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In memoriam Dr. Julia Marina Oterino

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The abstracts have been revised and evaluated by the Scientific Committee
of the Tucumán Biology Association

181.
AMYLOLYTIC ENZYMES PRODUCTION WITH A RECOMBINANT PICHIA PASTORIS STRAIN

Savoy P², Díaz Alfaro M¹, Moraes LMP de³, Lucca ME^{1,2}
¹PROIMI-CONICET, ²UNT, Tucumán, Argentina. ³Biología Celular, UnB, Brasilia, Brasil. E-mail: mlucca@proimi.org.ar

Pichia pastoris PGK α -G recombinant strain that produces a fusion protein (α -amylase *Bacillus subtilis* and glucoamylase *Aspergillus awamori*) under *PGK1* promoter gene was used.

The pPIC9+fusion was digested with XhoI NotI enzymes to yield the fusion fragment. The vector pPGK Δ 3AMY (constructed by Dr. F. A. G. Torres and A. Arruda) was digested with the same enzymes for directed ligation. The fragments were ligated and transformed into *E. coli* XL10-Gold strain. The recombinant plasmids were analysed by HindII digestion and one clone with the correct profile was used to transform *Pichia pastoris* X33 strain. Influence of the carbon source (glucose, sucrose, lactose, glycerol and starch) on biomass growth was studied. PGK α -G strain produced amylolytic enzymes with all carbon sources tested. Glucoamylase and α -amylase activities were also tested in chemostat with glucose as the sole carbon source. Maximum activity (U/ml) in batch for α -amylase and glucoamylase was 99.00 and 46.43 respectively. In continuous culture at D=0.08h⁻¹ and D=0.25h⁻¹, volumetric productivity of both enzymes was 0.92 and 2.38 U glucoamylase/ ml.h and 10.4 and 28.7 U α -amylase/ ml.h.

182.
BIOETHANOL PRODUCTION BY YEASTS ISOLATED FROM SUGAR CANE MOLASSES

Muruaga ML, Rodríguez Prado M, Perotti NI, Abate CM.
 PROIMI - UNT Av. Belgrano y Pje Caseros. SM de Tucumán (4000).
 E-mail: cabate@proimi.org.ar

Introduction. The use of ethanol as a biofuel offers a wide range of promising alternatives which includes the decrease in negative impact on the environmental and the possibility of safe energy.

Objective. To isolate highest bioethanol producer yeasts from sugar cane molasses. **Materials and methods.** Yeast strains were isolated from sugar cane molasses samples obtained from different sugar factories in Tucumán using YPD and YPS solid mediums with antibiotics. Fermentations assays were carried out in glass flasks with 200 mL of YPS medium with 250 g/L of sucrose and were incubated at 30°C. Residual sugars, biomass and ethanol concentrations were determined. **Results and Discussion.** Three isolated yeasts with a high fermentative power were evaluated: A2, A10 and A11, which produced 11.74, 14.09 and 13.55% of ethanol respectively. A10 strain was selected for further studies because the highest ethanol concentration as well as specific productivity values were obtained with this strain.

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183.
ANNONACEOUS ACETOGENINS STIMULANTS OF BIOFILM FORMATION IN AROMATIC HYDROCARBON-DEGRADING BACTERIA

Parellada E¹, Rodríguez A^{1,2}, Cartagena E¹, Ferrero M¹, Neske A¹, Bardón A¹

¹Instituto de Química Orgánica, Facultad de Bioquímica, Química y Farmacia. Universidad Nacional de Tucumán, Ayacucho 471. (4000) Tucumán, Argentina. ²PROIMI-CONICET, Tucumán, Argentina. E-mail: aneske@fbqf.unt.edu.ar

Previous studies in our lab showed that annonaceous acetogenins (ACG) extracted from *Annona cherimolia* (Annonaceae family) stimulate biofilm formation in polyaromatic hydrocarbons (PAH) degrading bacteria with no natural ability for biofilm production. The ACG are structurally related to the γ -lactones, a family of bacterial autoinductors that plays an essential role in "quorum sensing" mechanisms to coordinate biofilm maturation. In this work, 7 PAH-degrading strains were tested for their attachment capability and biofilm development on polystyrene microplates using ACG as a biofilm inductor. Out of 7 strains tested, 3 showed natural formation of bacterial biofilm that increased in the presence of annonacin-A, laherradurin and cherimolin-2 (159, 64.0 and 41.5% respectively). In this way, different ACG stimulate biofilm formation in environmental bacterial strains. These strains were therefore selected for future trials to determine their mode of action.

184.
CONSTITUENTS OF *Acanthospermum hispidum* FOR CONTROL OF *Oryzaephylus surinamensis*

Alva M¹, Fernández R¹, Arrighi F¹, Popich S^{1,2}, Cartagena E¹, Bardón A¹.

¹Química Orgánica III, Fac. de Bioqca., Qca. y Farmacia. UNT. Tucumán, Argentina. ²Departamento de Ciencias Básicas, Físicas y Naturales. Universidad Nacional de Chilecito. La Rioja, Argentina.

Oryzaephylus surinamensis L. (Coleoptera, Cucujidae) is a cosmopolitan pest capable of feeding on a variety of stored grains and dried products. In Tucumán, we find it frequently attacking rice. In order to develop more environmentally safe and easily biodegradable insecticides, we conducted feeding preference bioassays with extracts and volatile constituents of *A. hispidum* DC at 250 ppm. The CHCl₃ extract was found to be a neutral substance, with a preference index (PI) of -0.05, while that the free waxes CHCl₃ extract showed repellent effect (PI = -0.14). The hexane extract, rich in little polar substances, proved to be attracting (PI = 0.273). An odorant fraction, obtained by column chromatography with a 15% of AcOEt from a CHCl₃ subextract, was shown to be repellent (PI = -0.375). The wax-free extract and the fraction with a pleasant smell will be selected for the development of natural agrochemical formulations for the rational control of insects.