



**XXXVI  
REUNIÓN  
CIENTÍFICA  
ANUAL**



**DE LA SOCIEDAD DE  
BIOLOGÍA DE CUYO**

**ASPECTOS BÁSICOS TRASLACIONALES  
EN CIENCIAS BIOLÓGICAS**

**6 y 7 de diciembre de 2018**



*XXXVI Reunión Científica Anual de la Sociedad de Biología de Cuyo, Mendoza, Argentina.*

# **Libro de Resúmenes**

## **XXXVI Reunión Científica Anual**

### **Sociedad de Biología de Cuyo**



6 y 7 de Diciembre de 2018

**Nave Universitaria**

Secretaría de Extensión Universitaria de la  
Universidad Nacional de Cuyo

Juan Agustín Maza 250, Mendoza

Argentina





build maps that contained information about the dynamics of Chl-a in the entire surface of the reservoir under study. These techniques can be used to expand the knowledge on the dynamics of the Cassaffouth reservoir, of which there are very few antecedents, and also they can be applied as baselines to develop an early warning system of both this and other reservoirs in the region.

## 224. DEVELOPMENT OF POLYMERIC SYSTEMS BASED ON ESSENTIAL OILS AND EVALUATION OF THEIR REPELLENT ACTIVITY AGAINST *Triatoma infestans*

López S<sup>1</sup>, Tapia A<sup>1</sup>, Abraham G A<sup>2,3</sup>, Cortez Tornello P R<sup>2,3</sup>.

<sup>1</sup>Instituto de Biotecnología-Instituto de Ciencias Básicas, FI, UNSJ, Argentina; <sup>2</sup> CONICET; <sup>3</sup>Instituto de Investigaciones en Ciencia y Tecnología de Materiales, INTEMA(UNMdP-CONICET), Mar del Plata, Argentina -Email: sandralopez@unsj.edu.ar

Chagas disease is a very complex zoonosis that is present throughout the territory of South America, Central America and Mexico, and continues to represent a serious threat to the health of the countries of the region. The main strategies used to interrupt vector transmission of *Tripanosoma cruzi* by *Triatoma infestans* (primary responsible for the Chagas disease transmission), are the elimination or reduction of its abundance in homes through the application of insecticides with residual power, and environmental management through the improvement of housing. The abuse of conventional pesticides has led to serious consequences such as toxic residues, development of resistance, increase of secondary pests and, in general, problems of toxicity. Faced with these problems, there is a need to change the application strategies of insecticides and look for new methods of pest control that are respectful of the environment and the health of people. Essential oils have been presented as an alternative in the control of insect pests- due to its low toxicity -in mammals, little residual life in the environment, and fewer requirements imposed by the legal framework, because they enjoy social acceptance due to the widespread use of aromatic species. The repellents, although they do not kill the insect, are a good preventive alternative to avoid the bite of the vectors. The aim of this work was the development of polymeric systems based on three essential oils (SPAES) previously selected, and the evaluation of their potential repellent activity against *T. infestans*. Aerial part of *Acantholippia seriphioides*, *Artemisia mendozana*, *Azorella cryptantha*, *Azorella trifurcata*, *Baccharis grisebachii*, *Gymnophyton polycephalum*, *Larrea nitida*, *Tagetes mendocina*, *Zuccagnia punctata*, were collected from Central Andes area, Argentina, during the 2017-2018 flowering period and were hydrodistilled in a Clevenger type apparatus for 1 h, according to the method recommended by the European Pharmacopoeia and characterized by GC-FID and GC/MS analyses. Repellency on *T. infestans* nymphs was determined following to a standard method. Polymeric systems with different morphology (films and microparticles) were prepared\_ by incorporation of selected essential oils, according to previously reported methodologies *Artemisia mendozana*, *Azorella cryptantha* and *Zuccagnia punctata* showed a repellent activity against *T. Infestans* of (60-90%) equivalent to IV-V class. Authors are grateful to CICITCA-UNSJ, and UNMdP.

