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L1.**“Miguel Lillo” Lecture****MOLECULAR BIOLOGY OF PITUITARY TUMORS AND TUMORS FROM THE CENTRAL NERVOUS SYSTEM: NEW GENES INVOLVED, HYPOXIA AND SENESENCE***Arzt E.**Instituto de Investigación Biomedicina de Buenos Aires (IBioBA), Argentina - CONICET- Partner Institute of the Max Planck Society.*

Tumors from the Central Nervous system can be very aggressive (i.e. gliomas) or benign (i.e. pituitary tumors), the last being detected as silent adenomas in a significant number of autopsies.

With the aim of identifying genes involved in the development and benign behavior of pituitary tumors, we used the mRNA differential display technique comparing tumor and normal pituitary cells. Two genes have been identified to be involved in pathogenesis process: in prolactinomas obtained from Dopamine D2R knockout female mice, we have found differential expression of the cytokine BPMP-4 and in clones of the tumoral lactosomatroph cell line GH3 cell line overexpressing the cytokine IL-6 signal transducer gp130, which have enhanced tumorigenicity in nude mice, we found the expression of a novel gene RSUME.

BMP-4 has a dual role in lactotrophs and corticotrophs: it is augmented (and its antagonist noggin decreased) during prolactinoma development stimulating this cell proliferation, while, on the contrary, in corticotrophinomas BMP-4 has an inhibitory action. In both cases the action is different of that of TGF beta and involves a cross talk of smad-4 with steroid receptors. RSUME expression is induced under hypoxic conditions, increases VEGF and HIF expression, which correlates with increased angiogenic potential of the lactosomatroph gp130 (IL-6R) clones. IL-6 is involved in a novel mechanism of OIS (oncogen induced senescence), which may explain the low appearance of metastasis in this type of tumors. RSUME mechanism of action involves the stabilization of these proteins through sumoylation. RSUME is overexpressed in human pituitary adenomas, particularly in necrotic areas and in other CNS tumors such as gliomas and VHL dependent tumors (i.e. hemangioblastomas) where it is involved in angiogenesis and vascularization of these tumors through a mechanisms involving HIF and VHL. These proteins provide new interesting targets for inhibiting different steps involved in the development of pituitary adenomas.

L2.**MOLECULAR MECHANISMS OF CALTRIN, THE SECRETORY PROTEIN FROM MAMMALIAN SEMINAL VESICLES***Coronel CE.**Instituto de Investigaciones Biológicas y Tecnológicas (IBYT) CONICET-Universidad Nacional de Córdoba, Argentina. E-mail: ccoronel@efn.uncor.edu*

Ca^{2+} plays a key role in sperm physiology promoting processes related to fertilization: capacitation, hyperactivation, and acrosome reaction. In sperm transit along the female reproductive tract (FRT) $[\text{Ca}^{2+}]$ can be raised by either Ca^{2+} influx through plasma membrane channels, or Ca^{2+} release from intracellular stores. High $[\text{Ca}^{2+}]$ can induce spontaneous acrosomal exocytosis (SAE) and hyperactivation at any portion of FRT, even in absence of eggs, leading to lost sperm fertilizing capability. Thus, $[\text{Ca}^{2+}]$ should be kept low until sperm reach the oviduct and conform the reservoir to wait for ovulation. Low $[\text{Ca}^{2+}]$ is kept by plasma membrane Ca-ATPase, mitochondria, and the activity of caltrin (calcium transport inhibitor). In rat, caltrin is a small and basic protein that binds to the acrosomal region of sperm head and inhibits Ca^{2+} uptake. Thus, caltrin inhibits SAE and preserves sperm function as revealed by IVF where the rate of eggs with bound sperm to ZP, the number of bound sperm per egg, and the rate of fertilized eggs are notably enhanced. As a product of *Spink3* gene, rat caltrin inhibits serine proteases and activation/activity of proacrosin/acrosin. Studies to identify caltrin receptors and to examine their effect evaluating the functional state and $[\text{Ca}^{2+}]_i$ during sperm capacitation allow to affirm that rat caltrin: a) binds only to caudal sperm by binding to HongrES1, a secretory protein of rat cauda epididymis that covers the sperm head; b) keeps lower rate of capacitated sperm; c) blocks SAE and that induced by progesterone.

L3.**EPITHELIAL CADHERIN AND RELATED PROTEINS IN REPRODUCTION AND CANCER MODELS**

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Since the establishment of the laboratory over 15 years ago, our team has developed research projects towards the understanding of mammalian fertilization at the molecular level. Because mammalian fertilization is a calcium-dependent process and involves cell-cell adhesion and signal transduction events, in recent years we have dedicated many efforts to evaluate the involvement of **Epithelial cadherin (E-cadherin)** and related proteins in gamete interaction. E-cadherin is the founder member of the cadherin superfamily, a large group of calcium-dependent proteins that mediate cell-cell adhesion. It has been extensively studied in somatic cell models, but reports on its expression in gametes and its involvement in fertilization are scarce. As the result of these studies, the expression of E-cadherin in reproductive tract tissues, spermatozoa and Cumulus Oocyte Complexes (COC) was characterized. Members of the adherent complex E-cadherin, β -catenin and filamentous actin were found to localize to the plasma membrane of both sperm and COC; similar results were obtained using mouse, bovine and human gametes. In sperm-interaction assays, monoclonal blocking antibodies significantly impaired in vitro fertilization (mouse, bovine) and sperm-oolemma interaction (human, mouse, bovine). In addition to E-cadherin, spermatozoa and COC were found to express Neural cadherin (N-cadherin) in cell regions involved in sperm-oocyte fusion; accordingly, gamete pre-incubation with a monoclonal blocking antibody towards N-cadherin significantly inhibited sperm-oocyte fusion.

In recent years we have initiated projects to evaluate E-cadherin participation in cancer-related events. E-cadherin is defined as **tumor suppressor** because its expression/functions are inversely related to tumor progression; loss of E-cadherin impairs formation of the adherent complex and triggers Epithelial to Mesenchymal Transition (EMT), with profound changes in gene expression and cell behavior; cells undergo a “cadherin switch”, with replacement of E-cadherin by N-cadherin and acquisition of a fibroblast-like invasive phenotype. We are currently studying these events using cell culture and animal models in breast, endometrial, ovarian and bladder cancer.

Characterization of expression of E-cadherin and related proteins in fertilization and cancer will help to better understand the molecular basis of both processes and to identify similarities/differences between them.

S1.1.**BIORATIONAL FRUIT FLY PESTS MANAGEMENT IN ARGENTINA. FIRST PILOT MASS REARING AND RELEASE OF A NATURAL ENEMY**

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In Argentina, two tephritid fruit fly species stand out regarding their economic and quarantine importance: the introduced, *Ceratitis capitata*, originated in Africa, and the native *Anastrepha fraterculus*. There is currently increasing interest in Argentina in combating both pests through campaigns in which conventional chemical methods are gradually being substituted by more ecological practices, such as the sterile insect technique, the use of specific lures and baits for trapping pestiferous flies, and new biological control strategies within integrated regional fruit fly management programmes. These new trends are mainly motivated by issues concerning human health and environmental safety requiring banning of the most effective insecticides and globalisation of markets. Fortunately, biological control has recently been incorporated as a significant tool that is complementary to the fruit fly control and eradication practices currently deployed in the fruit-growing areas of the province of San Juan through mass rearing of the Indo-Pacific species *Diachasmimorpha longicaudata* at the BioPlanta San Juan facility (San Juan government). The objective is perform augmentative biological control in combination with sterile fly releases in all fruit production areas of the province to achieve suppression or selected eradication of *C. capitata* populations. At present, approximately 200,000 *D. longicaudata* adults are produced weekly in the BioPlanta San Juan facility using *C. capitata* larvae of the *tsl* VIENNA 8 strain. Nevertheless, the plan is to achieve weekly production of 5 million *D. longicaudata* wasps in a second phase. Due to the high level of parasitoid production, from February to June 2012, first pilot augmentative releases of *D. longicaudata* in Argentina are being carried out on commercial fig crops in rural areas of San Juan. Parasitoids were released weekly using a ground release system at a density of approximately 5,200 parasitoids per hectare. Biological control as part of a biorational fruit fly management programme is a viable strategy for the suppression and management of both *A. fraterculus* and *C. capitata* in San Juan.

S1.2.**CHEMICAL CHARACTERIZATION AND BIOLOGICAL ACTIVITY OF ESSENTIAL OILS FROM NATIVE SPECIES FOR INSECT PEST CONTROL**

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In recent decades, the decline of traditional chemical pesticides has been emphasized due to the adverse effects on the environment and human health. Some innovative and sustainable strategies to control pest populations are focused on altering the behavior of insects. Technologies such as lure and kill, push-pull systems, and sexual confusion, are based on the need for insects to find mates, find food sources or oviposition sites.

Among the natural products, essential oils are widely recognized for its many properties on insects such as toxic agents, fumigants and repellents. Its popularity has grown by their low toxicity and consumer approval. As a consequence, the essential oil market has had the strongest growth of all the botanical pesticide markets in recent years.

Essential oils are semiochemical agents as they disrupt the behavior of insects. Therefore, development of biotechnological alternatives for the control of insect pests based on the application of semiochemicals as attractants, repellents and natural insecticides is a novel and feasible research topic.

Our research is currently focusing on the chemical composition of essential oils from native species of San Juan and their role as semiochemicals and toxic agents, which may constitute new alternatives for pest control. The presentation will illustrate the results obtained on adults of *Ceratitis capitata*, the Mediterranean fruit fly (*tsl* line) as an insect model. The assays include insecticidal, repellent and attractant activity as well as enhancers of sexual competitiveness of the sterile males produced by the mass-rearing facilities of the Province of San Juan. Here, it will be described the importance of the composition of the oils and their influence on the variation of the bioactivities studied.

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 *Flourensia* 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 *Flourensia* 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 (LB: 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.

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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 (MIC₂₅₉₂₂: 0.015 µg/ml; MIC₂₉₂₁₃: 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 30°C *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 30°C. In this condition the reduced a_w also showed a significant inhibitory effect. At 4°C, 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.

Co5.**LACTIC ACID BACTERIA: COMPATIBILITY TEST AND ACIDIFICATION CAPACITY EVALUATION***Torres N, Orosco S, Sanchez V, Chavez M.*

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The objective of this work was to evaluate the technological aptitude of lactic acid bacteria collected from dairy goat systems. Three different strains (F7, F29 and G113) isolated from goat milk samples were used; they were identified as *Enterococcus lactis* spp (16S ARNr, 99% GenBank). No incompatibility was found. Acidification capacity was tested on every single strain and on strain combinations (G113 with F7, G113-F29, F7-F29 and G113-F7-F29); strains at 2% (v/v) were inoculated into 15ml of low fat dried milk. Samples were incubated at 37°C and at predetermined time intervals (0, 6, 16, 20, 24 and 48h) pH, acidity, microbial load and coagulation times (strong coagula) were measured. Acidification ranges (lactic acid % w/v) after 24h of inoculation were 0.27-0.33 and 0.44-0.55 for single strains and strain combinations respectively. Logarithm type curves for acid production were obtained for every sample tested; at 16h of incubation the single strain produced 50-56% of the final acidity values obtained at 48h; strain combinations reached 82-92% under same conditions. pH values decreased up to 4.60-4.90 at 48h. Individual strain microorganisms and F7-F29-G113 combination grew by one order of magnitude at 16h, whereas F7-G113 and G113-F29 increased by two orders and F7-F29 by three. All samples formed strong coagula at 20h of incubation. Strains in pairs showed greater capacity to grow and to produce acid media.

Co6.**ANTIFUNGAL ACTIVITY OF A *Ligaria cuneifolia* METABOLITE AND COMBINATION WITH COMMERCIAL ANTIFUNGALS AGAINST *Candida albicans****Soberón JR, Sgariglia MA, Sampietro DA, Vattuone MA.*

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In recent years, fungal infections have increased, especially in immunocompromised hosts. *Candida* spp. represents one the major causes of fungal infection. Commonly used antifungal drugs are toxic to hosts or act as fungistatics, leading to antifungal resistance development, making it necessary to find more effective and safe antifungal drugs. A compound isolated from the methanolic extract of *Ligaria cuneifolia* leaves called MLC7 was assayed alone and combined with commercial antifungal drugs against *C. albicans* (ATCC 10231). Minimal inhibitory concentration (MIC) for MLC7 was 5 µg. mL⁻¹, with fungistatic activity. Combination assays with Amphotericin B (AMB) showed additive effects between them, with combined inhibitory activity=1.05. The association between these drugs could be used to diminish the therapeutic doses of AMB along with its nephrotoxic effects. We are carrying out assays to elucidate the chemical structure of MLC7 and its mode of action.

Co7.**INSECTS ON MAIZE-CUCURBIT ASSOCIATED CROPS IN THE IRRIGATION AREA OF SANTIAGO DEL ESTERO***Helman S, Giusti N, Maldonado C, Raña E.*

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The “fence” is an agroecosystem of polyculture practised by traditional farming families amidst the natural vegetation characteristic of semiarid Chaco. Despite the large number of studies showing the lower abundance of insect pests in polycultures, no information exists in our province on the insect species present in this type of production system. The aim of this work was to investigate the complex of insects present in the soil where a maize (*Zea mays*)–anquito (*Cucurbita moschata*) association is grown. Treatments were: T1=50% maize and 50% anquito; T2=Interspersed 2 rows maize+1 row anquito; T3=monoculture maize and T4=monoculture anquito. The experimental design was random blocks with four replications and the plots were planted in late December. Two pitfall traps were placed per plot and the captured specimens were determined at the order and family level. During the sampling period 54% phytophagous detritivores, 32% predatory insects and 6% spiders were captured. The families Cicindelidae and Carabidae (Coleoptera) represented 81% and 19% of the predatory insects captured, respectively. The most abundant predatory species was *Megacephala* sp. (F. Cicindelidae). Specimens of the family Scarabaeidae (Coleoptera) accounted for 98% of phytophagous detritivores. The number of phytophagous detritivores captured was higher than that of predatory insects in all treatments assayed.

Co8.**IN VITRO REGENERATION OF *Fragaria vesca* PLANTS FROM LEAF AND PETIOLE EXPLANTS***Hael Conrad V, Tomas Grau R, Díaz Ricci JC.*

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An efficient regeneration protocol is essential for the successful genetic transformation of plants. The objective of this work was to adjust a plant regeneration system from leaf and petiole of local accessions of *F. vesca*. Fruits were collected from the locality of Villa Nogués, achenes were extracted, scarified with sulfuric acid (96%) and plated on two culture media: half-strength MS 4% sucrose (MS1), and MS 3% sucrose (MS2) (both at pH 5.74). Cultures were maintained at 25°C, with a photoperiod of 16h light/day (40 µmoles/m².s). After 4 months MS1 was chosen because plants grown in this medium were larger. Leaf and petiole sections were excised from 4-month-old seedlings and cultured on regeneration medium (MS with 3% sucrose, 3mg/l BAP and 0.25mg/l IBA for leaves, and 1mg/l BAP and 0.25mg/l IBA for petioles, pH 5.74). Leaves and petioles regenerated as masses of undifferentiated cells called callus. 70% of leaf callus and 50% of petiole callus produced shoots. 5mm-high shoots were excised and cultured in MS1. Rooted plants were rusticated into sterile peat, kept in a humid chamber under the above conditions, and one month later placed in a greenhouse. The results obtained allowed us to select a suitable culture medium for *in vitro* germination of achenes of *F. vesca*, and to adjust an efficient plant regeneration system from leaf and petiole explants.

Co9.**EFFECT OF TEMPERATURE ON THE GERMINATION OF *Panicum maximum* JACQ***Cabrera DC¹, Chaila S¹, Sobrero MT², Pece MG³, Ochoa M del C².**¹Fac. de Agronomía y Zootecnia. UNT. ²Fac. de Agronomía y Agroindustrias. UNSE. ³Fac. de Ciencias Forestales. UNSE.**E-mail: debora_cc16@hotmail.com*

P. maximum is an important weed in sugarcane. The effect of the burning of cane fields on this weed is not well known. The aim of this study was to determine the effect of high temperatures on the germination of *P. maximum*. Caryopses with and without glumes and bracts were used. Each group was subjected to temperatures of 0, 60, 80, 100, 120, 140, 160, 180 and 200°C respectively for 5 minutes. Fifty seeds were placed in Petri dishes containing filter paper premoistened with distilled water. Incubation was performed in germination chambers (35-15°C; 14 hours of light). Germination was recorded daily for 28 days. The experimental design was factorial 2 x 9 with four replications. The results were statistically analyzed by ANOVA. In covered or uncovered caryopses there were no significant differences between 0 and 60°C and between 80 and 100°C, but there were differences between the two groups. Highest germination with uncovered and covered caryopses was recorded at 60 and 0°C (75% and 17.5%) and lowest at 100°C (12% and 2%), respectively. There was no germination above 100°C. It is concluded that the presence of bracts and glumes and temperatures above 60°C significantly reduces germination, so the burning of cane fields has a strong impact on the loss of soil seed bank.

