICET, CIT VILLA MARÍA-UNVM, CONICET. Email: sanchezmnela@gmail.com

Nardophyllum brioydes is a plant native to South America, widely distributed in the Argentine-Chilean Patagonia. From its aerial parts were isolated pentacyclic triterpenes, ent-halimanes and seco-ent-halimanes, among which the secochiliolide acid stands out. This is the major compound present in the plant, it possess unusual structural motives and shows activity against *Trypanosoma*. Several derivatives were synthesized mainly by modification of the carboxyl group present in this compound, and to a lesser extent by transformation of the tetrasubstituted alkene. Some of the obtained derivatives were active against *T. brucei*, *T. cruzi* and *Plasmodium falciparum* in both in vitro and in vivo assays.



From the ethanolic extract of the roots, several pentacyclic triterpenes were isolated and identified, together with two novel compounds: nardoquinones A and B. These isomeric compounds have an o-quinone structure, probably originated by means of a radical reaction from a common precursor.

The last results obtained from the chemical research of this promising Patagonian species together with its biological activity data will be presented.

Potencial sinergia de los aceites esenciales en combinación con antibióticos comerciales

Dra. Beatriz Viviana Lima. Instituto de Biotecnología, Facultad de Ingeniería, Universidad Nacional de San Juan. CONICET. Email: blima.unsj@gmail.com

The high rate of fungal infections, along with the limited efficacy and high toxicity of available antifungal drugs, render imperative the need for the development of new potential therapeutic options against the most important clinically fungi. A possible solution may be to combine existing antibiotics with essential oils (Eos) to enhance the efficacy of them. The antibiotics have several modes of action and the essential oil components may act synergistically, affecting multiple targets; by physicochemical interactions and inhibiting antifungal-resistance mechanisms. Many reported assays show additive or moderate synergism, indicating that EOs may offer possibilities for reducing antibiotic use. Herein, it presents el effect of the essential oils obtained from species of the native flora combined with commercial antifungals; the approach was to develop potential antifungal with a minor toxicity and most effective. The checkerboard test, that evaluates the effect of interactions between two antimicrobial substances, was the method used. The combined effects between EOs of eight species from San Juan province and three commercial antifungals, against yeast and dermatophyte strains of clinical relevance, analyzed with the Fractional Inhibitory Concentration Index (FICI) values. Synergistic effect was observed (FICI =0.31) between *A. cryptantha* EO (4000 m a.s.l.) in combination with fluconazole against *C. albicans*, while that against *C. neoformans*, the *A. mendozaana*, *A. cryptantha* (2700 m a.s.l.). *L. integrifolia* EOs showed an additive response (FICI = 0.62, 0.75, 0.75, respectively). Regarding dermatophytes, *A. seriphioides* and *A. cryptantha* EOs combined with terbinafine displayed an additive effect against *T. rubrum* (FICI = 0.56) and *M. gypseum* (FICI=1.03). All combinations showed doses reductions regard evaluated antifungals (dose reduction index, DRI 16.25 and 32). The EOs of species collected in the province of San Juan in combination with commercial drugs could for the development of a new antifungal agent useful for the treatment of infections associated with *C. albicans* and *T. rubrum*, thus minimize the side effects, and prevent the emergence of antifungal resistance. Despite the promising results given by in vitro studies there is still need to find molecular basis of mode of action of these EOs. Acknowledgement: CICITCA, UNSJ and PIO.CONICET SECITI Gob de San Juan 022.

Conferencia Final

Vinculación Tecnológica en Salud

Dra. Ana Paula Fernandes (Brasil). Vaccine Technology Center (CTVacinas) of the Federal University of Minas Gerais, at the Technology Park of Belo Horizonte, Brazil. apfernandes.ufmg@gmail.com