## 225. NEMATICIDAL ACTIVITY OF *Zuccagnia punctata* V. (FABACEAE) AGAINST *MELOIDOGYNE INCOGNITA*

Manrique S<sup>1,2</sup>, Simirgiotis MJ<sup>3,4</sup>, Bórquez J<sup>5</sup>, Feresin GE<sup>1,2</sup> Tapia A<sup>1,2</sup>

<sup>1</sup>Instituto de Biotecnología-Instituto de Ciencias Básicas- Universidad Nacional de San Juan, San Juan, Argentina. <sup>2</sup> CONICET, Argentina. <sup>3</sup>Instituto de Farmacia, Facultad de Ciencias, Universidad Austral de Chile, Valdivia, Chile. <sup>4</sup> Center for Interdisciplinary Studies on the Nervous System (CISNe), Universidad Austral de Chile, Valdivia, Chile. <sup>5</sup>Laboratorio de Productos Naturales, Facultad de Ciencias Básicas, Universidad de Antofagasta, Chile. E-mail: smanrique@unsj.edu.ar

*Meloidogyne spp.*, commonly known as root-knot nematodes, is considered one of the principal phytoparasitic nematodes species that infect a wide range of host plants, being responsible of serious damages on crops. Nowadays, nematode's management is limited to chemical control using highly toxic organophosphate and carbamate compounds, which raises the need of new nematicides agents of natural origin. The aim of this work was to evaluate the nematicidal activity of lyophilized decoction (LD) and dichloromethane exudate (DCME) obtained of the aerial parts from *Z. punctata* against *Meloidogyne incognita* (at the second larval stage) as well as their chemical characterization by UHPLC OT-MS. *M. incognita* egg masses were isolated from infected chard roots and placed in Petri dishes with sterilized water. Once the juveniles at second larval stage emerged, 30 individuals were collected in 60 x 15 mm Petri dishes with 5 mL of distilled water. The nematicidal activities LD at a concentration of 0.5 % (w/v), as well as the DCME at a concentration of 0.5 % (w/v) were evaluated. Dishes were incubated in the dark at 25° C and inactive nematodes were counted after 24, 48 and 72 h using a binocular microscope. Distilled water (DW) was used as a positive control. For LD and DCME, the treatments were replicated three times. Differences significative were obtained between the measurements (24 h: LD 60 % (b) DCME 80 % (b) DW 11 % (a), 48 h: LD 89 % (b) DCME 76 % (b) DW 20 % (a), 72 h: LD 73 % (b) DCME 91 % (b) DW 22.6 % (a)  $p \leq 0.05$ ). The bioassay-guided fractionation by Sephadex LH 20 and silica gel column of DCME led to the isolation of the compound 2',4'-dihydroxy-3'-methoxychalcone (C1) and 2',4'-dihydroxychalcone (C2), which showed a strong nematicidal activity at a concentrations of 0.25 % (24 h: C1 98 % b C2 100 % b DW 11 % a, 48 h C1 98 % b C2 98 % b DW 11 % a, 72 h C1 100 % b C2 100 % b DW 13.33 % a ). LD and DCME from *Z. punctata* showed great potential like alternative control against *M. incognita*. Authors are grateful to CICITCA-UNSJ.

## 226. URBAN TREES GROWTH AND WATER STRESS. RELATIONSHIP BETWEEN ANNUAL TREE-RINGS AND CALCIUM SIGNAL: RESULTS USING LASER-INDUCED BREAKDOWN SPECTROSCOPY (LIBS).



Martinez CF 2, Roig FA 3 1 Instituto de Ambiente, Hábitat y Energía -INAHE-. 2 Instituto Argentino de Nivología y Graciología - IANIGLA-Centro Científico Tecnológico (CCT CONICET Mendoza). 1 Investigadora INAHE CCT CONICET Mendoza. E-mail: cmartinez@mendoza-conicet.gob.ar

The water availability incidence in the urban trees growth can be quantified by dendrochronological analyzes. The tree-rings time serie constructions allow evidence the differential thickness of the annual rings and their chemical composition. *Platanus hispanica* Tend, a frequent and representative tree-specie in the urban landscape of Mendoza-Argentina, was studied. We analyzed at anatomical and dendrochemical level, in a comparative way, the tree-rings growth of different thickness: wide -that indicates an adequate water availability- and narrow -resulting by growth under water restriction-. Methodologically, the analytical technique called Laser-Induced Breakdown Spectroscopy-LIBS- is applied, and also tree-ring measurements. This method allows us to evaluate the chemical content present in wood, particularly those related to drought periods, such as Calcium. The first results for studied cases -Urban and Periurban- indicate as tendency that the average Calcium tenor is proportional to the thickness of the tree-rings. The periurban trees have a lower content than those located in an urban condition, where the soil content of this element is higher given the greater urbanization of the area. In future studies and with a larger number of cases, we expect to develop a water stress indicator based on the qualitative and semi-quantitative content of Calcium in tree-rings, which will allow us to know the response and adaptation mechanisms of this tree-specie, to drought and water deficit.