Co10.**FIELD EVALUATION OF AMITRAZ APPLIED IN STRIPS FOR SLOW RELEASE CONTROL OF THE MITE *Varroa destructor* IN HONEYBEE COLONIES OF *Apis mellifera* L.***Pérez R, Leveratto D, Rolnec D, Marcangeli J.**Facultad de Ciencias Agrarias y Forestales UNLP. Calle 60 y 119 (1900) La Plata, Buenos Aires, Argentina. E-mail: zooamg@agro.unlp.edu.ar*

The aim of this study was to evaluate the efficacy of amitraz in colonies of *Apis mellifera* bees against the mite *Varroa destructor*. Work was carried out in La Plata in March and June 2012. A total of 10 colonies were divided into 2 groups: a) 4.13% amitraz and b) control. Each colony was given 2 amitraz-impregnated plastic strips according to laboratory recommendation. Thereafter, the colonies were given two plastic strips with 0.36% flumethrin to remove remaining mites. Samples were taken weekly from each colony special floors, removing dead mites. Efficacy of acaricide treatment was calculated as the number of dead mites -killed by amitraz- divided by the total number of mites collected (flumethrin + amitraz). The results showed differences in overall efficiency. 4.13% amitraz showed an average acaricide efficacy of $91.59\% \pm 6.41$, this being significantly higher than the control group ($p < 0.05$). These results show that amitraz represents a good alternative to be considered for the successful control of Varroa disease. The results show that amitraz is a useful agent to kill large numbers of mites. Moreover, it could be considered for a control program with the rotation of several active agents.

Co11.**INCIDENCE OF DIFFERENT SCARIFICATION METHODS ON THE GERMINATION OF *Panicum maximum* JACQ***Cabrera DC¹, Sobrero MT², Chaila S¹, Ochoa M del C², Pece MG³**¹Fac. de Agronomía y Zootecnia. ²Fac. de Agronomía y Agroindustrias. UNSE. ³Fac. de Ciencias Forestales. UNSE.**E-mail: debora_cc16@hotmail.com*

Panicum maximum (PANMA) is an established weed in the sugar cane fields of northern Argentina. There is little information about factors influencing its germination, so the aim of this work was to evaluate the effect of scarification on the germination of PANMA. Caryopses were separated from glumes and bracts for the following scarification treatments: 1) placement in an oven at 40°C (five hours); 2) irrigation with potassium nitrate solution 0.2%; 3) washing with water (five hours); 4) thermal shock (70°C water for 5 minutes and washing with running water for 2 minutes); 5) Control. Fifty caryopses were placed in Petri dishes containing filter paper premoistened with distilled water. The test was performed in a germination chamber (35/15°C, 14 hours of light). The design was completely randomized with four replications. Germination was recorded daily for 28 days. The results were statistically analyzed using ANOVA and mean differences test with Tukey's test ($\alpha = 0.05$). The highest percentages of germination were obtained with treatments 1, 3, 5 and 2. They are not significantly different, but they differ from treatment 4. It is concluded that there are increases in germination with scarification treatments that are not always statistically significant.

Co12.**DETERMINATION OF THE EQUATION OF THE DISSIPATION CURVE OF CARBENDAZIM IN LEMON THROUGH EMPIRICAL MODELS***Ferrari RR, Alvarez AR, Aguirre JC, Jorrat SL.**Facultad de Ciencias Exactas y Tecnología. UNT. Av. Independencia 1800. (4000) Tucumán, Argentina. E-mail: rferrari@herrera.unt.edu.ar*

The pesticide carbendazim is used in lemon production to combat different fungal genera. Tests in animals show that this substance possibly causes toxic effects on human reproduction. Carbendazim has been related to a greater frequency of cancer of the lymphatic ganglia in female mice. The maximum limit value of carbendazim residues in lemon established in the European Union and Argentina is 5 mg/kg. In this work we experimentally determined the dissipation curve of carbendazim in lemon from Tucumán Province and evaluated mathematical empirical models to determine the equation of the dissipation curve. Carbendazim was used in plants of Citrus Limon variety Limoneira 8A at a dose of 4 liters of commercial product (which contains 50% carbendazim) per plant at a concentration of 0.1%. Samples were taken at 0, 1, 2, 7, 14, 21, 28 and 35 days after application and analyzed by HPLC (high performance liquid chromatography). The mathematical empirical model that presented a better fit was the first-order reaction model, with a correlation coefficient equal to 0.89. Mean dissipation time was 9 days. The lemon fruits presented a carbendazim concentration that does not exceed the maximum limit established in Argentina and in the European Union.

Co13.**METABOLIC PROFILE ANALYSIS OF DIABETIC PATIENTS IN JUJUY PROVINCE**

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There are no accurate data about the prevalence of diabetes in inhabitants of the highlands, particularly in Argentina. The population of Jujuy is distributed into four geographic regions: Yunga, 500 meters above sea level (MASL), Valle, 1200 MASL, Quebrada, 2500 MASL and Puna, above 3500 MASL, a situation that might favor the appearance of environmental factors that could affect diabetes. The purpose of this work was to explore the metabolic profile of diabetic patients inhabiting environments at different altitudes in Jujuy. The study was carried out in 1317 patients grouped into Valle n=607, Yunga n=513, Quebrada n=92 and Puna n=105. Body mass index, monthly insulin dose (MID), fasting blood glucose, glycosylated hemoglobin (HbA1c), total cholesterol, HDL, LDL and triglycerides were determined. Patients were also surveyed about their nutritional habits and knowledge of diabetes. ANOVA was performed and means comparison test with a significance level of $p < 0.01$. Patients from the Puna exhibited higher HbA1c, required more MID, had higher LDL and HDL cholesterol levels and showed greater need for nutritional counseling and diabetes education compared to other regions. Although it is necessary to improve nutritional counseling and diabetes education in this region, the results strengthen the hypothesis of an effect of altitude on diabetes in Jujuy.

Co14.**INSULIN RESISTANCE AND DIFFERENT RATES OF HYPOTHYROIDISM MEASURED BY TSH**

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Obesity is associated with insulin resistance (IR) and different rates of thyroid dysfunction, which can lead to cardiovascular disease (CVD). To investigate the association between IR and hypothyroidism, size (m), weight (K), body mass index ($BMI = K/m^2$), basal glucose (mg/dL), insulin ($\mu U/mL$) and TSH ($\mu U/mL$) were determined in 199 women (15-68 years). HOMA was calculated ($glucose \times insulin / 405$). Patients were divided according to 1) TSH values: Group 1(G1): 0.3 to 4, Group 2(G2): >4 and $=10$, Group 3(G3): >10 ; 2) HOMA, into two groups (≤ 2.5 and >2.5 IR indicator); 3) BMI, into four groups according to the WHO. The study was cross-sectional. The chi square test with contingency coefficient calculation (C) was used to analyze association. G1: 82% were euthyroid with 37% (61/164) with $HOMA > 2.5$ and 87% (138/164) were overweight or obese. G2: 14% had 46% (13/28) of $HOMA > 2.5$ and 93% (26/28) were overweight or obese. G3: 4% had 71% (5/7) with IR, all of them obese. The HOMA-TSH association was weak ($\chi^2 = 3.90$, $n=199$, $C=0.14$). IR increased with increasing TSH. G1 showed a high percentage of obese patients. However, HOMA was the best IR marker in G2 and G3. There was a weak HOMA-TSH association that agreed with previous studies. In cases of hypothyroidism a metabolic evaluation would be advisable to prevent or reduce the risk of CVD.

Co15.**RESPIRATORY VIRUS SURVEILLANCE IN A BRIEF HOSPITALIZATION SERVICE, NICOLAS AVELLANEDA HOSPITAL**

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Acute respiratory infections (ARIs) continue to be the leading cause of acute illnesses worldwide and remain the most important cause of infant and young children mortality. The populations at greater risk of developing a fatal respiratory disease are the very young, the elderly, and the immunocompromised. A program for the prevention and control of ARIs in infancy was implemented in Chile in 1989, and Tucumán adopted the model in 1996. Its main components were the use of physiotherapy, inhaled steroids and bronchodilators, brief or one-day hospitalization at the primary health care level, and rational use of antibiotics.

The aim of this work is to report viral aetiology of ARIs in children in the short internment room (SIA) during 2009-2011. Viral infections were documented by antigen detection with immunofluorescence (IF). During the study period 7370 patients with respiratory diseases consulted doctors in the hospital pediatric ward, and 1693 aged 1 month – 4 years were admitted to SIA. 72% were examined by IF and 741 were positive for different viruses. Respiratory virus laboratory surveillance plays an important role in programs to avoid hospitalization, prescribe appropriate treatment and reduce infant mortality.

Co16.**STUDY OF HUNTER SCHREGER BANDS IN DECIDUOUS ENAMEL**

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Hunter Schreger bands (HSB) studied under electron microscopy can be seen as clear and dark zones corresponding to prism cross and longitudinal sections. The purpose of this work was to study the inclination of HSB in deciduous tooth enamel. Crowns of exfoliated temporary incisor and canine teeth were used, embedded in epoxy resin, ground, etched with acid solution and observed using Environmental Scanning Electron Microscopy (ESEM). After measuring enamel thickness the images obtained were used to make exact replicas of the inclination of the bands in the medial and incisal zones. The angle formed by the band orientation and a tangent adjacent to the dentin was measured. Enamels with bands, radial enamel and aprismatic enamel were identified. The bands in the medial zone presented an inclination towards the occlusal zone that became more evident towards the incisal zone. In the medial zone, the average angle was 66.67° DT 13.95° ($n=9$) and in the incisal zone it was 54.72° DT 5.81° ($n=11$). The difference was significant: 11.93° , $t=2.4$ $d=0.037$. Bands form wider angles towards the medial zone and show some inclination as they approach the incisal border, forming more acute angles towards the cusp. Prism direction and band disposition are important in the abrasion, fracture and clinical and pathological behavior of this tissue.

Co17.**EVALUATION OF MICRONUCLEI (MN) USING PAPANICOLAOU (Pap) AND MAY GRUNWALD GIEMSA (MGG) STAIN IN BUCCAL CELLS**

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Introduction: MN assessment in exfoliated cells is a promising tool for the study of epithelial carcinogens and can be used to detect chromosome breakage or mitotic interference, thought to be relevant to carcinogenesis. **Aims:** To compare Pap and MGG stain as two techniques for staining the buccal mucosal cells in order to detect MN in individuals of a rural community. **Materials and Methods:** A total of 50 male subjects above 50 years old were examined in Graneros, Tucumán. Twenty smears were stained with MGG stain and 30 with Pap stain. All the smears were assessed for cellularity and scored for MN. **Results:** MNs were easily seen in 3 smears in the clear cytoplasm in the Pap smears exhibiting normal cellular architecture. However, these samples should be carefully evaluated, because keratohyalin granules were found, which makes evaluation difficult. In smears stained with MGG cell swelling and vacuolization of the cytoplasm were observed, so MN was difficult to identify. Both stains were full of bacteria and cell debris, which often masked MNs. **Conclusions:** Pap is a better stain than MGG for the micronucleus assay screening of buccal cells.

Co18.**ROLE OF CA²⁺ IN DEHYDROLEUCODINE- INDUCED ACTIVATION IN *Rhinella arenarum* OOCYTES**

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In *Rhinella arenarum* oocytes, the fertilizing sperm induces an increase in Ca²⁺ concentration that causes the inactivation of MPF, allowing meiosis completion and oocyte activation. Ca²⁺ comes both from the external environment and from intracellular stores. Previous works demonstrated that a sesquiterpene lactone, dehydroleucodine (DhL), is capable of inhibiting MPF activity and inducing oocyte activation in *Rhinella*.

The aim of this paper is to analyze the importance of both intra- and extracellular Ca²⁺ in DhL-induced activation in oocytes matured *in vitro*.

Activation was induced with different doses of DhL in media with and without Ca²⁺. The involvement of Ca²⁺ from the intracellular stores was analyzed using BAPTA/AM and heparin and ruthenium red as antagonists of IP₃R and ryanodine-R respectively. Activation was evaluated by the disappearance of the animal hemisphere white spot, the flattening of the pole and the separation of the vitelline envelope. Results indicate that DhL induced activation in a dose dependent manner in both media with and without Ca²⁺. The inhibition of RyR causes a reduction in the activation induced by DhL while IP₃R inhibition does not significantly affect the process.

These results suggest that DhL requires no extra cellular Ca²⁺ to exert its effect although intracellular Ca²⁺ is critical. RyR appears to be the largest contributor to the release of Ca²⁺ in the DhL-induced activation in this species.

Co19.**SPATIAL DISTRIBUTION OF THE ICHTHYOFAUNA OF THE FIGUEROA SWAMP, SANTIAGO DEL ESTERO, ARGENTINA**

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The hydrological Pasaje-Juramento-Salado system in the province of Santiago del Estero forms the Figueroa Swamp, which is located in the eastern Paranoplatensean ecoregion and is regulated through various works for the irrigation of crops. The aims of this study were to make ichthyological inventories and observe the spatial and temporal distribution of species. The study was conducted on a seasonal basis, for four years, covering the period of reconstruction of the Cero and Figueroa Reservoirs.

We used different gear to catch fish. Samples were grouped by environments: Salado river; Figueroa, Cero and Cuchi Pozo reservoirs, Km 30, Gini channel and Cuchi Pozo channel. Twenty-three species belonging to Characiformes, Siluriformes, and Synbranchiformes Cyprinodontiformes orders were collected. The order Characiformes was the best represented. The genus *Astyanax* was the most abundant, while the scarcest was *Synbranchus*. Environments with higher species richness were reservoirs, followed by channels and by the Salado River. The spatial record indicates that most species were constant in all environments. Only three species are accidental. This is an indication that fish, despite the reconstruction of the Cero and Figueroa reservoirs, are adapted and occupy the newly created environments.

Co20.**PLANORBID POPULATIONS AND THEIR COMPONENT COMMUNITY IN DISTURBED LIMNOTOPS OF LERMA VALLEY, SALTA, ARGENTINA**

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Trematode parasites of common planorbids of Lerma Valley can be taken as biodiversity indicators. To describe the trematode-planorbid association, *Biomphalaria tenagophila* and *B. orbigny* molluscs were collected for one hour in Campo Alegre and Puerta de Díaz reservoirs and in the Tres Palmeras puddle from 2005 to 2007. Molluscs were classified into four size classes and parasitized organisms were counted. Chi square test and Spearman's correlation coefficient were used to detect differences and relationships. Community comparisons were carried out by cluster analysis. 638 *B. tenagophila* were found in Campo Alegre, 2864 in Tres Palmeras and 943 *B. orbigny* in Puerta de Díaz. In drought months 23% molluscs were obtained in the puddle, but none in the reservoirs. A positive correlation was found between planorbid density and precipitations. We collected 88, 91 and 93% of the estimated richness in each environment, 18 being taxa with only two autogenic cycles, and Echinostomatidae as dominant. The abundance of trematodes showed a positive correlation with their hosts, rainfall and temperature. No taxa exceeded 3% prevalence. The reservoirs were more similar to each other than to the puddle. **Conclusion:** The communities associated with planorbids had low prevalence, high richness and predominance of allogeneic cycles, and drought was a structuring force.

Co21.**MORPHO-ANATOMY OF TWO VARIETIES OF *Begonia cucullata* (BEGONIACEAE) COMMERCIALIZED AS "AGRIAL" IN PARAGUAY**

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Leaves and stems of *Begonia cucullata* Willd. var. *cucullata* Willd. and *B. cucullata* Willd. var. *arenosicola* (C.DC.) L.B. Sm. & B.G. Schub are sold in Paraguay under the name of "Agrial" and used in folk medicine as anti-inflammatory and antipyretic herbs. Morpho-anatomy of the vegetative organs of both varieties was analyzed to provide structural characters for their characterization. Conventional techniques were applied.

The variety *cucullata* presents reddish stems less than 1 m high, elliptical leaves with a subtruncate base, light green to reddish on the underside. Midrib transection presents four closed collateral bundles. Paradermal section shows anomo or anisocytic stomata and glandular trichomes with symmetric multicellular head. The variety *arenosicola* is over 1 m high. Stems and leaves are dark green on the upper and light green on the lower surface. Leaves present an asymmetric base, a single closed collateral vascular bundle in the midrib, anisocytic stomata and glandular trichomes with asymmetric multicellular heads.

These diagnostic characteristics enable the correct identification of both varieties. However, as Begonias may contain oxalic acid and cucurbitacins, potentially toxic at high doses, we suggest caution in their use and further studies on the matter.

