



## ***TUCUMAN BIOLOGY ASSOCIATION***

(Asociación de Biología de Tucumán)

Abstracts from the

## **XXVIII ANNUAL SCIENTIFIC MEETING**

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125.

**USE OF NATIVE *Bacillus thuringiensis* RT TO CONTROL *Spodoptera frugiperda* IN MAIZE PLANTS**

Carrizo AE, Loto F, Pera LM, Baigori M.

PROIMI-CONICET. Av. Belgrano y Pje Caseros. 4000. Tucumán. Argentina. E-mail: lymb32@gmail.com.ar

*Bacillus thuringiensis* (*Bt*), which produces the delta-endotoxin, is widely used in the biological control of *Spodoptera frugiperda* (*Sf*) (Lepidoptera: Noctuidae), a key pest of corn in northwest Argentina. The native *Bt* RT (16S rDNA partial sequence deposited in GenBank, accession number EF638795) was used. Entomopathogenic cultivation was developed at 30°C in a fermentor (Labfors 3) with a working volume of 3 l, using a culture medium formulated with agro-industrial wastes. The product was applied on maize plants using an airbrush (n=15 for each condition). Bioassays were conducted in a climate chamber with third stage *Sf* larvae (corn biotype). The following lots were analyzed: a) uninfected plants, b) infected plants, c) infected plants sprayed with sterile culture medium, d) infected plants treated with *Bt*. After 7 days, the experiment was stopped and mortality was calculated according to the Henderson-Tilton formula, using as control treatment b. The dry weight of aerial parts of plants was also assessed. After 5 days of incubation, the culture reached 1,164 x 10<sup>6</sup> crystals/ml, 83 x 10<sup>6</sup> spores/ml and 76 x 10<sup>6</sup> vegetative cells/ml. The mortality after 7 days was 76%. There were no significant differences between the dry weights of aerial parts of uninfected plants and those treated with *Bt*.

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126.

**CHARACTERIZATION OF METABOLITES WITH ANTIFUNGAL ACTIVITY PRODUCED BY *Bacillus* IBA 33**

Gordillo MA, Navarro AR, Maldonado MC.

Inst. de Biotecnología. Fac. de Bioquímica, Química y Farmacia. UNT. Ayacucho 465. (4000) Tucumán. Argentina. E-mail: biotec@fbqf.unt.edu.ar

The main problem in citrus culture is sour rot disease (*G. candidum*), which is controlled by synthetic chemicals. Alternative systems for biological control of plagues are being implemented. The aim of this work was to characterize the metabolites of *Bacillus* IBA33 by stability to temperature and enzymatic digestion tests. Stability Temperature Test: The residual antifungal activity of metabolites was evaluated after treatment at 4°C (2 months) 40, 60 and 100°C (30 min). Enzymatic Digestion Test: Residual antifungal activity was evaluated after treatment for 2 h at 37°C with Trypsine (50 µg/ml), α-Chymotrypsin (10 mg/ml), Protease (10 mg/ml) and Proteinase K (20 mg/ml). Antifungal activity was evaluated by antagonism against *G. candidum* in microplates. Metabolites of *Bacillus* IBA 33 were resistant at 40 and 60°C and maintained the same antifungal activity as before treatment. At 100°C, residual activity was 50% lower. Metabolites of *Bacillus* IBA 33 were resistant to digestion with Trypsine, whereas with Protease α-Chymotrypsin and Proteinase K lost 25, 75 and 100% of antifungal activity, respectively. The results showed that metabolites have important thermal stability and also demonstrated the peptidic nature of the metabolites of *Bacillus* IBA 33.

127.

**COMBINED ANTIFUNGAL ACTIVITY OF TRIPODANTOSIDE AND AMPHOTERICIN B AGAINST *Candida* SPECIES YEASTS**

Soberón JR, Sgariglia MA, Sampietro DA, Vattuone MA.

Cátedra de Fitoquímica, Instituto de Estudios Vegetales "Dr. A.R. Sampietro" (IEV), Facultad de Bioquímica, Química y Farmacia. Universidad Nacional de Tucumán. Tucumán. Argentina. E-mail: jrsrody@yahoo.com

Fungal infections caused by yeast pathogens are common in immunocompromised patients. *Candida* spp. represents the major group of yeasts recovered from these patients. The limited number of available antifungal drugs (azoles, polyenes and pyrimidine analogues), their toxicities and resistance make it necessary to find new antifungal drugs. The main constituent of *Tripodanthus acutifolius* (Ruiz & Pavon) van Thieghem leaves is tripodantoside (TP), a phenylbutanoid with no data about its antifungal effects. The antifungal activities of TP and amphotericin B (AMB), both individually and combined, were assayed against *C. albicans* (ATCC10231) and *C. tropicalis* (ATCC750) using the broth microdilution method. TP showed inhibitory effects against both strains at 20 µg.mL<sup>-1</sup>. The association of TP+AMB resulted in additive effects against both strains when combined assays were performed. The combination of TP+AMB could diminish the AMB therapeutic doses and the toxicity associated with the use of AMB. The antifungal activity of TP supports the need for further studies of its action modes.

128.

**ANTIBACTERIAL ACTIVITY OF PROPOLIS FROM NEUQUÉN, ARGENTINA**

Villoldo NC, Sampietro DA, Vattuone MA.

Cátedra de Fitqca., Instituto de Estudios Vegetales; Laboratorio de Biología de Agentes Bioactivos y Fitopatógenos (LABIFITO), FBQyF. UNT. Ayacucho 471.4000. Tucumán. E-mail: nataliavilloldo@hotmail.com

**Introduction:** Propolis, which is produced by bees, is used to prevent bacterial and fungal infections in the hive. It is widely used in folk medicine because it contains high levels of bioactive compounds. **Aim:** To determine the antibacterial activity of ethanolic extracts of partially purified propolis (EPPP) from different areas of Neuquén, Argentina (Centro B, Note A and Confluencia). **Methods:** The susceptibility testing was performed using macrodilution assays. Dilutions of EPPP were mixed with Mueller Hinton agar medium in Petri dishes. Bacterial strains of Collection ATCC and local bacterial isolates (IEV) were used. **Results and Conclusions:** All extracts inhibited the growth of the tested strains. Centro B extract had the lowest minimum inhibitory concentration (MIC) for *E. coli* ATCC 25922 and *P. aeruginosa* ATCC 27853 (11.77 µg / ml). Confluencia extract had the lowest MIC for *E. coli* IEV301 (12.21 µg / ml) and Norte A extract was more bioactive against *P. aeruginosa* ATCC 27853 (MIC: 8.80 µg / ml). The highest MIC value was observed for *S. aureus* ATCC 29213. These are promising results suggesting that these extracts could be used to treat bacterial infections.