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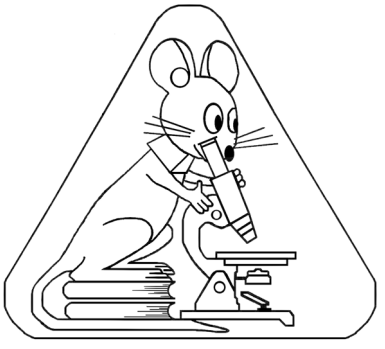

TUCUMAN BIOLOGY ASSOCIATION

(Asociación de Biología de Tucumán)

Abstracts from the

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Co1.

INHIBITION OF *Paenibacillus larvae*, THE ETHIOLOGICAL AGENT OF AMERICAN FOULBROOD IN HONEY BEE, BY DIFFERENT EXTRACTS FROM *FLUORENSIA* SPP.

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Paenibacillus larvae is the ethiological agent of American foulbrood in *Apis mellifera* L. The aim of the present work was to investigate the antagonistic activity of three species of the genus *Fluorensia* against *P. larvae*.
Hexane, chloroform (CE) and ethyl ether (EEE) extracts from the aerial parts of *Flourensia riparia, F. fiebrigii* and *F. tortuosa* were obtained. Inhibitory activity was evaluated against three different strains of *P. larvae* using the disk diffusion method in MYPGP agar. The toxicity of the most active extracts on bees was evaluated using the complete exposure technique.
The analysis revealed that all different *Flurorensia* extracts tested inhibited insect growth; however, non-polar extracts had no significant inhibitory effect. The magnitude of the antagonistic effect depended on the chemical nature of the extract and on the *P. larvae* strain. CE and EEE from *F. riparia* and EEE from *F. fiebrigii* were the most active extracts against *P. larvae* Azul, the most sensitive indicator strain (MIC values 283 ppm, 1932 ppm and 2481 ppm).
Toxicity tests showed no lethal effects on exposed bees.These results show that the above extracts are a viable alternative for use on infected *P. larvae* hives.

Co2.

PRODUCTION OF DELTA-ENDOTOXIN AND HYDROLYTIC ENZYMES BY *Bacillus thuringiensis* RT IN TWO CULTURE MEDIA FOR *Spodoptera frugiperda* CONTROL

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Biopesticides prepared from *Bacillus thuringiensis* (*Bt*) are an option for pest control for agriculture, forestry and public health. This microorganism produces delta-endotoxin (DE) and hydrolytic enzymes that increase its pathogenicity to target insects and could be exploited industrially. The aim of this work was to evaluate the production of DE and hydrolytic enzymes from *Bt* RT in two culture media. The native isolate *Bt* RT was grown in both LB and M5 medium (formulated from agro-industrial wastes). DE was determined using the alkaline solubilization method. Hydrolytic activities were evaluated using the agar diffusion method. Halos were developed with iodine vapors. The product obtained in both media was tested against *Spodoptera frugiperda* (*Sf*) larvae on artificial diet and maize seedlings. After 5 days, 155.67 and 664.32 mg/L of DE was detected in LB and M5, respectively. Concerning the hydrolytic activities, the following radii (mm) were measured: amylase (LB: 0, M5: 2.2), carboxymethylcellulose (LB: 0.5, M5: 8.0), protease (LB: 1.1, M5: 5.3), chitinase (LB: 0.5, M5: 8.9) and xylanase (BL: 0, M5: 6.2). The effectiveness of the formulations against *Sf* was 100% for M5 using both diet and seedlings and 61.40% (diet) and 58.33% (seedlings) for LB.
Project supported by PIP 297 and CIUNT 26/D409.

Co3.

ANTIBACTERIAL ACTIVITY OF AN AQUEOUS EXTRACT OF *Caesalpinia gilliesii* (Wall.ex Hook.) LEAVES

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The Argentinian endemic *Caesalpinia gilliesii* (Fabaceae) is popularly used as an analgesic. No bibliographical background was found concerning *C.gilliesii* antimicrobial activity. The aim of this work was to evaluate the antibacterial activity (ABA) *of C.gilliesii* leaf infusion (CGLI).
CGLI was prepared following Farmacopea Arg. VI Ed. Phenolic compounds (PC) were determined using the Folin-Ciocalteu method. ABA was assayed by bioautography. MICs and MBCs were determined (broth microdilution, CLSI).Tested bacteria (ATCC) were: *Escherichia coli* 25922, *Staphylococcus aureus* 29213, *S.aureus* 25923 and *Enterococcus faecalis* 29212. Quality control was made with ciprofloxacin (MIC_{25922}:0.015 µg/ml; MIC_{29213}:0.25 µg/ml).
The extraction yield was 36.27% (w/w) and 3.89% (w/w) for PC. *E. coli* 25922 and *S. aureus* 29213 growth inhibition was observed with 932 and 466 µg of extracted material (EM), respectively. *S.aureus* 29213 was the most susceptible microorganism (MIC 18630 µgEM/ml), followed by *E.faecalis* 29212 (MIC 37260 µgEM/ml). *E.coli* 25922 and *S.aureus* 25923 MICs: 74530 µgEM/ml.
CGLI showed inhibitory and bacteriostatic action on the tested bacteria. *C.gilliesii* is a potential source of antibacterial compounds against pathogens. Extract purification to characterize the active compounds is being performed.

Co4.

ANTIBACTERIAL ACTIVITY OF WATER ACTIVITY, LEMON ESSENTIAL OIL AND *Leuconostoc mesenteroides* ON *Escherichia coli* GROWTH IN TOMATO PUREE AT 4 AND 30°C

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In a previous work we demonstrated that *Leuconostoc mesenteroides* ssp. *mesenteroides* Tsc inhibited the development of the autochthonous microflora on tomato purée. We investigated the antibacterial effect of reduced water activity (0.97), lemon essential oil (150 ppm), *L. mesenteroides* Tsc and its metabolites, D-lactic (3.5 g/l) and acetic (3.0 g/l) acids, on *E. coli* ATCC 25922 growth in tomato purée at 4 and 30°C. At 30ºC *E. coli* ATCC 25922 grew about 2 log cycles for 24 h, thereafter followed by complete elimination at day 10. At refrigeration temperature, it did not develop but survived during storage. In culture performed with the Tsc strain or D-lactic and acetic acids the initial population of *E. coli* began to decrease rapidly, no viable cells being detected at 3-4 days at 30ºC. In this condition the reduced a_w also showed a significant inhibitory effect. At 4ºC, the Tsc strain or its metabolites showed the highest inactivation rates, although to a lower extent than at the higher temperature. In both tested conditions lemon essential oil caused the lowest inactivation rate. In conclusion, the Tsc strain and its metabolites would be more efficient for potential application for the preservation of minimally processed vegetable products.