Co22.**ROOT ANATOMY AND MORPHOLOGY OF ENDOMYCORRHIZAS IN *Fragaria x ananassa* var. *camarosa* IN THE PROVINCE OF TUCUMÁN**

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Fragaria x ananassa var. *camarosa* is one of the varieties of strawberries grown in INTA-Famaillá. It is a herbaceous plant, with a root system in the first 30 cm of the soil. The aim of this work was to characterize the anatomy of root and the morphology of endomycorrhizas. 10 individuals per treatment were collected (without disinfection "S/D" and with disinfection "C/D", metam sodium). Samples were treated with conventional techniques. The primary structure of root presented unistrate epidermis, exodermis, cortex parenchyma with longitudinal air channels, endodermis, unistrate pericycle and diarch stele. The secondary structure showed different stages of early growth, epidermal debris, exodermis and cortical parenchyma (primary structure) attached to the periderm in formation, internally scarce cortical parenchyma and vascular system. The secondary xylem presented protoxylematic points 2-4. We observed 2 morphological types of endomycorrhiza: *Arum* and *Paris*. The air channels observed in the cortex parenchyma of the primary structure are associated with the *Arum* morphology. The radical anatomy and the presence of endomycorrhiza in var. *camarosa* are described for the first time.

Co23.**MORPHO-ANATOMY OF THE VEGETATIVE ORGANS OF *Tropaeolum tuberosum* subsp. *silvestre* (TROPAEOLACEAE)**

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Tropaeolum tuberosum Ruiz et Pav. subsp. *silvestre* Sparre is a herbaceous plant distributed from Ecuador to northern Argentina. The existence or absence of tubers in this plant is controversial because it was only observed in cultivated plants. The aim of this work was to provide morphological and anatomical information of vegetative organs from wild material collected in las Sierras de Calilegua (Jujuy) at 2600 masl. Conventional anatomical techniques were used. Voucher specimens were deposited in the LIL Herbarium. Leaves present actinodrome primary venation, mucilaginous idioblasts over the adaxial surface and papillose epidermal cells. In a transverse section the leaf is dorsiventral, hypostomatic with sunken anomocytic stomata. Petiole 4-20 cm long, 1-2 mm diameter, epidermis with raised anomocytic stomata, cortical and medullar parenchyma with starch, vascular system formed by 6-7 collateral, closed vascular bundles with secretory cavities in the phloem and in the distal portion of a laminar collenchyma ring. The aerial stem presents a circular section with ectofloic eustele. Rhizome showed cortical and medullar parenchyma with starch, cells arranged loosely, fibers and secretory cavities in the phloem level. Roots are diarch, protostelic, endogenous and fasciculated. These contributions are relevant to characterize the species.

1. CONTRIBUTION TO THE KNOWLEDGE OF *Cordyceps s. l.* IN ARGENTINA

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Cordyceps s.l. constitutes an entomopathogenic group of Ascomycetes. It is known for its diversity of interactions with the classes Insecta and Arachnida and includes about 500 reported species. Molecular systematics has shown that *Cordyceps s.l.* includes 4 genera (*Cordyceps s.s.*, *Metacordyceps*, *Ophiocordyceps* and *Elaphocordyceps*) with a cosmopolitan distribution and greatest diversity in the tropics. Besides molecular differences, species can be separated by the shape and color of the stroma, the perithecia arrangement, the ascospore morphology, type of merisporous fragmentation and the host specificity level. In order to continue the study of biodiversity of species of *Cordyceps s.l.* present in Argentina, specimens collected in the Iguazú National Park (Misiones, Argentina), kept at BAFC, were morphologically examined. The following species were identified: *Metacordyceps martialis* on Coleoptera larvae, *Ophiocordyceps amazonica* on adult Acrididae, Orthoptera and *O. melolonthae* Melolonthidae larvae, Coleoptera. This constitutes the first record of these species for Argentina. *Nomuraea atypicola* (anamorph) on *Nemesiidae* spider, Araneae, is recorded for the first time for NW Argentina. This research is a significant contribution to the knowledge of the number of *Cordyceps s.l.* species known in Argentina.

2. A KEY TO THE EGG PARASITOIDS OF LEPIDOPTERA DEFOLIATORS IN SOYBEAN CROPS IN TUCUMAN PROVINCE, ARGENTINA

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In northern Argentina, soybean crops are affected by several pest but *Anticarsia gemmatilis* (Hübner) (Catocalinae), *Rachiplusia nu* (Guenée) and *Pseudoplusia includens* (Walker) (Plusiinae) (Lepidoptera: Noctuidae) are the most important defoliators. Their populations have a rich antagonistic complex, egg parasitoids being the most significant. Knowledge of biocontrol agents is essential for the planning of IPM programs. The aim of this contribution is to provide tools to identify these insects. Field collected eggs were enclosed under laboratory conditions to obtain adult parasitoids and then mounted to observe specific characters. For identification, specific keys of Platygastroidea and Chalcidoidea and particularly those of Scelionidae, Aphelinidae and Trichogrammatidae were used. The most important egg parasitoid species, in order of abundance and frequency, were *Trichogramma pretiosum* (Riley), *T. bruni* Nagaraja, *T. nr rojasi*, *Trichogramma* sp. (Trichogrammatidae), *Encarsia porteri* (Mercet) (Aphelinidae) and *Telenomus cyamophylax* Polaszek (Scelionidae). A pictorial key is provided for the identification of these species.

3. COLEOPTERA ASSOCIATED WITH STRAWBERRY CROPS IN TUCUMAN, ARGENTINA

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Because of its qualities for industrialization and export, strawberry (*Fragaria ananassa* Duch.) is a fruit of high regional economic value. Tucumán province is the leading exporter of Argentine strawberries. The knowledge of harmful and beneficial arthropods present in crops is essential to develop programs of integrated pest management, and to maintain production standards and quality. The aim of this study was to determine the species of beetles associated with strawberry crops. The study was conducted at INTA's EEA Famaillá, in Tucumán (Argentina). Sampling was conducted on plots of "Strawberry Festival", "Sabrosa" (Candonga), "Fortuna" (Radiance), "Camino Real" and "Camarosa" cultivars between September and November, 2011. As a result, we identified phytophagous beetles and predators. Phytophagous families found were Crysomelidae, Carabidae and Tenebrionidae. The predator family found was Coccinellidae. Nine species of Coleoptera are cited for the first time in strawberry crops in Argentina. The taxonomic information obtained is essential to understand pest- predator relationships, to characterize strawberry agroecosystem biodiversity, to propose biological control strategies and to implement integrated production protocols.

4. CONSUMPTION RATES OF *Rhopalosiphum maidis* (HOMOPTERA: APHIDIDAE) BY *Doru lineare* AND *Doru luteipes* (DERMAPTERA: FORFICULIDAE)

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Doru lineare and *D. luteipes* are frequent species inhabiting corn crops and their surrounding spontaneous vegetation, mostly composed of *Sorghum halepense*. Johnson grass is affected by *Rhopalosiphum maidis* and earwigs are important predators. The aim of this work was to evaluate the attack rates and the predatory capability of *D. lineare* and *D. luteipes* through consumption rates using *R. maidis* as prey. The study area was located at El Manantial (Tucumán). The rate of aphid affected plants was calculated (number of aphid affected plants/total checked plants x 100) from April to June 2012. Consumption rates were assessed in the laboratory: one adult earwig with a fasting period of 48h was placed in a glass tube containing 30 aphids for 15 minutes and then the number of preyed aphids was counted. Five trials, consisting of 10 replicates with 10 ♂ and 10 ♀, were made for each species. The data obtained were analyzed (*T* test). The aphid affected 69.75% of Johnson grass plants with a mean of 3.49 individuals/plant. Consumption rates for adults of *D. luteipes* was 21.7 aphids (♀=20.14 and ♂ = 23.26; P= 0.0007). The consumption rate of adult of *D. lineare* was 21.3 aphids (♀= 20.92 and ♂= 22.92; P= 0.026).

5. POPULAR KNOWLEDGE OF NATIVE PLANTS WITH MEDICINAL PROPERTIES IN LOCALITIES OF THE QUEBRACHOS DEPARTMENT, SANTIAGO DEL ESTERO

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The aim of this work was to collect current information on medicinal species and their use in folk medicine by inhabitants of the central Quebrachos department.

Semistructured interviews and ethnobotanical walks were conducted with the inhabitants in 12 locations of the central strip. We collected information on medicinal plants known and used, their most common uses, forms of preparation and administration and parts or organs of plants used.

We identified 29 medicinal species belonging to 16 botanical families, with a prevalence of Fabaceae, Asteraceae and Verbenaceae, which are specifically used to treat gastrointestinal disorders, cough and bronchitis and to heal wounds.

Twigs and leaves are used mainly as tea or infusions.

The results show a significant number of species with medicinal properties that people know by their vernacular names and usual consumption and to which they resort for the treatment of various health conditions.

6. RICHNESS, ABUNDANCE, SPATIAL-TEMPORAL DISTRIBUTION AND DENSITY OF THE FISH FAUNA IN THE MIDDLE JURAMENTO RIVER BASIN (SALTA, ARGENTINA)

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Aquatic ecosystems contain a great variety of fish that are being affected by the degradation of their habitat, a fact that has received little attention. The aim of this work was to provide information about this situation. Between 2005 and 2007, 1016 individuals belonging to 31 species were collected. Richness ranged as follows in increasing order: Site 7, S=6, Site 5, S=7, Site 1, S=8, Site 3, S=12, Site 4, S=14, Site 5, S=15 and Site 2, S=17. The most abundant was *Gambusia affinis* (n=389) and the less abundant (n=1) were *Pseudohemiodon laticeps*, *Hypostomus* sp., *Trichomycterus* sp., *Serrasalmus maculatus* and *Parodon tortuosus*. The highest average density (1.3 individuals/100m²) corresponded to *Gambusia affinis*, of localized and variable distribution, and the lowest (0.01 individuals/100m²) to *Rhamdia quelen*, *Pseudohemiodon laticeps*, *Hypostomus* sp., *Trichomycterus* sp., *Serrasalmus maculatus* and *Parodon tortuosus*. Andean and Parana forms of the Orders: Characiformes (45%); Families: Parodontidae, Characidae, Crenuchidae, Serrasalminae and Erythrinidae; Order Siluriformes (27%); Families: Heptapteridae, Loricariidae and Trichomycteridae; Cyprinodontiformes (19%) and Families Anablepidae and Poeciliidae; Perciformes (9%) Family Cichlidae were found. The abundance pattern was little affected by hydrology. There were significant differences between sites. The fact that this is a regulated section of the river favors economic development, but the use of the water would affect the fish fauna.

7. BIOLOGICAL CHARACTERISTICS OF *Chrysopodes spinella* (NEUROPTERA: CHRYSOPIDAE) FED WITH *Bemisia tabaci* EGGS (HEMIPTERA: ALEYRODIDAE)

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The whitefly *Bemisia tabaci* (Hemiptera: Aleyrodidae) is one of the insect pests of greatest economic importance worldwide. Among its natural enemies, we find members of the Chrysopidae family (Neuroptera). The objective of this work was to determine some biological characteristics of *Chrysopodes spinella* fed with whitefly eggs under laboratory conditions. *C. spinella* adults were collected in tomato greenhouses, in Lules, Tucumán, Argentina, and taken to EEAOC laboratories. 34 larvae were fed with whitefly eggs and 37 with *Sitotroga cerealella* eggs, used as control. They were offered a new number of eggs every 24 hours and larvae survival was recorded. Oviposition and longevity were recorded when they reached the adult stage. The development time of *C. spinella* fed with whitefly eggs was 35 days and 45 days with *S. cerealella* eggs. Survival of immature stages, number of eggs per adult and their longevity were higher when *C. spinella* was fed with *S. cerealella* eggs. The results obtained in this work are an important contribution to a better understanding of this predator species.

8. RECORDING AND ANALYSIS OF VOCALIZATIONS IN TAPIR (*Tapirus terrestris*) IN SEMI CAPTIVITY

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The tapir (*Tapirus terrestris*) is the largest mammal in South America. The purpose of this study was to record and analyze the vocalizations of the tapirs of the Experimental Reservation of Horco Molle. The vocalizations were recorded with a portable recorder and a directional microphone. We found 5 vocalizations: 2 atonal sounds (single click, dur.=0.063 sec and double click dur.=0.238 sec) and 3 tonal sounds (short squeal FH=2652 Hz, long squeal FH= 2241 Hz and M shaped squeal FH=4103 Hz). The discriminant analysis with 4 predictive variables for the 3 squeals had a 100% correct assignment for the M shaped squeal, 78% for the short squeal and 92% for the long squeal. The situations in which the vocalizations occurred were analyzed with the Exact test ($P < 0.000001$) and with the Chi square test, 3 df, $\chi^2 = 60.97$ ($p < 0.000001$). The double click occurred significantly more often during locomotion while the short and long squeals were associated with feeding. In 2 play back experiments with the 3 whistles, the M shaped whistle produced the most striking response, with hiding and escape. This is the first quantitative study of the acoustic parameters of vocalizations in tapirs and the first quantitative analysis of the situations in which the vocalizations occur.

9. GORDIIDA (NEMATOMORPHA) DIVERSITY IN EL TALA RIVER (CATAMARCA, ARGENTINA)

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The objective of this work was to determine Gordiida (Nematomorpha) diversity in El Tala River, in the province of Catamarca. The sampling place was 748m above sea level (28°27'34.26"S- 65°50'28.11"W). Adults were collected along 200m in the water course, from one bank to the other, by 2 people who combined manual techniques, sieves and wire meshes. The material was determined taxonomically following routine techniques: separation of males and females, measurement of body length of the specimens and cuticle observation with an optical microscope. The material was kept in 70° alcohol. Generic richness was 3 and specific richness 7. The species reported were: *Chordodes brasiliensis*; *Noteochordodes achosmosus*; *N. cymatium*; *N. desantisi*; *N. saltae*; *N. talensis* and *Pseudochordodes dugesi*. The most abundant species was *C. brasiliensis*, and the least abundant were *N. achosmosus* and *N. desantisi*. It is interesting to notice that in this water course 53.85% of the total gordiido fauna of Catamarca is represented, and 15.22% of the total species in Argentina. These results contribute to expand knowledge of Gordiida diversity and distribution in Catamarca and in Argentina, which can be further reinforced with future collection campaigns.

10. EVALUATION OF THE WATER QUALITY OF EL ARBOLITO STREAM THROUGH BIOTIC RATES

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The objective of this work was to evaluate the water quality of a Yungas stream in Catamarca using biotic rates. "El Arbolito" stream (28°37'13"S-66°02'05"W, 1040m above sea level) in Concepción, Capayán was studied. Three samples of benthic insects per season of the year were obtained with a Surber sampler (300µm mesh opening; 0.09m² surface area). Concurrently with the biological samples, stream morphometric data, peripheral vegetation and water physicochemical elements were recorded according to Standard methods. 39401 ind/m² representing 9 orders, 31 families, one subfamily and 39 genera were collected. BMWP' (Biological Monitoring Working Party) rates adjusted for NW Argentina reached a value of 173 (Class 1: very clean water); ASPT (Average Score per Taxon), which reached a value of 5.58 (no impact water); and FBR (Family Biotic Rate) with a value of 4.47 (high quality water, with some organic contamination). From a biological point of view, the stream water quality is very good, as confirmed by the values obtained for the physicochemical variables, showing that the section studied is free of anthropic contamination (low levels of sulfates, chlorides and organic matter) and that water can be re-used for various purposes.

11. INITIATIVE: CONSTRUCTION OF THE PROVINCE'S EMISSIONS INVENTORY. FIRST WORKSHOP RESULTS

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The creation of emissions inventories is proposed to allow for spatial and temporal air pollutant estimates, thus enabling the use of air quality models (AQM). Some efforts were made in the past by various entities but they were scattered and lacked the necessary connection between them.

Results: The participants from INTA (National Institute for Agricultural Technology) at Famaillá, Tucumán, EEAOC (Obispo Colombres Experimental Station for Agricultural Industry), Environmental Management Bureau (FiscAmb), LEBA (National University of Tucumán) and National Technological University at Tucumán lectured on agriculture related world and regional CO₂ air pollution, pollution characteristics of the atmosphere above the city of Tucumán, atmospheric particle matter, sugar mill stack parameters determination and radiometry results. Several joint projects emerged and it was concluded that these workshops should continue.

12. PRELIMINARY REPORT OF THE BOTANICAL AND NUTRITIONAL CHARACTERIZATION OF *Quenopodium quinoa* CROPS IN WESTERN CATAMARCA

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Quinoa is an ancient crop of the higher regions of South America that constituted a major protein source for the aboriginal population.

Objectives: to describe *Quenopodium quinoa* crops in western Catamarca and analyze the chemical composition and protein content of quinoa seeds. **Methods:** We used natural material from crops located in Villa Vil, Azampay and Laguna Blanca. We utilized systematic observation and classification and a gravimetric method for the chemical composition of seeds. **Results:** Two varieties were identified, CICA and Real. Quinoa was found to be an annual crop, erect, 30 to 300 cm high, depending on genotype, soil and climate; pivoting root, stems cylindrical, angular, hollow; simple alternate leaves. Flowers can be hermaphrodite, have self-pollinating or allogamous habits and are grouped in panicles. Plants develop at about 2000 m.a.s.l. with a salt concentration of 200 mM. Chemical composition and protein content of quinoa seeds: ethereal extract: 1.37%, crude fiber: 14.33%, protein: 12.90, carotene: 5.11 ppm. **Conclusions:** Quinoa is amply adapted to western Catamarca. Its ability to be cultivated in western Catamarca due to its resistance to the high salt concentrations in this area gives it strategic productive and socio-economic importance because of its potential nutritional value.