## 227. ATTRIBUTES OF BIOLOGICAL CRUST FOR USE IN THE RESTORATION OF ECOSYSTEMS, MENDOZA

Navas Romero A L (1), Martínez Carretero E (1), Herrera Moratta M A (1), Duplancic A (1-2)

1 - Instituto Argentino de Investigación en Zonas Áridas - CCT-Mendoza. 2 - Facultad de Ciencias Exactas y Naturales - Universidad Nacional de Cuyo. Email: analauranavas@gmail.com

In Argentina, more and more human activities result in a significant deterioration of the biological surface of the soil. Biological soil crusts (CB) provide significant ecosystem services to drylands. With the intention of knowing CB attributes that allow evaluating their role in restoration, our objective was to determine the stability, compaction, moisture retention, content of organic matter, nitrogen, phosphorus, temperature and radiation in soils covered with biological crusts. The study area was located in the Dept. Las Heras, Mendoza. Thirty blocks of 2 m<sup>2</sup> were built at random in the extension of the interparche. Each block was made up of two zones, one with a biological crust (CCB) and another without a biological crust (SCB), separated by 50 cm. In each block soil stability (Herrick's test), compaction (dual penetrometer), moisture retention (saturation and weighing), content of organic matter (calcination), nitrogen (Kjedahl), phosphorus (photometry of flame), temperature (digital thermometer) and radiation (point radiometer) were measured. Significant differences were found (p <0.001) in the compaction, stability, content of organic matter, nitrogen, temperature and humidity between CCB zones and SCB zones. The stability, organic matter, nitrogen, phosphorus and moisture retention turned out to be higher in CCB zones, but not the radiation, temperature and compaction that showed a decrease. The biological crusts seem to resist high levels of radiation, improve the fertility and physical properties of the soil and act as thermal shock absorbers, becoming a plausible alternative for the recovery of degraded ecosystems.

## 228. SUSTAINABLE EXTRACTION AND ISOLATION OF ALKALOIDS FROM THE LEAVES OF *HIPPEASTRUM ARGENTINUM* (PAX) HUNZ.

Ortiz JE<sup>1</sup>, Tapia AA<sup>1</sup>, Feresin GE<sup>1</sup>

<sup>1</sup>Instituto de Biotecnología, Facultad de Ingeniería, Universidad Nacional de San Juan. E-mail: jortiz@unsj.edu.ar

The Amaryllidaceae alkaloids have shown a broad range of pharmacological and biological activities, including acetyl cholinesterase (AChE) inhibition, and antitumoral, antibacterial, antifungal, antiviral and antimalarial activities. The extensive structural diversity of this group of alkaloids promotes the research for the development of new drugs. Until now, only galanthamine is being for the palliative treatment of mild to moderate Alzheimer's disease (AD). It is a long-acting, selective, reversible and competitive inhibitor of AChE and an allosteric modulator of the neuronal nicotinic receptor for acetylcholine. The extracts obtained from Amaryllidaceae bulb usually show complex alkaloid profiles. To isolate these alkaloids bulbs are used, this implying the loss of the plant. Sometimes is requiring more biomass, but due to ecological and conservation aspects cannot be performed. The alkaloid 7-OH-clivonine is a cholinesterase inhibitor previously identified in the leaves of *Hippeastrum argentinum*. The aim was in a sustainable way to isolate the 7-OH-clivonine using the leaves of *H. argentinum*, to deepen the studies of bioactivity. The fresh and totally developed leaves were collected (between November 2017 and March 2018), and then dried and crushed. Then, the alkaloid extract was prepared. The extract yield related to the dried plant material was >1% w/w, showing a higher yield than that of the bulbs. Chromatographic methods (LC, Sephadex LH20, PTLC) and crystallization were applied to isolate the alkaloid 7-OH-clivonine. The studies based on *H. argentinum* leaves represent an ecological, sustainable and effective alternative for Amaryllidaceae alkaloids research. Acknowledgement: CICITCA- UNSJ, ANPCYT PICT 2014-3425. Red CYTED-BIFRENES. Proy 416RTO511

## 229. EFFECT OF ANTROPIZATION ON THE TARDIGRADE COMUNITES URBAN

Ostertag B R<sup>1</sup>, Rocha A M<sup>1</sup>, González-Reyes A X<sup>2</sup>, Suárez C E<sup>3</sup>, Corronca J<sup>2</sup>, Rodríguez-Artigas S<sup>2</sup>, Doma I L<sup>1</sup>, Pérez M S<sup>1</sup>

<sup>1</sup>FCE&N, UNLPam; <sup>2</sup>FCN-IEBI, UNSa-Argentina; <sup>3</sup>FA, UNLPam. E-mail: belenostertag@gmail.com