13. SPONTANEOUS VEGETATION OF THE URBAN NATURE RESERVE AND BOTANICAL GARDEN OF THE FACULTAD DE CIENCIAS FORESTALES-UNSE

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The Urban Nature Reserve of the FCF-UNSE is the first of its kind in Santiago del Estero. Located on the banks of the Rio Dulce in the northeast of the Santiago del Estero city, it occupies 20 hectares where remnants of the original vegetation of the riverbank can be seen. The aim of this work was to make an inventory of the spontaneous vegetation of the site Urban Nature Reserve and Botanical Garden "Ing. Ftal. Lucas Roic" of the FCF-UNSE.

Between 2010 and 2012 explorations in different seasons of the year were conducted to make a survey of existing vegetation by free listing, collecting material for herbalization and identification according to conventional techniques.

134 species belonging to 98 genera distributed into 37 botanical families were cataloged. The best represented family was Poaceae (18.83%), followed by Asteraceae (14.29%) and Solanaceae (8.27%). All the species are Angiosperms, out of which 78% are Dicotyledonous and 22% Monocotyledonous. There is a predominance of herbaceous vegetation (78% of the species) over shrubs (15%) and trees (7%).

These data allow a better understanding of the plant diversity in the reserve and its importance in terms of the number of species present. It is also expected that these results will be useful for future restoration and conservation work in this area.

14. EFFECT OF DIFFERENT PLANTING DATES ON QUINOA PRODUCTION IN TAFI DEL VALLE, TUCUMÁN, ARGENTINA

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The aim of this trial was to determine the behavior of the quinoa crop, cv. Sica, in two planting dates in Tafi del Valle, Tucumán. The experiment was conducted in the Tafi Valley Experimental Substation at 2000 m.a.s.l. in 2011/12. Sowing was done in furrows in two 3m long plots, leaving 13 to 15 plants per m². Planting dates incumbent upon the treatments were: T1: 15/11/11; T2: 5/12/11 with 8 replicates in a randomized block design. The harvest took place in April and May, respectively, by hand. The parameters evaluated were: plant height at the time of flowering and commercial yields (kg.ha⁻¹). The results were analyzed by ANOVA and Tukey's test. There were significant differences in plant height between T2 (1.222m) and T1 (1.043m). In yield T1 (298.792 kg.ha⁻¹) was significantly different from T2 (279.563 kg.ha⁻¹). It is considered that while the plants are lower on earliest planting date, yields increase by more branching and flowering period available, fruit and grain filling before the start of the frost period. Plants also have a lesser tendency to wind dislocation. According to the ecological conditions of the trial, quinoa cultivation is considered viable in early planting date, with the possibility of incorporating sustainable technology.

15. A CALORIMETRIC ANALYSIS OF SOIL TREATED WITH EFFECTIVE MICROORGANISMS

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Effective microorganisms (EM) are a consortium of beneficial microorganisms. A plot in a sugar cane plantation was treated with EM (EMS) and another with EM plus Yeast (YS). The latter soil yielded 1000 kg sugar cane less than EMS. The negative effect of yeast was investigated by isothermal calorimetry in addition to chemical and microbiological analyses. Soluble phosphorus content of EMS was higher than that of YS whereas pH values were higher for the latter (6.33) than for EMS (6.02). Calorimetric thermal power (*P*) – time curves of soil amended with glucose indicated poor mineralizing activity of the microbial community of both soils. SSL without amendment produced around 10.5 cm³kg⁻¹h⁻¹ CO₂ whereas SL CO₂ production was 6.5 cm³kg⁻¹h⁻¹. This difference in CO₂ evolution (60%) is consistent with the same percentage difference in CFU g⁻¹. A linear relation was found upon plotting log values of CO₂ evolution vs. log *P* of soils amended with glucose. Thus, soil microbial biomass could be calculated by the method developed by us. The addition of yeast to the soil seems to have selectively inhibited some microorganisms, thus shifting the natural equilibrium provided by EM, which accounts for the negative result observed.

16. BIOFILM FORMATION OF NAPHTHALENE DEGRADING STRAINS ENHANCED BY ANNONACEOUS ACETOGENINS AND SOME OF THEIR ACETYLATED DERIVATES

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Annonaceous acetogenins (ACG) are secondary metabolites isolated from the Annonaceae family. Some ACG positively interfere with quorum sensing mechanisms, increasing biofilm formation of PAHs degrading strains. We intend to investigate the influence of ACG and some of their acetylated analogs on *Pseudomonas plecoglossicida* J26, PN5 and CN4 biofilm formation by comparison with controls of each strain grown in the absence of ACG. The biofilm formation assay is based on the ability of bacteria to grow attached to polystyrene microplates. To measure biofilm formation LB medium was supplemented with 5 µl of a 100 µg.ml⁻¹ ACG ethanolic solution (2.5 µg.ml⁻¹ final concentration) and inoculated with an overnight LB culture of the strain. Biofilm formation was quantified by the addition of crystal violet and OD_{560nm} measurements. Acetylated itrafin and rolliniastatin-2 showed significant differences on PN5 biofilm formation in comparison with their natural analogs (162/145% and 154/128%, respectively; ethanol control, 100%). Therefore, these acetylated ACG will be selected for future naphthalene degradation assays with the PN5 strain. These results would be promising for biofilm-mediated bioremediation.

17. PERICARPPHENYLPROPANOIDS: RESISTANCE FACTORS TO MAIZE EAR ROT CAUSED BY *Fusarium verticillioides*

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Fusarium verticillioides, the ethiological agent of maize ear rot, contaminates grains with fumonisins that are potentially toxic for humans and animals. The development of more resistant hybrids is the less expensive and more sustainable strategy to minimize fumonisin contamination. The aims of this work were: 1) to determine content of pericarp phenylpropanoids in 11 maize genotypes from INTA germplasm; 2) to evaluate if pericarp phenylpropanoids play a role in resistance against *F. verticillioides*. Eleven maize genotypes were grown in Pergamino for two years and inoculated with microconidial suspensions of P364 (a high fumonisin producer strain). Disease severity, fumonisin contamination and content of phenylpropanoids were evaluated in the grains during harvest. The pericarp of the maize genotypes contained *trans*-ferulic, *cis*-ferulic and *p*-coumaric (pCA) acids and five diferulates (DFAs). The most abundant DFAs were 8,5'-DFA benzofuran, followed by 8,5'-DFA and 8,8'-DFA. Field resistant genotypes exhibited the highest contents of phenylpropanoids, which were associated with the lowest fumonisin accumulation ($-0.61 > r > -0.90$). High levels of pericarp phenylpropanoids proved to be a maize trait associated with lower disease severity and fumonisin accumulation.

18. IN VITRO EFFECTIVENESS OF COPPER FUNGICIDES FOR THE CONTROL OF *Diplodia natalensis* AND *Phomopsis citri* ISOLATED FROM LEMONS

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Diplodia natalensis and *Phomopsis citri* are the causal agents of citrus stem-end rot. This is an important postharvest disease in warm and humid regions such as the citrus areas in Tucumán, Argentina. The infection occurs in the field mostly at the beginning of the harvest season (March and April) but symptoms develop during transit, storage and fruit degreening, causing important postharvest losses. Even though the application of benzimidazole fungicides provides good stem-end rot control, these products are restricted in our main export markets, so it is necessary to find other fungicides to prevent the disease. The effectiveness of copper oxychloride, hydroxide and oxide for the control of local isolates of *D. natalensis* and *P. citri* was determined *in vitro* using the mycelia growth test. 100, 500, 1000 and 1500 ppm of each active ingredient were incorporated into sterilized potato dextrose agar. After that, the plates were inoculated with each fungus. Growth inhibition was measured for each fungus at specific times after inoculation. The three formulations controlled the growth of both fungus strains even though the effectiveness was different for each pathogen. *P. citri* was more sensitive than *D. natalensis* at 100 and 500 ppm in the three copper formulations.

19. BIOACTIVITY OF *Zuccagnia punctata* COMPOUNDS ON *Fusarium verticillioides*

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Fusarium verticillioides is an ethiological agent of the ear rot disease. It contaminates maize grains with fumonisins which are potentially toxic for humans and animals. We demonstrated that an ethereal fraction of *Zuccagnia punctata* (Fabaceae) tincture inhibits the growth of this pathogen. The aim of this work was to isolate and identify the responsible bioactive compounds. Aerial part tincture of *Z. punctata* was evaporated and partitioned with ethyl ether. The ether extract (EEt) was fractionated by chromatography in a Silica gel (230-400 Mesh) column (SCC). The collected fractions were grouped into 5 pools (G1, G2, G3, G4 and G5) according to their absorbance at 305 nm and TLC on Silica gel using UV at 365 and 254 nm, and NP-PEG. Bioactive components were detected by bioautography of TLC on a spore suspension of *F. verticillioides*. Bioactive bands were identified using physical, chemical and spectroscopy detection methods. Results were compared with others obtained with pure standards. Antifungal constituents of EEt were detected in G2, G3, G4 and G5. Analyses performed suggest that these compounds are flavonoids. Two of them were isolated and identified as 2',4'-dihydroxychalcone and 2',4'-dihydroxy-3'-methoxychalcone. The purification and structural elucidation of unidentified bioactive molecules is in progress.

20. BACTERICIDAL SECONDARY METABOLITES PRODUCED BY *Fusarium* sp. AGAINST *Staphylococcus aureus*

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Entomopathogenic fungus (EF) causes the death of the host insect. EF are a rich source of natural bioactive compounds. When the insect dies several microorganisms that grow normally in the exoskeleton surface as well as in nearly the whole epithelium such as *Staphylococcus aureus* try to degrade the insect body. The aim of this work was to determine if EF *Fusarium* sp. 3300 (NRRL 25102) inhibited the growth and biofilm formation of *S. aureus* ATCC 6538. The fungus was cultured on a potato dextrose broth in the absence (A) and in the presence of 2% (w/v) pupae of *Ceratitis capitata* (B), using the medium with insect as a control (C). After 15 days incubation, the supernatant was separated from the mycelium by filtration. The supernatant was extracted with chloroform and the FM produced in the different media were analyzed by TLC. Eighteen eluates were obtained in the B condition; eight of them were produced by the insect induction. The extract obtained from A and B conditions and four eluates produced by induction showed bactericidal activity against *S. aureus*. The production of substances in the presence of insect-derived material suggested that new antimicrobial compounds are produced when the fungus infects the insect. These substances of eukaryotic origin, normally present in the environment, should be studied as potential antibiotics.

21.

ANACARDIACEAE FROM NORTHWESTERN ARGENTINA: ANTIFUNGAL POTENTIAL ON FUSARIUM SPECIES

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Fusarium species reduce maize and wheat yields and contaminate grains with mycotoxins. Anacardiaceae are a potential source of antifungals for *Fusarium* control. The aim of this work was to identify leaf extracts and their constituents that may prove useful for the control of *F. graminearum* and *F. verticillioides*. Leaves of *Schinus* (*S. molle*, *S. fasciculatus*, *S. gracilipes*) and *Schinopsis* (*S. lorentzii*, *S. haenkeana*) were extracted with dichloromethane (CH₂CL₂), ethyl acetate (AcEt) and methanol (MeOH). Extracts were evaporated to dryness, suspended in 50 ml of MeOH and filtered. The methanolic filtrates FmCH₂CL₂, FmAcEt and FmMeOH were assayed by agar diffusion and broth microdilution methods. MID and IC₅₀ were determined. Their constituents were separated by thin layer chromatography (TLC). The lowest DIMs were obtained for FmCH₂CL₂ and FmAcEt of *Schinopsis* species on *F. graminearum*. The FmCH₂CL₂ and FmAcEt of *S. fasciculatus*, *S. gracilipes*, *S. haenkeana* and *S. lorentzii* on *F. graminearum* and FmCH₂CL₂ of *Schinopsis lorentzii* on *F. verticillioides* showed IC₅₀s between 125 and 400 µg/ml. TLC indicated terpenoids and alkylcatechols in FmAcEt and FmCH₂CL₂ of *Schinopsis* species. These extracts were the most active ones on *Fusarium*. However, *F. graminearum* was the most sensitive. The separation of the bioactive constituents is in progress.

22.

METABOLITES WITH ANTIBIOFILM PROPERTY FROM *Aspergillus parasiticus*

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The presence of insect parts in the culture medium may increase structural diversity or modify the concentrations of fungal metabolites (FM) produced by entomopathogenic fungi. The aim of this work was to determine the antibacterial and antibiofilm activity of FM from *Aspergillus parasiticus* MEA1 on *Pseudomonas aeruginosa* ATCC 27853. The fungus was cultured on a dextrose potato broth in the absence (A) and in the presence of 2% (w/v) cuticle of *Spodoptera frugiperda* (B), using the medium with insect as a control (C). After 15 days incubation, the supernatant was separated from the mycelium by filtration, both were extracted with chloroform and the FM produced in the different media were analyzed by TLC and GC-MS. The chloroform extract (EC) obtained under condition B was separated by TLC and the antibacterial and antibiofilm activity were determined. In the EC of mycelium B the main metabolite found was 2-oleilglycerol. This extract caused a 41% inhibition in biofilm formation of *P. aeruginosa* at 100 µg/ml. Three eluents were obtained from this extract, but only the more polar eluent (formed by 60% ergosterol) decreased bacterial growth (15%) and inhibited biofilm formation (30%). The presence of insects induced the formation of FM able to inhibit the biofilm of *P. aeruginosa*; these FM should be evaluated as potential antipathogenics.

23.

CYTOTOXIC AND INSECTICIDAL ACTIVITY OF EXTRACTS FROM *Vernonia nebularum* AND *Vernonia fulva*

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The search for methods for the natural protection of crops still continues, plants being used as botanical insecticides since they have fewer lethal consequences for beneficial insects and humans. These insecticides can reduce the risk of resistance in insects and cause less damage to the environment. The aim of this work was to evaluate the insecticidal potential of *Vernonia nebularum* and *Vernonia fulva* (Asteraceae) on larvae of *Spodoptera frugiperda* (Lepidoptera: Noctuidae), which causes severe damage to crops in our region. The cytotoxic activity of the extracts was tested on larvae of *Artemia salina*. All extracts (petroleum ether, dichloromethane and methanol), obtained from the aerial parts of *V. nebularum* and *V. fulva*, were tested at 300 ppm to assess the lethal and sublethal effects caused on *S. frugiperda*. Extracts and subextracts of *V. nebularum* showed high pupal mortality rates (up to 47%). Leaf extracts from *V. fulva* reached larval mortality percentages above 40%. The cytotoxicity in *A. salina* was tested at concentrations of 1000, 100, 10 and 1 ppm. Highest cytotoxic activity was observed in the dichloromethane extracts for both species. The results suggest that the plant extracts tested could be subjected to isolation studies and structural identification of new substances to determine their mechanism of action and the possible synergistic effect between them.

24.

STABILIZATION OF LISOSOME MEMBRANE BY SPECIES FROM ASTERACEAE, EPHEDRACEAE, FRANKENIACEAE, SOLANACEAE, ROSACEAE AND VERBENACEAE FAMILIES

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During inflammatory processes, many leukocytes are damaged or destroyed, and their lysosomal enzymes are spread to the extracellular medium, damaging the tissue of the swollen area. This induces the synthesis of more inflammation mediators and worsens the inflammation. Plants are a promising source of metabolites with important bio-activities and potential use in the treatment of illnesses related to inflammatory processes. We evaluated the ability of seventeen plant species to stabilize the lysosome membrane, inferred from their capacity to protect the red blood cell membrane. Plant species were collected from arid regions of northwestern Argentina and the ability of their tinctures to protect the red blood cell (RBC) membrane was evaluated using a hypotonic saline solution and spectrophotometrical quantification of the hemoglobin released. As positive controls, anti-inflammatory drugs were used. The majority of the species studied were able to stabilize the RBC membrane, except for *Ephedra multiflora* and *Frankenia triandra*. The plant species that prevented the lyses of 50% or more RBC at 1.5 mg/ml were: *Baccharis boliviensis*, *B. incarum*, *Chilotrichiopsis keidelii*, *Parastrephia lepidophylla*, *P. phyllifolius*, *Fabiana bryoides*, *F. patagonica* and *Junellia seriphioides*. Some species showed a higher effect than the anti-inflammatory drugs tested.

25. PHYTOCHEMICAL CHARACTERIZATION AND POTENTIAL USE IN VETERINARY MEDICINE OF PROPOLIS FROM ARID REGIONS OF NORTHWESTERN ARGENTINA

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Introduction: In previous reports we demonstrated the antibacterial activity of propolis hydroalcoholic extracts from arid and semi-arid regions of northwestern Argentina against human pathogens. The objective of this study was to compare two extraction methods of propolis from arid regions and evaluate their antibacterial activity against bacteria isolated from canine otitis. **Materials and methods:** Propolis extracts were prepared by successive extractions and maceration using ethanol 80°. Extracts were characterized by TLC and HPLC-DAD, and total phenolics compounds, flavonoids and non flavonoids were determined by spectrophotometric methods. Minimal inhibitory concentration (MIC) values were determined by the agar macrodilution method against 11 strains isolated from canine otitis (*Staphylococcus* and *Proteus*). **Results:** Four compounds (two chalcones, one flavone and one flavanone) were identified. Propolis tincture showed MIC values of 33 µg/ml and 267 µg/ml for the Gram-positive and Gram-negative bacteria, respectively. **Conclusion:** the propolis from arid regions of northwestern Argentina may be used in veterinary medicine.

26. SEQUENTIAL AND SIMULTANEOUS INOCULATION OF *Oenococcus oeni* WITH MIXED CULTURES OF WINE YEASTS: METABOLISM OF SUGARS AND MALATE

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Alcoholic and malolactic fermentations by *Saccharomyces* and *O. oeni* contribute to the organoleptic profile of wines. This work also includes an apiculate yeast to determine the metabolic resources of *S. cerevisiae* mc₂, *K. apiculata* mF and *O. oeni* X₂L to grow in grape juice medium. Yeast mixed cultures were performed as follows: 1-mF 10⁶-mc₂ 10⁶ CFU/mL, 2-mF 10⁴-mc₂ 10⁶ CFU/mL. Media were fermented, filtered and inoculated with 10⁶ CFU/mL-X₂L (sequential culture-SC). Simultaneous cultures included mF, mc₂ and X₂L strains (10⁶ CFU/mL each). All the cultures were incubated at 30°C in microaerophilia. At different time intervals, samples were taken for analytical determinations. Yeasts consumed 91 (1) and 96% (2) of sugars at 48h, yielding 159 mM ethanol, 16 mM acetate, 4.8 mM lactate and 3.6 mM glycerol at 144h; carbon recovery (CR) was 91%. X₂L strain grew in SC. Malate was consumed and 4.9 mM lactate, 0.34 mM acetate, 3.5 mM ethanol and 1 mM glycerol were detected (CR= 96%).

In simultaneous cultures the strains consumed 96% of sugars and 65.9% of malate at 72 h and produced 157 mM ethanol, 19.7 mM acetate, 7.7 mM lactate and 2.54 mM glycerol (CR=98%). The results allow us to propose the inoculation conditions that can drive both fermentations without modifying the wine quality.

27. OPTIMIZATION OF BIOMASS AND BACTERIOCIN PRODUCTION BY *Lactococcus lactis* CRL 1584, A POTENTIAL PROBIOTIC FOR RANICULTURE

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L. lactis CRL 1584, isolated from a bullfrog hatchery, inhibits etiological agents of red-leg syndrome and *Listeria monocytogenes* by organic acids, H₂O₂ and bacteriocin. Thus, *L. lactis* is a beneficial bacterium for raniculture that should be administered to the host at viable high numbers to obtain a beneficial effect. Then, a response surface model was applied to optimize both biomass and bacteriocin production in LAPtg medium at 36°C. Biomass was determined by OD_{540nm} and bacteriocin activity by the plate diffusion method, expressed as Log AU/mL.

In the central point of the design, biomass value was 1.14 and bacteriocin 2.56. By using the response surface model for biomass, peptone and tryptone exerted a positive linear effect and a negative interaction between the two. Yeast extract (EL) exerted a linear positive effect and glucose a quadratic negative effect, the maximum being 6.25 g/L glucose. With respect to bacteriocin production, peptone and EL showed a linear positive effect and a positive interaction with glucose. Optimal production of biomass (1.406) was obtained with (g/L): 18.74 peptone, 12.49 tryptone and EL and 6.25 glucose, while optimal bacteriocin production (3.39) was 18.74 peptone, 12.49 tryptone, EL and glucose.

This work provides the basis for biomass and bacteriocin production by *L. lactis* CRL 1584.

28. CULTURE MEDIUM AND TECHNIQUES FOR THE DETECTION OF BIOFILM FORMATION BY *Enterococcus faecalis*. IN VITRO STUDY

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Enterococcus faecalis is the predominant species in root canals treated for persistent periapical lesion. The aims of this work were: A) evaluation of two culture media for biofilm development; B) biofilm detection by three fixation techniques. **Materials and Methods:** We evaluated three strains of *Enterococcus faecalis* isolated from the root canal. A) The media used were 1) Luria broth and 2) TS broth supplemented with 1% glucose and 10% human serum. B) Detection of biofilm was made by 1) staining with crystal violet at 10% and elution with alcohol (biofilm without fixation); 2) staining with crystal violet at 10% with heat-fixed biofilm and fixed with formaldehyde. The reading was performed using a microplate reader Versamax Microplate Reader (USA). **Results:** A) In Luria Bertani broth medium, no biofilm development was observed after 48 h of incubation. In TS broth culture medium supplemented with 1% glucose and 10% human serum, biofilm development was observed after 48 hours of incubation. B) Biofilm fixation using formaldehyde was significantly higher than the one performed with heat and without fixation (ANOVA $p < 0.0001$). **Conclusions:** TS broth culture medium was appropriate for biofilm development of *E. faecalis*. Prior fixation with 10% formaldehyde was the most appropriate technique for biofilm detection.

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29.

IN VITRO EVALUATION OF IRRIGATION SOLUTIONS FOR THE DISINFECTION OF GUTTA PERCHA CONES

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Among the materials used to seal the root canal, gutta percha cones are the most widely accepted and used. However, although produced under aseptic conditions, they can become contaminated by handling as well as by aerosols generated near the benchtop and during storage. That is why they should be disinfected before being used. The aim of this *in vitro* study was to assess the antimicrobial effect of sodium hypochlorite (NaOCl) 1% and 2.5%, chlorhexidine gluconate (CHX) 1% and 2%, and iodine potassium iodide (IKI) 0.3% used for 1 and 3 minutes on the disinfection of gutta percha cones contaminated with *E. faecalis*.

Materials and Methods: 48 gutta-percha cones were contaminated for 1 h with *E. faecalis* isolated from root canals. They were then immersed in the following irrigation solutions: 1% NaOCl, 2.5% NaOCl, CHX 1% CHX 2%, 3% IKI, distilled water (control) for 1 to 3 minutes. Cones were washed and placed individually in BHI medium and incubated for 24 h. After that time bacterial growth was determined. Results: No bacterial growth was observed with any of the experimental solutions employed at both time periods assessed, growth being found only in the control solution.

Conclusions: 1% and 2.5% NaOCl, 1% and 2% CHX and 0.3% IKI used for 1 min were effective to disinfect gutta percha cones contaminated with *E. faecalis* for 1 h.

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30.

A SURVEY OF THE PERIODONTAL CONDITION OF DENTAL STUDENTS

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Introduction: Gingivitis, an inflammation of the soft tissues surrounding the teeth, can evolve into periodontitis. The index system scores a patient's periodontal condition. **Objectives:** To determine the periodontal condition and most frequent pathology of 4th year U.N.T. Dentistry School students. **Materials and methods:** We worked with all the students (125) attending Periodontics 4. We used the Community Periodontal Treatment Requirement Index (CPITN), which assigns a 0-4 code to each clinical evaluation. Each code is a diagnosis. 0 stands for good periodontal health, 1 for gingivitis, 2 for gingivitis requiring treatment, 3 for mild periodontitis, and 4 for severe periodontitis. We also determined how many times a day students brushed their teeth, their use of interdental devices and smoking. **Results:** 60 right anteroinferior and posterosuperior sextants: code 1; 56 left posterosuperior sextants: code 1. 24 anteroinferior sextants: code 2. 2 anteroinferior sextants: code 3. Code 4 was not registered. Daily tooth brushing: 31 students (24.8%), twice a day; 69 students (55.2%), three times; 9 students (7.2%) five times; 16 students (12.8%) did not answer. Interdental devices: 103 students (82.4%) used them, 22 (17.6%) did not. Smoking: 90 students (72%) did not smoke; 16 (12.8%) did; 19 (15.2%) did not answer. **Conclusions:** gingivitis proved to be the prevailing pathology. Highest percentages for buccal hygiene were 3 daily tooth brushings, use of interdental devices and non smokers.

31.

INCREASED RIBOFLAVIN CONCENTRATION IN MILK THROUGH FERMENTATION WITH SELECTED LACTIC ACID BACTERIA

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Riboflavin (vitamin B₂) plays an important role in cellular metabolism and is the precursor of the coenzymes FMN and FAD that participate in numerous oxidation-reduction reactions and energy metabolism. In this work, lactic acid bacteria (LAB) able of produce vitamin B₂ in milk were identified. 180 strains, belonging to the collection of CERELA, were inoculated into a riboflavin-free synthetic medium and incubated at 37°C for 16 h. The concentration of riboflavin was determined by means of a microbiological method using as reference strain *Lactobacillus (L.) rhamnosus* ATCC7469. Only 43 strains were able to grow in this medium. Out of these, 12 strains were selected because of their high riboflavin production: *L. plantarum* (2), *L. reuteri* (2), *L. fermentum* (2), *L. paracasei* (2), *L. bulgaricus* (2), *Lactococcus lactis* (1) and *Streptococcus thermophilus* (2). They were inoculated into cow milk and incubated at 37°C for 24h. Some of the strains were able to increase vitamin concentrations in milk up to 20% with respect to the initial concentration, whereas others decreased B₂ concentrations. The use of LAB capable of synthesizing riboflavin in milk would constitute a biotechnological strategy for the elaboration of novel vitamin bio-enriched foods.

32.

EFFECT OF HEAT TREATMENT ON FOLATE CONCENTRATION IN A B₂ NATURALLY BIO-ENRICHED YOGURT

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The aim of this work was to study the effect of heat treatment on folate concentration and stability in a B₂ naturally bio-enriched yogurt. 3 yogurts were elaborated using B₂ producing strains: *L. bulgaricus* CRL863 & CRL871 and *S. thermophilus* CRL803 & CRL415. After elaboration, they were heated 3 times at 80°C for 30 min. After treatment, they were stored at 4°C. The following were evaluated: **a)** folate production; **b)** acidity (pH); **c)** protein concentration & **d)** cellular viability (Log CFU/mL). **Results:** Highest levels of folate were reached after yogurt elaboration. Yogurt B (CRL871 + CRL803 + CRL415) showed the highest folate levels (223.53 ± 2.75 µg/L). In general, pH was about 4.75 and protein concentration ranged from 0.17 to 0.24 g/dL. After heat treatment, only yogurt B had the same folate values (about 220 µg/L). pH and protein levels were not modified by heat. **Conclusion:** out of the 3 yogurts tested, only B showed folate values 3 times higher than a commercial yogurt. After heat treatment, folate concentration decreased 40% in yogurts A & C, but remained constant in B. It is possible to elaborate and apply heat treatment to yogurts in order to increase their microbiological safety, with no loss of vitamin, depending on the strains used.

33. PSEUDOPHYLLIDAE: DIAGNOSIS IN A DOG IN THE CITY OF TUCUMÁN, ARGENTINA

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Diphyllobotrium and *Spirometra* are the most representative taenias of the *Pseudophyllidae* order due to their zoonotic importance. They may live as a parasite in the small intestine of men, mammals and birds. They are heteroxenous. *Diphyllobotrium* uses a copepod and a fish as intermediary hosts and the adult lives as a parasite in the small intestine of piscivore mammals and birds. *Spirometra* uses a land vertebrate as a second intermediary host and the adult develops in carnivore mammals and birds. **Objective:** to report the diagnosis of *Pseudophyllidae* in a dog in the capital of Tucumán. **Materials and methods:** a direct simple copro-parasitological analysis was carried out with fresh faeces during the consultation. A parasitic segment was sent to the laboratory and microscopically observed. **Results:** ovoid eggs were observed, operculated in one end, non-embryonic, light brown, with no air chamber, similar to the ones observed with the simple direct technique. Based on the morphology of the segment collected and the eggs recovered, we determined that they were *Pseudophyllidae*. **Conclusion:** we believe this finding is relevant not only as the first diagnosis of pseudophyllidiasis in a dog in Tucumán but also due to its importance as an agent responsible for zoonosis. Further studies are necessary.

34. ASSESMENT OF PRESERVATION METHODS APPLIED TO DAIRY AND CUTANEOUS PROPIONIBACTERIA OF INDUSTRIAL IMPORTANCE

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Propionibacteria are divided into “dairy” and “cutaneous” based on habitat and are used as cheese starters, nutraceutical producers and probiotics. Industrial application of microorganisms greatly relies on preservation methods that guarantee cultures with long term functionality. Our objective was to assess the effect of different preservation methods on viability and stability during storage of 2 dairy and cutaneous strains of propionibacteria. *P. freudenreichii* and *P. avidum* strains were harvested at the stationary phase (10^{10} CFU/mL) and preserved with hypobiotic methods: storage under mineral oil and anabiotic methods: freezing at -20°C and lyophilization with/without cryoprotectors. Samples were stored for 9 months at 4°C and the number of viable cells, re-activation in fresh medium and cellular damage (release of proteins, nucleic acids and β -gal) were determined at intervals. The strains survived treatments and long-term storage. After 9 months, 10^4 CFU/mL and 10^9 CFU/g were recovered under the best conditions of hypobiotic and anabiotic methods respectively. Glycerol, DMSO and LEL were successful protectors and suspension media for propionibacteria preserved by freezing whereas glutamate and trehalose were the best protectors for lyophilized cells. The protectors assayed also prevented cell inactivation and damage caused by preservation.

35. ASSOCIATION BETWEEN EXTENDED SPECTRUM B-LACTAMASES (ESBL) AND COMPLEX INTEGRONS IN ENTEROBACTERIA ISOLATED FROM MEDICAL CENTERS IN TUCUMÁN

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Nosocomial infections caused by ESBL-producing Enterobacteriaceae represent a worldwide problem related to a high rate of morbidity and mortality. Resistance encoding genes are mobilized by plasmids and transposons located in integrons that are responsible for resistance spread. Studies in Argentina showed that CTXM-2, PER-2 and SHV are the ESBL most frequently detected in Enterobacteriaceae with a prevalence of CTX-M-2 (75%). The aim of this study was to determine the association between ESBL-encoding genes and complex integrons in clinical isolates of ESBL-producing Enterobacteriaceae. Between March 2008 and December 2010, we studied 2238 strains isolated from medical centers in Tucumán. ESBL was screened according to CLSI standards. Out of 242 ESBL producing strains, 108 were randomly selected to perform molecular characterization of *bla*_{-SHV2}, *bla*_{-PER2} and *bla*_{-CTX-M-2} and to detect complex integrons using primers directed to *int1* and *orf513* genes by PCR. The ESBL enzymes were characterized as CTXM-2, PER-2 and SHV with CTX-M2 prevalence. Out of these strains, 44 (70%) were associated with class I complex integrons. This multicenter study reflects the high incidence of ESBL associated with class I integrons in our region. Enhanced infection control plays an important role in limiting the spread of ESBL-producing organisms.

36. ANTIMICROBIAL EFFECT OF DIFFERENT CONCENTRATIONS OF SODIUM CHLORIDE ON THE *Streptococcus mutans* GROUP

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Dental caries is an infectious disease considered as a public health problem. Mutans streptococci have been implicated as etiological agents of this disease. Mouthwashes with antimicrobial substances can be used for the prevention of dental caries. The aim of this work was to determine the *in vitro* inhibitory effect of different concentrations of sodium chloride (ClNa) on the growth of *S. mutans* (Sm) and *S. sobrinus* (Ss). **Materials and Methods:** Sm and Ss were isolated from human saliva. 5 μ L of each strain assessed was sown, according to the 0.5 turbidity tube of Mc Farland scale, in Mitis Salivarius Agar + Bacitracine (MSB) with ClNa concentrations of 3%, 7%, 14% and 21%. The samples were incubated in air + 5% of CO₂ at 37°C for 48 hs. Colony counts were expressed in CFU/mL and Student's *t* test was used.

Results: Sm did not grow at a 7% concentration of ClNa. Ss significantly reduced its CFU with the 7% concentration although there was no growth at a 14% concentration of ClNa.

Conclusions: Ss is more resistant *in vitro* than Sm at a concentration of 7% of ClNa, higher concentrations being required to inhibit its development. This natural substance could be used for the prevention of dental caries.

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37.

PRELIMINARY STUDY OF THE FLORAL ORIGIN OF HONEYS OF TINOGASTA AND ANDALGALA, CATAMARCA*Arroyo Nieto AV¹, Costa C², Fiad S³.*¹Becario CIN 2012, ²FACEN, UNCa. ³FCEF y N. UNC. ³FACEN, UNCa. E-mail: vvalearroyo@hotmail.com; E-mail: criscosta78@yahoo.com.ar; E-mail: susanafiad502@hotmail.com

Honey is a natural product whose composition and characteristics present variations attributable to its floral origin. Monofloral honeys are those whose composition includes a minimum of 45% of pollen of the same family, genus or floral species, and from which they take their name, with the exception of honeys from citrus or alfalfa. Multifloral honeys are those whose composition includes nectar from several vegetable species without the predominance of any. The aim of this work was to determine the floral origin of honeys from the Tinogasta and Andalgalá Departments. Campaigns were conducted between September, 2011 and April, 2012 to carry out a survey of the flora, to gather, herborize and identify the botanical samples, which are deposited in the Area of Special Projects of the FCEFy N of the UNC. 11 samples were processed using conventional melissopalynological technologies according to the procedures of the ICBB. Pollen types were determined by comparison with pollen from the reference palynotheca of the Palynology Laboratory. 8 monofloral Fabaceae were found with values between 47 and 85% of pollen from Leguminous and within these, the prevalent species was *Prosopis alba* Griseb.; the other three turned out to be multifloral. 100% of the monofloral honeys correspond to native species characteristic of the Chaco.

38.

THE NUTRITIONAL EFFECTS OF PARASITIC DISEASE IN GOATS*Blanco MJ, Chueca C, Marchetti C, Rodríguez Brito A.**School of Agronomy and Zootechnics. Florentino Ameghino s/n, Finca El Manantial. UNT. E-mail: mjv_blanco@hotmail.com*

Animal health has been compromised by the negative effect of parasitic infections. Nutritional deficiency is a factor to be taken into account in high parasite loads. **Objective:** Nutritional monitoring, (based on protein and fiber parameters) vs. parasitic infestation in a goat herd. We worked with 20 native goats. Sampling period: August to December. We collected: a) Faeces samples processed with the Willis technique; b) food samples. From August to September, the animals were fed with Bermuda grass (*Cynodon dactylon*) and wheat pellets. From October to December the food was Rhodes grass (*Chloris gayana*) and Bermuda grass. These samples were processed by the AOAC method of crude protein (CP) and neutral detergent fiber (NDF) by the Van Soest method. **Results:** a) parasite eggs per gram of feces (EPG), August = \bar{x} = 213; September = 123; October = 1316, σ = \pm 0.131; November = 1389, σ = \pm 1.35 and December = 4243, σ = \pm 2.6. b) Food nutritional value: **diet 1** (August-September): CP = 7.34%; NDF = 74.96; **diet 2a** (October-November) CP = 4.13%; NDF = 72.58%; **diet 2b** (December): CP = 6.98; NDF = 69.12. The low parasitic load in August-September was due to environmental conditions. Between October and December a high-fiber low-protein diet added to the environmental conditions favored the increase in parasite load.

39.

EFFECT OF FISH OIL ENRICHED DIET ON OMEGA-3 FATTY ACID CONTENT IN LAYING HENS' LIVERS*Giunta SA, Zutara MS, Luna Pizarro P, Maidana S, Arnau EM.**Facultad de Ingeniería, Universidad Nacional de Jujuy. E-mail: sagiunta21@gmail.com*

This work investigated the effect of the enrichment of the birds' diet with 2.5% fish oil during their productive lives and compared it with a control group. The birds were subjected to a breeding and egg-laying at high-altitude (N) system, considering the three altitude levels (N1, N2 and N3) used in the laying farm. Weight, protein content, total fat content and fatty acid composition in the bird's livers were evaluated. Protein content was obtained by the Kjeldahl method; the fat was extracted and determined by Soxhlet and Bligh and Dyer methods respectively. The fatty acid profile was obtained by gas chromatography (GC). No significant differences were observed in weight, protein content or total fat content between the treated birds and the control group at any of the three height levels evaluated. However, the omega-3 fatty acid eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) content increased significantly from non detectable (ND) to 0.54% of methylated fatty acid and from 1.59 to 5.99 % of methylated fatty acid, respectively, in the livers of the birds fed with the enriched diet compared to the control group, at all the three levels evaluated. These results show that the 2.5% fish oil ω -3 enriched diet used in this study was enough to produce a significant increase in EPA and DHA in the laying hens' livers

40.

PRELIMINARY STUDY OF FATTY ACIDS LEVELS OF *Eisenia andrei* USING GAS CHROMATOGRAPHY*Giunta SA, Zutara MS, Luna Pizarro P, Maidana S, Jáuregui HS.**Facultad de Ingeniería, Universidad Nacional de Jujuy. E-mail: sagiunta21@gmail.com*

Eisenia andrei is a useful species in the transformation of organic residues besides being of nutritional interest since it is a rich protein source (> 60% w/w, dry base), minerals and fatty acids. The aim of this work was to determine the content of fatty acids in samples of worms fed with farm hen manure. The manure comes from birds subjected to a base diet (balanced food - G1) and others with a supplemented base diet (vitamin E and fish oil - G2). Lipids were extracted and determined by Soxhlet and Bligh and Dyer. The fatty acids profile was performed with gas chromatography (GC). The results obtained showed that the content of ω -3 found in the manure from birds fed with the enriched diet was sufficient to produce a significant increase in fatty acids ω -3 PUFA, fundamentally the DHA from non detectable (ND) in control worms to 6.99% methylated fatty acid in the worms fed with the manure under study. Therefore, the presence of DHA in the worms turned its flour into a potential source of this essential fatty acid, which might help to solve the nutritional and ecological problems of some developing countries.

41. EFFECT OF ORGANIC SUBSTRATA (PIG MANURE AND POULTRY DROPPINGS) AND OF THE SOURCE OF MOISTURE IN THE PRODUCTION OF *Eisenia andrei*

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The aim of this work was to evaluate the effect of different organic substrata of animal origin on *Eisenia andrei* (Ea) as well as their source of moisture. The pig manure (P) and poultry droppings (G) used as a substrate for worms was composted for 15 days and then submerged in water for 2 more days to stabilize the pH. Aqueduct water (A) and residual effluents (E) from the meat industry were used as a source of moisture for the worm substrate. At the end of the process we determined amount of lombricompost generated, final weight and number of worms. The information was evaluated with the analysis of variance. The increase in weight was significantly greater in the mixture PE ($P < 0.05$). Nevertheless, with respect to the number of individuals obtained at the end of the treatments, GE was the best mixture followed by GA, PE and PA, in this order. A lower consumption of substrate GE by the worm Ea resulted in a greater efficiency in the index of transformation of organic matter (57%) compared to substrate PE (48%). Lombriculture can be integrated into the systems of poultry and porcine production and, by recycling material, it can be of great help for the decontamination of an environment polluted by animal excreta and effluents from the meat industry.

42. UTILIZATION OF A LIQUID BIOFERTILIZER IN THE GERMINATION AND GROWTH OF MAIZE *Zea mays* (Var. Capia)

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The aim of this work was to make a liquid biofertilizer from lombricompost and evaluate its efficiency in maize cultivation. 3 concentrations were tested to obtain an ideal preliminary dose of biofertilization. For the production and obtainment of the organic fertilizer a liquid extract was obtained from the action of *Eisenia andrei* on 100% clean poultry droppings. The bioassays were carried out with seeds of *Zea mays* (Var. Capia). The germination tests allowed us to evaluate the viability of the seeds subjected to the different treatments. The parameters considered were number of germinated seeds and height of the plantlets. In the results significant differences between the control and the tested group were found. Germination percentages (%G) ranged between 69% and 85%. As for the average time of germination calculated every day, no significant values were observed for treatments 1, 2 and 4 while for treatment 3 a significant increase ($p = 0.05$) in germination was found in relation to the previous ones. After 56 days of treatment, the best results for the height of the plantlets were observed in T3 (98 cm), followed by T2 (89 cm), T4 (83 cm) and T1 (74 cm). In T3 we found the plants with best conformation.

43. ZYGOTIC SELECTION IN CORN (*Zea mays* L.) WITH AN INBRED TESTER

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Zygotic selection is a modified gamete selection. The aim of this study was to evaluate the efficiency of zygotic selection in maize plants of second backcross (BC) in order to select the best hybrids (F1) with the inbred tester (Lea48HQ). The study was conducted in INTA Leales during the winter (2011) in a greenhouse. Plants of BC were selfed and crossed with the tester. During the next summer a trial was conducted (rainfed and fertilized with 50 kg.ha⁻¹ diammonium phosphate; 100 kg.ha⁻¹ urea) to evaluate 23 unreleased F1 and 2 controls Dekalb390Mg (T1) and Dow2K562Hx (T2). We measured yield (RTO) and ear.plant-1 (PRO). For RTO we found 13 F1 with higher values than T2. For PRO the results showed that 4 F1 had higher values than T1, and 15 F1 proved better than T2. This proves that the methodology used is efficient for the selection of superior genotypes.

44. POPULATION DENSITY OF WHITEFLY (*Bemisia tabaci* Gennadius) NYMPHS IN DIFFERENT STRATA OF *Mentha arvensis* L.

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Bemisia tabaci G has been cited as one of the major pests that reduce the quality of the essential oils of the genus *Mentha* species. The aim of this study was to determine the population density of whitefly nymphs in different strata of the plant. The assay was conducted at the experimental field of FAy A - Santiago del Estero under irrigated conditions on a crop of *M. arvensis* during the 2009-2010 season. The experimental design was a randomized block with six replications. The treatments assessed were the lower, middle and upper strata. In the laboratory, weekly counts were made in 20 leaves from different positions. The average number of nymphs per leaf was recorded. Data were transformed by the mathematical expression LN to normalize their distribution. Significant differences were found in population density of nymphs for different treatments. The middle stratum showed greater density, with 23 nymphs per leaf, in relations to the lower (15 nymphs/l) and higher strata (13 nymphs/l), differences between them not being significant. It should be noticed that the determination of the position preference of whitefly nymphs is essential to streamline their sampling. It is concluded that the leaves of the middle stratum are suitable for studies of whitefly population density.

45. EVALUATION OF THE EFFECT OF LIGHT AND FERTILIZATION ON THE GROWTH OF TWO CÍTRUS ROOTSTOCKS

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The commercial propagation of citrus is an activity carried out in nurseries qualified for the production of plants to ensure certified commercial health and quality thereof. In the seedbed seed germination and seedling establishment should be ensured, so a number of practices should be followed to guarantee production success. The aim of this paper is to adjust different nutrition and light techniques to obtain high health and quality citrus rootstocks. We worked with seedlings of two rootstockspots produced in a breeding chamber. The treatments were: single and double dose of fertilizer with light and without light. We worked with plant-plot in randomized blocks with three replications and each sample of 10 seedlings, controlled every 15 days. Height of the samples was determined. We used analysis of variance and mean comparison test by date (Tukey's test, 0.05). The results obtained show that a double dose of fertilizer with light (DDF+L) is the best response throughout the trial, and that it differs significantly from the first day. In the other treatments, no differences were observed. Light is the more influential of the two factors tested to show seedling growth, since treatments without light showed the lowest values in all dates assayed. We conclude that DDF+L is the most appropriate treatment for the rapid growth of the seedlings.

46. PRESENCE OF FRUIT FLY IN CITRUS FARMS OF THE CAPITAL DEPARTMENT, SANTIAGO DEL ESTERO

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Knowledge about the presence and abundance of certain major citrus pests would define guidelines in the citrus production in the province. Fruit flies, which belong to the family Tephritidae (Diptera), are very harmful pest in citrus production. The aim of this work was to conduct a survey of the presence of the insects of the family Tephritidae and to identify the most frequent species in the citrus farms in the Capital department of Santiago del Estero. Every 15 days during the 2012 season we visited farms in the following locations: Nueva Francia (farm I), Maco (farms II and III) and Villa Zanjón-Experimental Field of the Facultad de Agronomía y Agroindustrias - (farm IV). Sampling was performed with Mc Phail and Jackson traps, using 4 Mc Phail and one Jackson per ha in different hosts: mandarin, orange and grapefruit. From this study, two species were identified belonging to the Tephritidae family: *Ceratitis capitata* Wied (mediterranean fly) and *Anastrepha fraterculus* Wied (South American fly), especially present in orange trees. Capture data reveal that out of all tephritidae, *Ceratitis capitata* was the most frequent species (78%). The conclusion is that *Ceratitis capitata* is the most important species, and orange trees the main host.

47. EFFECT OF BIOLOGICAL INOCULANTS AND EARTHWORMS (*Eisenia fetida*) ON CHICKPEA (*Cicer arietinum*) CULTIVATION UNDER CONTROLLED CONDITIONS

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Earthworms are a key species in soil trophic chains, playing an important role in removing organic matter from the surface and incorporating it into the soil, which helps to improve soil fertility and favors crops. These functions are fulfilled by the microorganism-worm association. In the earthworm gut microbial activity is stimulated by various processes.

At present commercial biological inoculants are being developed to improve crop yields. This trial involves growing chickpea plants under controlled conditions in pots with sterile soil watered regularly with sterile water. There were four treatments: 1. without inoculant and without earthworms. 2. with inoculant and without earthworms. 3. with inoculant and worms. 4. without inoculant and with worms. After 2 months plants were analyzed on the basis of phenological characters.

The results revealed that the number of branches was similar. However, there was a higher average value of the variable height of the foliage and root dry weight in plants with worms and inoculants.

These results would indicate a positive effect for chickpea of the simultaneous combination of biological inoculants with earthworms, highlighting the quality of earthworms as ecosystem engineers that improve the quality of the soil.

48. INCIDENCE OF FUNGI ON SOYBEAN PRODUCED IN THE PROVINCE OF TUCUMAN, CYCLE 2010-2011

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The quality of soybean seeds is a major factor in the success of the crop. The aim of this work was to evaluate the incidence of fungi on soybeans from 9 varieties in Tucumán (cycle 2010/2011). The treatment carried out involved soybeans which were disinfected and soybeans which were not. We used plastic trays with cotton and sterile paper, damped with 30ml of 2.4D 0.2% (50 seeds per tray). They were incubated at 25-30°C and a 12h photoperiod. Assessment was made on the seventh day, identifying fungal agents. The soybeans which were not disinfected presented significant differences among them. In Piedra Blanca and Monte Redondo, *Cladosporium* presented the highest incidence (51%) whereas *Aspergillus* did so in Piedrabuena (32%) and La Cocha (39%). Comparing varieties, RA 633 was the most affected one with an incidence of 76%, followed by 5909 and A8000, 67%; DM 5.8, 66%; DM 8002, 64%; DM 6500, 59%; Munasqa, 58%; DM 7.8, 50%. In general, *Fusarium* showed lower incidence levels. Similarly, the superficially disinfected soybeans were affected in all the areas as well. *Alternaria* 18% prevailed in Piedra Blanca and *Cladosporium* 10% in Monte Redondo. The most affected varieties were 5909 and RA 633 with 24% incidence, followed by DM 6500 (22%), A8000 (18%), DM 5.8 (17%), DM 8002, Munasqa and DM 7.8 (13%).

49. PRODUCTION DIAGNOSIS OF COMMERCIAL FARMS OF COMMON MANDARINE IN THE CAPITAL DEPARTMENT - SANTIAGO DEL ESTERO

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The production estimate of commercial mandarine farms in Santiago del Estero is scarce. We evaluated the production of plants in two commercial farms with similar cultural management in the Capital Department. The aim of this work was to study variability among plants, their degree of similarity and the association between these variables with PCA of multivariate methods. The following variables were measured: polar and equatorial diameter, weight, number of seeds and segments, grain size of the fruit, color, weight and skin thickness, weight and volume of juice, soluble solids, acidity and ratio. The data comes from 30 fruits taken randomly from 10 plants per farm. The results showed that the 3 first axes accounted for 72.36% of the variability among plants and plane 1-2 plane for 61.70%. In Farm I, 7 out of the 10 plants produced fruits of greater volume and juice weight, with a greater number of seeds, acceptable shell color and higher contents of soluble solids and Ratio. In Farm II only 3 plants showed moderately acceptable characteristics while the rest of them produced low commercial quality fruit. It was concluded that the differences are due to the type of rootstock used, Rangpur showing a better behavior, to additional irrigations and thinnings of fruits performed, and to the existence of saline areas.

50. EFFECT OF DROUGHT ON EMERGENT WEEDS POPULATION IN SOYBEAN CROPS IN THE EAST OF TUCUMAN

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Water is a development factor for soybean crops and weeds. The aim of this paper is to determine its influence on emergent weed populations in soybean crops. The samples were taken during the 2010-11 and 2011-12 campaigns at Los Aluxes SA, located in the east of Tucumán (Cruz Alta). The transect method was used for collection. The following data were recorded: spp, number of individuals and rainfall. The results were: **2010-11, Oct:** *Sphaeralcea bonariensis* 12; *Argemone subfusiformis* 8; *Trichloris pluriflora* 3; *Glandularia peruviana* 4. **Nov:** *S. bonar.* 26; *A. subfus.* 2; *T. plur.* 2 and *G. peruv.* 12; *Quenopodium album* 45; *Amaranthus quitensis* 21; *Portulaca oleracea* 11; *Heliotropium procumbens* 6; *Parietaria debilis* 1. **Dec:** *P. oler.* 5; *S. bonar.* 27; *A. quit.* 26. **Jan-Feb:** no spp. **Mar:** *A. subfus.* 1. **Apr:** *S. bonar.* 1. Precipitation: **751 mm.** **2011-12, Oct:** *S. Bonar.* 9; *A. subfus.* 9; *T. plur.* 4; *G. peruv.* 2. **Nov:** *S. bonar.* 11; *A. subfus.* 3; *T. plur.* 2; *G. peruv.* 2; *Q. album* 10; *A. quit.* 6 and *P. oler.* 2. **Dec:** *S. bonar.* 11; *A. quit.* 8; *P. oler.* 2. **Jan:** no spp. **Feb:** *Q. album* 1. **Mar-Apr:** no spp. Precipitation: **393 mm.** The number of weeds decreased in 2011-12, when the rainfalls were lower. The spp were absent when the crop was "closed". Determination of the number of emergent weeds in connection with the water factor is important for proper cultural management.

51. PROTOCOL FOR THE CHARACTERIZATION AND DETERMINATION OF GLYPHOSATE RESISTANT POACEAE WEEDS

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The resistance of some weeds to glyphosate is relatively recent. The biotypes respond to a "selective pressure". The first resistant weed was *Lolium rigidum* in Australia in 1996. In Argentina, the first ones were *Sorghum halepense* and *Lolium multiflorum*. The aim of this paper was to provide characterization protocols for the main glyphosate resistant Poaceae weeds at a regional level: *Digitaria insularis*, *Echinichloa colona*, *Eleusine indica*, *Lolium multiflorum*, *Urochloa lorentziana* and *Urochloa platyphylla*.

The resistant biotypes were collected in the departments of Chichigasta, Río Chico, Leales and Burruyacú (Tucumán) in soybean and citrus crops. The following vegetative characters were registered: rhizome, stolon, culmus, knots, basal leaves, pod, leaf, ligula, as well as the following reproductive characters: ear, spike, main and secondary rachis, spikelets, rachilla, number of flowers, floret, lower and upper glume, lemma, palea, floral structures, rachilla articulation, caryopsis, life cycle. All characters were measured and pubescence and coloration were analyzed. Different protocols were designed for each biotype. Protocols are basic tools that will enable the identification of the main resistant biotypes at an exomorphological level during the first phase that will be completed with biological and chemical studies.

52. RESULTS OF ORGANIC AND MINERAL NUTRITION ON CHLOROPHYLL AND CAROTENOID CONTENTS IN EARLY POTATO CV. SPUNTA PRODUCTION IN TUCUMAN, ARGENTINA

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The effect of organic and mineral nutrition on chlorophyll and carotenoid contents in early potato tuber production cv. Spunta in 2011 in FAZ, UNT, was studied. The experimental design was a randomized block with eight treatments: T1. Control; T2. Guanito (manure pellets) 1 dose (700 kg.ha-1), T3. Guanito 1/2 Dose (350 kg.ha-1), T4. Guanito 1+1/2 Dose (1050 kg.ha-1), T5. 22N-28P-0K (750 kg.ha-1), T6. 22N-28P-0K (750 kg.ha-1) + Guanito 1 Dose T7. 22N-28P-0K 750 kg.ha-1 + Guanito 1/2 Dose, T8. 22N-28P-0K 750 kg.ha-1 + Guanito 1+1/2 Dose. We measured the content of photosynthetic pigments and carotenoids in fresh potato tubers. Dimethyl sulfoxide was used for the extraction of photosynthetic pigments. Their quantification was made from the absorbance readings at 664, 648 and 472 nm. The results were analyzed by ANOVA, Tukey's test and Pearson's correlation coefficient. Significant differences in chlorophyll a content in T6 (2.6633) and T8 (2.6567) compared to control (1.1167) were obtained. This study showed a positive correlation between carotenoids and chlorophyll a (0.8747) contents. We concluded that the study of pigments content can be used as an early biochemical marker of the photosynthetic activity of the plant to evaluate organic and mineral nutrition in the early production of potato cv. Spunta.

53.

AMARANTH BEHAVIOR ON DIFFERENT PLANTING DATES IN TAFI DEL VALLE, TUCUMÁN, ARGENTINA

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The aim of this experiment was to evaluate the behavior of amaranth cultivation on two planting dates in Tafi del Valle, Tucumán. The trial was conducted at the Experimental Substation in Tafi del Valle at 2000m.a.s.l. in 2011/12. Sowing was carried out directly in furrows in two 3 m long plots; thinning was done leaving an average gap of 10 cm between plants. Planting dates concerning the treatments were: T1. 15/11/11; T2: 5/12/11 with 8 replicates in a randomized block design. The harvest of amaranth grains was conducted in April and May, respectively, by hand, when the panicle reached physiological maturity, grain was hard or when leaves senesce and fall. Measurements were: plant height at the flowering period and commercial yields (kg ha⁻¹). ANOVA was performed and Tukey's test ($p=0.05$). There were significant differences in plant height between T2(0.970m) and T1(0.785m). In yields T1(232.229 kg ha⁻¹) was significantly different from T2(215.001 kg ha⁻¹), with higher agronomic yields. These results reveal the importance of the planting date since when it is done early the cultivation of amaranth has more favorable ecological conditions resulting in higher agronomic yields.

54.

DIFFERENT CULTURAL MANAGEMENT STRATEGIES OF SUGARCANE AND THEIR EFFECTS ON THE INTERFERENCE PROCESSES OF *Talinum paniculatum* (Jacq) Gaertn.

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T. paniculatum (TALPT- Fat Meat, Caruru) is a sugarcane crop weed in the Argentine Northwest. The aim of this work was to determine losses owing to the competition of the species with different management types. The work was conducted at Los Nogales (26°74'89"06S–65° 21'97"5W) during 2010-2011 in sugarcane cv. LCP 85-384. The trial was carried out in randomized blocks with 5 replications, 160 m² plots. Treatments were: T1: Totally dirty. T2: Totally clean. T3: Total mulching (fertilization with 90 kg N₂/ha). T4: Burning of harvest residues, conventional culture, nitrogen fertilization, little weed incidence. T5: mechanical culture without burning, fertilization, high incidence of *T. paniculatum*. We determined abundance-covering, aggressiveness and control with a 0-6 scale with two trained evaluators. Results were statistically analyzed by means of ANOVA and Tukey's test, for $\alpha=0.05$. Results in T4 and T5 indicated losses of 7.40 and 24.20% for cane and 8.70 and 26.10% for sugar. Greatest TALPT aggressiveness was found in T5 with 70% effect and T1 with 80%. Weed control was greatest in T5 with 90% and T4 with 60%. Mechanical-chemical methods and burning are excellent weed controls and methods with mulching moderate controls.

55.

EMERGENT POPULATIONS OF *Solanum nigrum* L. IN SUGARCANE FROM SEED CONTRIBUTION AT LOS NOGALES (TUCUMÁN, ARGENTINA)

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S. nigrum (SOLNI-Ajicillo, Caraxixá) is a second order weed in Tucumán sugarcane crops of great importance as a possible competitor. The objective of this work is to know the emergent populations from the production and contribution of seeds. The work was carried out at Los Nogales in TUC 77- 42 cultivar, three-year ratoon, during 2010. The studied plot was of 4800 m². We evaluated initial plants (December 2009), establishment (January 2010), production of seeds (May 2010) and emergent populations of plantlets (November 2010). The crop was managed with mechanical culture without herbicides, without watering, with nitrogen fertilization (90 kg.N₂ ha⁻¹). The parametric statistical analysis was made in initial, intermediate and final populations using ANOVA and Tukey's test for $\alpha = 0.05$. We found an average seed production of 1,203.33 seeds.pl⁻¹ and of 162,783,333 seeds.ha⁻¹ from the original plants. Those seeds generated an emergent weed population of 145,075.33 pl.ha⁻¹ out of which a total of 79,128 pl.ha⁻¹ survived. Mean rates are: TBM 434.46‰; TBN 565.53‰; and Sv 79.12‰. The emergent populations are small with a high mortality rate (TBM), very low natality rate (TBN) and low survival.

56.

EFFECTS OF SOLARIZATION ON THE GROWTH OF *Prosopis alba* (Griseb)

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The aim of this work was to determine the effect of solarization on the growth of *P. alba*. The trial was conducted in El Zanjón, province of Santiago del Estero. 4 substrates obtained from forest nurseries were assayed: S1: soil obtained from the surface layer, S2: Decomposed unsifted mount mulch; S3: clearing litter mixed with soil; S4: vermicompost mixed with soil. The treatments were substrates: 1. Solarized and 2. Non-solarized. The substrates were placed in 0.375 m³ plots arranged randomly, with four replicates, and were solarized for 50 days. 100 seeds of *P. alba* (Algarrobo) were sown in each of the plots. 30 days after sowing 20 plants per plot were uprooted and height and dry biomass were determined. In all cases, biomass was greater in solarized substrates than in those without solarization. Biomass values were: S1: 6.49/2.8, S2: 4.32/2.23, S3:4.47/3.26and S4: 4.47/2.94.gr respectively. The average height of plants produced in the solarized and non-solarized substrates were S1:17, 37 and 10.61, S2: 13.86 and 10.29, S3:15.0 and 11.64 and S4: 14.8 and 12.82 cm respectively. It is concluded that forest substrates solarization stimulates the development of *P. alba* in early stages, more vigorous plants being obtained than in non-solarized substrates.

57. NON-DESTRUCTIVE METHOD OF LEAF AREA ESTIMATION FOR INDIVIDUAL LEAVES OF TWO SWEET SORGHUM (*Sorghum bicolor* (L.) MOENCH) HYBRIDS

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Leaf area measurement is fundamental for crop development evaluation since it is a necessary measure to calculate plant assimilation. The objective of this work was to find a regression equation between Leaf Area Pattern and leaf blade linear dimensions in different developmental stages of two sweet sorghum hybrids to estimate leaf area in the field. Hybrids with potential bioenergetic use were Padrillo and Argensil 165 Bio. They were sown on December 16th and 26th 2011 respectively at 3 cm deep and 8-12 plants/m density. Every 15 days, 438 Argensil leaves and 506 of Padrillo were randomly extracted. Maximum length and width of each leaf was measured and photographed. Pattern leaf area was determined with ImageJ software. A statistical Student's t test was used. It was adjusted to a linear regression of the leaf area pattern in relation to maximum length per width. For Padrillo, the equation is $AF_i = 0.7241 * x$; $R^2 = 0.978$. For Argensil 165 Bio, the equation is $AF_i = 0.7369 * x$; $R^2 = 0.982$. Both models are highly significant with very good precision. Through the statistical test, differences between both equation slopes were detected, showing the advantage of using the specific equation for each hybrid. This work provides a simple, precise method for leaf area estimation in individual sorghum leaves at different developmental stages.

58. NON-DESTRUCTIVE METHOD FOR THE ESTIMATION OF LEAF AREA PER PLANT IN TWO SWEET SORGHUMS (*Sorghum bicolor* (L.) MOENCH) HYBRIDS

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Leaf area is a fundamental parameter in the evaluation of crop development, bioenergetic efficiency and plague damage determination owing its close relation to photosynthesis and transpiration. The objective of this work was to adjust a non-destructive method to estimate leaf area per plant of two sweet sorghum hybrids determining height and green leaf number throughout the crop cycle. Padrillo and Argensil 165 Bio hybrids were sown on December 16th and 26th 2011 respectively at 3 cm deep and 8-12 plants/m density. Samplings were made every 15 days from emergence to the beginning of leaf senescence. Height from plant base to +1 leaf ring was measured. Number of green leaves per plant and maximum length and width of each leaf was determined. Leaf area of each leaf was estimated with methods adjusted to individual leaves and leaf area per plant was calculated as the sum of individual leaf areas. Non-linear regression equation was adjusted between leaf area per plant and the product of height and green leaf number per plant. Padrillo equation is $AF_{pl} = -0.0002x^2 + 2.2584x + 94.016$; $R^2 = 0.9549$, and for Argensil 165 Bio it is $AF_{pl} = -0.001x^2 + 4.2615x + 57.08$; $R^2 = 0.9573$. Both models are highly significant with good precision. This method enables the estimation of leaf area per plant from the first phenological stages to the end of the crop cycle in a non destructive manner.

59. EFFECTS OF PREGERMINATIVE TREATMENTS OF BEAN (*Phaseolus vulgaris* L.) SEED REVIGORATION ON THEIR PHYSIOLOGICAL PERFORMANCE

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This research was aimed at evaluating the effect on the physiological performance of seeds of pregerminative treatments by imbibition in an extract of a suspension of lombricompost in water (1 to 5); in water and without treatment (control). The design of the experiment used three levels of induced deterioration: 0 without harm, 2 and 4 hits for Perla INTA (white) and NAG 12 INTA (black). Analysis of the germination of white bean without harm indicates that both pretreatments, although affecting the percentage of normal seedlings, increased growth rate. Concerning performance in the field, lombricompost accelerated the emergence of black bean seedlings with high vigor that showed significant increases in size and highly significant increases in dry matter accumulation compared to the control. This treatment used with more deteriorated seeds depressed not only emergence but also velocity and size of the seedlings produced. It is concluded that the pretreatments used differentially modified the behavior of bean cultivars Perla INTA and NAG 12 INTA.

60. DIDACTIC STRATEGY FOR THE TEACHING OF BIOLOGY AT THE UNIVERSITY LEVEL

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The aim of this work was to determine the efficiency of conceptual maps as a didactic strategy to promote the significant learning of Biology, a subject belonging to the 2nd year of the Licentiate in Food Technology. We worked with two groups of students: an experimental one, which used conceptual maps as a learning strategy and a control group that did not use them. All the students were evaluated according to their level of knowledge, comprehension and application of the cognitive domain of the topics metazoans and metaphytes. The evaluation tool was a multiple choice with one correct answer questionnaire. The analysis of the results showed that the experimental group achieved better results compared to the control group. 90% of the students belonging to the experimental group passed the partial exam with a mark higher than 7 compared to 50% of passing marks of the control group. We concluded that conceptual maps provided a tool for students to significantly learn concepts of cellular biology concerning metazoans and metaphytes. Nevertheless, their effective use will depend on factors such as learning motivation, constant training in the drawing of maps, significant learning contents and time of implementation.

61. RESEARCH PROJECTS IN THE LEARNING OF BIOLOGY: A PRACTICAL APPROACH

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Biology is a subject belonging to the 2nd year of the Licentiate in Food Technology. The aim of this work was to implement learning based on research projects to favor the integration of concepts and the understanding of the subjects dealt with. The strategy was used at the end of the four-month period in the school cycles 2011 and 2012. The methodology basically consisted of conformation of work teams, choice of an integration topic, planning of the project, formulation of hypotheses and aims, bibliographical research, laboratory activities, interpretation of the results and oral reports of the work performed. The analysis of the results showed that the number of students who regularized the subject increased significantly, reaching 70% in 2011 and 90% in 2012 compared to 2010, with only 50%. It is concluded that teaching based on projects achieved the integration of concepts and promoted the research ability of students. Teachers became aware of the strengths and weaknesses of their teaching practice when implementing this strategy, which also opened a wide range of possibilities in the search for didactic tools to be applied to other subjects.

62. SOCIAL REPRESENTATIONS OF TEACHERS OF THE FOUNT WITH RESPECT TO RESEARCH

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This study is part of a doctoral thesis focused on the need for qualitative methods in the field of health research. The aim of this work was to identify and analyze the social representations of research in teachers of the Faculty of Dentistry of the UNT (FOUNT). Experienced researchers of the FOUNT were selected as key informants as part of a qualitative design, in-depth interviews being chosen as a technique for data collection. These interviews dealt with research experiences, the informants' trajectory as researchers in the FOUNT, their faculty work and their relationship with other faculty members. The constant comparative method was used for data analysis. Findings were grouped into categories as stated below: With respect to the work schemes of the teachers, they seem to have little inclination toward research. Respondents stated that the past and present practices of researchers showed a persistent trend over time related to lack of a more stable and ampler space for this professional activity. They say that one of the ways to start research is through team work. The analysis of social team work became an excellent strategy to approach a field that connects meanings and practices related to the characteristics of research in the FOUNT.

63. SOCIAL REPRESENTATIONS OF ORAL HEALTH IN MOTHERS IN A RURAL POPULATION IN THE PROVINCE OF TUCUMÁN

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This study, conducted in San José de Medinas, is part of the final work of the Rural Internship of the Medical Career of the UNT. Social representations of mothers attending pediatric consultation at the San José de Medina Hospital were analyzed.

The population was approached following intentional sampling criteria involved in a qualitative design. Data analysis was performed using the constant comparative method.

Results were grouped into the following categories: For mothers, caries is a disease linked to body corruption and physical deterioration. The restriction of cariogenic food was mentioned by some mothers who seemed to be aware of the importance of rationalizing sugar intake. Highlights include the widespread belief that decalcification of teeth occurs during pregnancy to provide minerals for fetal growth. Representations intersect oral health aspects of discourse where emotions, beliefs, practices, environment and individual history play a major role. The educational encounter between mothers and health professionals should be thought about, and professionals should recognize the coexistence of different representations during such encounters.

64. ORAL HEALTH KNOWLEDGE AND CARIOGENIC RISK ASSESSMENT IN 12 TO 14 YEAR OLD STUDENTS IN TUCUMÁN

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This study is part of an educational intervention program to promote oral health. The aims of this study were to examine the knowledge of oral health and to quantify the level of cariogenic risk in 12 to 14 year-old students attending Dr. Ramón Carrillo School in El Cadillal. In this descriptive study the population consisted of 29 children (15 males and 14 females) in the 1st year of high school who were given a questionnaire with 12 questions about oral care. Information was processed and absolute and relative frequencies were calculated. Cariogenic risk was assessed with O'Leary plaque index before the educational intervention. 67% of the students claimed they knew what caries is and how to prevent tooth decay (87%). Only 24% said they had to visit the dentist for check-ups. 94% were aware of the fact that sweets are involved in caries pathogenesis. Most children did not know the meaning of bleeding gums (60%). 24% of respondents identified the risk associated with poor hygiene before bedtime. In the course of this year only 47% visited the dentist while 7% never went to the dentist. The results of O'Leary plaque index showed cariogenic risk in all schoolchildren assessed. There is a clear need to prioritize schoolchildren as a vulnerable group considering the cariogenic risk and the obstacles found when trying to undertake preventive actions.

65. EDUCATIONAL APPROACH USED BY TEACHERS IN CATAMARCA WHEN DEALING WITH THE SUBJECT OF EATING

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Eating is one of the basic needs of human beings. The teaching of this subject is superficial and does not consider all the sociocultural components implied in its approach.

Objective: to characterize the educational approach used by teachers in Catamarca when dealing with this subject.

Methodology: mixed cross-sectional, observational-expost facto type of research. Observation units: secondary level teachers from San Fernando del Valle de Catamarca. Measuring tools: semi-structured interviews and a guide for class observation. In order to classify the approach, two categories of analysis were established.

Results: The teachers deal with contents related to organic, physiological, chemical, and metabolic levels. They also mention eating disorders as well as socio-cultural pressures, and purchasing power together with its relation to the family shopping basket as an economic factor. No contents related to consumer education or to historical-productive aspects of eating are set out.

The conclusion is that the curricular approach considered is descriptive, with little reference to the socio-cultural significance of the subject; the school content follows a morphophysiological approach. Key words: Educational-epistemological approach. Eating. Teachers.

66. PERCEPTION OF ORGANIC CHEMISTRY BY STUDENTS OF THE FACULTY OF NATURAL SCIENCES. CONTINUOUS IMPROVEMENT IN EDUCATION

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In the teaching of Organic Chemistry, the important element should be not only scientific contents, but also the appropriation of scientific knowledge, skills and values that enable students to carry out the necessary actions in the natural and social environment of their profession. The objectives of the present study are to investigate the degree of understanding of the students of different careers who attend Organic Chemistry classes and determine if they are aware of the relationship between the objects of study of the subject and their professional concerns. Since 2009, at the end of the course, the students answered a survey with twelve questions. The survey allowed learners to express their views of the subject, the difficulties found, and the effect of the contents with respect to the following year's subjects. The target students were also asked to make suggestions concerning possible teaching improvements. The difficulties detected after the research are failure in previous contents (60%), poor attendance to consultation, and time devoted to study (50%). 78% of the students claimed that the contents of the course were useful to tackle the prerequisite subjects and 89% of them said that those contents are closely linked to the curriculums of different careers. These results allow us to conclude that the students not only consider the subject as part of their curriculum but also perceive it as a useful tool for their professional future (90%).

67. PROSTATE CANCER(PC) KNOWLEDGE AND PERCEPTION AMONG MEN IN TUCUMAN

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This study assessed the knowledge and perception of PC in men of a rural (PR) and a periurban (PU) population of Tucumán. A cross-sectional study used data collected from 291 males of PR (59.2±10.0 years) and 461 of PU (60.8±8.9 years) sites. A semi-structured questionnaire was used. Educational level of PR and PU respondents was the following, respectively: None: 43% and 33%; Primary school: 40% and 39%; Secondary school: 3.8% and 12.1%. When respondents were asked about their knowledge of the Prostate Gland (PG), 40.2% and 48.0% did not know if it was a male or a female organ; 75% and 81% had some information about PC, 78% and 83% had information about PC screening. When respondents were asked how they would feel if they had PC, 57.4% and 55% expressed indifference. When asked whether they would see a specialist if they had PC, 89% and 91.9% said they would. 73.6% and 64.6% had not had a PG examination. After being informed about PC screening, 71.8% and 93.7% said they would be willing to do it. The results highlight the fact that PC and PU were similar as regards knowledge and feelings about PC and that most respondents were willing to be screened for it. Community-based PC educational interventions and provision of screening centers are required for these groups.

68. PIERCINGS AND TATTOOS: RISK PERCEPTION OF RELATED DISEASES IN ADOLESCENTS

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In recent years, piercings (P) and tattoos (T) have had an exponential growth among adolescents, thus increasing the risk of oral, dermal and systemic diseases. The aim of this work was to determine the knowledge and perception of risk of these practices among the secondary school population (PS) of San Miguel de Tucumán. An ad-hoc survey was conducted with 959 students from 6 high schools (age 16.1 ± 2.0 years). 62% were in favor of piercings and 52% approved of tattoos, 55% perceived that there is discrimination against those who use P and/or T, 91.8% were not aware of any relevant legislation on the subject; 54.2% were unaware of related diseases, 60% associated P and/or T with fashion; 73.6% wanted to have P and/or T and 26.4% did not. 36% already had P and/or T. Favorite parts of the body for P were mouth, lips, tongue (49%), navel (31%), ears (10.2%), eyebrows (8.3%) and nose (1.5%) while for T they were wrists, arms, legs, ankles and back. 50.4% had them done in a shop, 26.8% by a friend, 11.3% at a fair, 11.5% by themselves. A high percentage of respondents agree with the use of P and T without having sufficient knowledge of the risks of exposure. We consider that secondary school students should be made aware of the risks of these practices and that health promotion strategies should be developed so that students can exercise their right to health.

69. EVALUATION OF APPROACHES TO LEARNING OF MEDICAL STUDENTS (UNT)

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This study presents part of the results of the research "An open question: studies of the incidence of the training model in Biology on the academic performance of university students. Part II" approved and supported by grants from the UNT.

Our goal is to identify the learning profiles of the students accepted to Medical School (UNT).

Learning requires the use of specific strategies. It implies motivation as well as the conception of learning that students have and the way in which they deal with it (learning approaches).

The CEPEA questionnaire was applied to 44 volunteer students. The results showed that only 39% of the students had a more than superficial approach, that is, they were motivated to learn rather than to pass an exam. 28% adopted superficial approaches: they were interested in learning with the least effort and avoiding failure. The remaining 33% of the students experienced learning as a competitive task.

We consider it important to reflect on the students' learning processes when designing and implementing teaching strategies to efficiently meet the common difficulties that are found in the early stages of the career and to prevent academic failure.

Key words: Learning, motivation, strategies, medicine

70. MORPHOLOGY AND ANATOMY OF THE SPOROPHYTE OF *Astrolepis sinuata* (PTERIDACEAE)

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Astrolepis is a small xerophytic genus that belongs to the cheilanthoid ferns. The only species that grows in Argentina is *Astrolepis sinuata* (Lag. ex Sw.) Benham & Windham, an element of the dry mountain forest in the Northwestern region. The aim of this research was to carry out the morphological and anatomical characterization of this species. Fresh material was collected in Tucumán and Salta and deposited in the LIL Herbarium. Standard anatomical techniques were applied. The results show that *A. sinuata* has a postrate rhizome covered by glandular star scales. Pinnate fronds up to 70 cm with 20-45 pinnae and short petioles. Adaxial surface glabrous and abaxial covered by ciliate star scales. Hypostomatic blade. In cross section 2-3 palisade and 6-7 spongy parenchyma layers. Petiole and rachis with sclerenchymatic tissue. It presents two vascular bundles surrounded by endodermis with Casparian strips. Sclerenchymatic solenostelic rhizome and parenchymatic pith with large intercellular spaces. Diarch roots with sclerenchymatic cortex. Some anatomical characters of *A. sinuata* such as glandular star scales, two vascular bundles in the petiole and large intercellular spaces in the rhizome pith are different from the rest of the cheilanthoid ferns. The anatomical characters of this species are considered adaptations to xeric environments.

71. ANATOMY AND MORPHOLOGY OF *Melpomene peruviana* (POLYPODIACEAE)

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The genus *Melpomene* belongs to the grammitid ferns, which form a monophyletic clade within the Polypodiaceae. *Melpomene peruviana* (Desv.) A. R. Sm. & R.C. Moran is a small fern, epipetric or terrestrial in highland pastures. The aim of this work was to carry out the morphological and anatomical characterization of *Melpomene peruviana*. This work was performed with 10 individuals. Standard anatomical techniques were used. *M. peruviana* presents thin creepy rhizomes, the scales are strongly clathrate, with 1-5 papillae at the apex. Fasciculate petiole and pinnate fronds. Dorsiventral hypostomatic leaves. In cross section, unistrate epidermis with a thick cuticle, 1-2 palisade and 5-6 spongy parenchyma layers. Protostelic vascular bundle surrounded by sclerenchymatous tissues. Semiterete petiole with two small parenchymatous wings, sclerenchymatous cortex; vascular bundle with Y-shaped xylem surrounded by an endodermis with Casparian bands in the radial cell walls. Solenostelic rhizomes, meristeles surrounded by sclerenchymatous tissue, parenchymatous cortex and pith. Diarch root with a sclerenchymatous tissue in the inner cortex reduced near the protoxylematic points. Morphological and anatomical features of *M. peruviana* such as sclerenchymatous tissue within the petiole, rhizome and roots as well as scales with glands constitute adaptations to xerophytic conditions.

72. MORPHOLOGY, ANATOMY AND LEAF ARCHITECTURE OF *Carica quercifolia* (CARICACEAE)

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The aim of this work is to analyze the leaf morphology, anatomy and architecture of *Caraca quercifolia* in the Yerba Buena Department, Tucumán.

We worked with five samples fixed in FAA. Conventional histological techniques were performed.

The leaf has a whole blade, acute apex, margin of various shapes, elliptic-lanceolate, lyrate, oblong, ovate, deep or slightly lobed. The epidermal cells are polygonal, with straight to slightly wavy walls. Anomocytic stomatal apparatus. Eglandular, multicellular and uniseriate trichomes. In cross-section, the blade is dorsiventral, hypostomatic, with papillose abaxial epidermis. In the midrib a parenchymatic marrow is observed, surrounded by collateral beams forming a circular to subcircular ring. Centrifugally, a ring of parenchyma is observed, and sub-epidermically, abaxial and adaxial collenchyma can be seen. In cross-section, the petiole is subcircular, with unistrate epidermis, subepidermal angular-laminar collenchyma, and cortical parenchyma. The vascular system is analogous to the midrib. The primary vein is pinnate-camptodromic-brachydromic. Secondary veins in 10-12 pairs. Last marginal venation buttonholed. Areoles with venules. *C. quercifolia* leaf architecture is described for the first time. The elements of diagnostic value are leaf architecture, stoma type and trichome.

73. FOLIAR ANATOMY OF *Urera altissima*, URTICACEAE OF NOA

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Urera altissima, which is native to the forest of Tucumán, has alternate deciduous leaves. The aim of this work was to analyze its foliar anatomy. We worked with fresh material from 6 individuals collected in provincial route 307 (Tucumán). Conventional techniques were used. The results showed leaf with a whole blade, symmetrical, crenate margin, and pinnate caspedodromous venation. The adaxial epidermal cells are isodiametric to rectangular with straight to curved walls; abaxial epidermis with rectangular cells with lobed walls. Stomata anisocytic, anomocytic, and paracytic (15x10 µm). Simple unicellular trichomes in both epidermis and glandular trichomes with unicellular foot and tetracellular head on abaxial surface. Presence of cystoliths. The blade is dorsiventral, hypostomatic; both epidermis and palisade tissue unistrata, spongy parenchyma (3-4); collenchyma subepidermal (3-4). The parenchyma presents secretory channels and calcium oxalate crystals. Petiole subcircular with cystoliths and trichomes identical to the blade; unistrate epidermis, subepidermal collenchyma (3-4), parenchymatous tissue with drusen, secretory ducts and channels. Vascularization comprises 2 cycles of collateral vascular bundles, one internal (4) and another external (8). The diagnostic characters are: venation, stomata, trichomes, crystals, collenchyma, vascularization of petiole, channels and secretory ducts.

74. SEASONAL VARIATION OF α -AMYLASE ACTIVITY IN SALVINIA MINIMA FRONDS EXPOSED TO Cr (VI)

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The ability of plants to redirect primary metabolism under stress is a key for the activation of anti-stress mechanisms. Studies from our laboratory showed that starch levels detected in *S. minima* fronds under Cr (VI) did not correlate with the soluble sugars levels measured. Thus, the aim of this work was to evaluate α -amylase activity in these fronds. Plants were exposed to Cr (VI) in summer and winter. Fronds were sampled at midday. α -amylase activity and soluble sugars were quantified by spectrophotometry. In both seasons, the results showed a decrease in α -amylase activity by Cr effect that was neither dose-dependent nor showed interseasonal variations. Glucose, sucrose and starch showed significant variations between both seasons. α -amylase activity was positively correlated only with glucose. Sucrose content was higher in summer with a progressive Cr-dependent increase not related to enzyme activity. On the basis of the results it could be concluded that *S. minima* presents different metabolic strategies to counteract Cr (VI) effects. During the summer, most C is channeled towards sucrose synthesis without significantly affecting the starch level. In winter, C is preferably addressed to starch in response to lower metabolic cost due to low temperatures. However, the variations observed in α -amylase activity do not account by themselves for the changes in starch, so a possible role of AGPase should not be ruled out.

75. TWO CLASS TAU GLUTATHIONE TRANSFERASES FROM STRAWBERRY LEAVES ARE DIFFERENTIALLY EXPRESSED IN RESPONSE TO BIOTIC AND ABIOTIC STRESSES

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Plant Glutathione Transferases (GSTs) are multifunctional proteins encoded by a large gene family involved in the response to biotic and abiotic stresses. They present a conserved N-terminal, GSH binding domain, and a variable C-terminal domain for binding to hydrophobic substrates. Using DD-RT-PCR and RACE methodology we identified 17 members of class tau GSTs expressed in leaves of strawberry plants challenged with a combination of abiotic (darkness, high humidity and 28°C) and biotic (infection with isolate M23 of *Colletotrichum*) stresses for 48 h. In this study we analyzed the relative expression of two transcripts, *FaGSTU1* and *FaGSTU17* in different stress treatments, using semiquantitative RT-PCR. The level of *FaGSTU1* compared to the control was higher in plants infected with M23, and was repressed when the infection was carried out with the isolate M11 of *Colletotrichum* that causes anthracnose. After the treatments no significant differences in *FaGSTU17* level were observed. These findings suggest that *FaGSTU1* and *FaGSTU17*, which encode proteins that share 33% of primary sequence identity in the C-terminal domain, are components of different pathways associated with stress response in strawberry.

76. IDENTIFICATION AND PHYTOTOXIC ACTIVITY OF FLAVONOID ISOLATED FROM *Flourensia blakeana* DILLON (ASTERACEAE)

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The aim of this work was the isolation, purification and identification of the flavonoids present in *Flourensia blakeana* Dillon and their possible phytotoxic activity. The aerial part of *Flourensia blakeana* D. was collected in route 307, in Tafi del Valle, Tucumán, Argentina. The vegetable material was processed using the classical 72 hour drying, grinding and extraction method with EtOH. Partitioning was done with hexane, methylene chloride (Cl₂CH₂) and ethyl acetate (EtAcO). After several repeated chromatographies of the dichloromethane extract, three flavonoids were isolated. Structural elucidation was determined with RMN¹H, RMN¹³C spectroscopic techniques and 2D experiments. We identified the compounds 3,5,5'-trihydroxy-3',7-dimethoxyflavanone, 3',5',5-trihydroxy-7-methoxy-flavanone and 3',5,7-trihydroxy-3,4'-dimethoxyflavone. The phytotoxic study was performed with a bio-assay testing root growth. The assay was performed with *Lactuca sativa* and *Sorghum saccharatum* seeds and solutions of the compound with concentrations of 150, 75 and 15 ppm. Results show that compounds 2 and 3 have a selective activity with the seed and the concentration, exerting a moderate inhibitory activity on *Sorghum saccharatum* and stimulation in *Lactuca sativa*.

77.

ASSESSMENT OF THE SUGARS CONTENT IN SEEDLINGS OF THE *Cedrela* SPECIES AND ITS RELATIONSHIPS WITH LOW TEMPERATURES

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Low temperature influences plant survival in the field. Plant tolerance to cold is mainly related to the metabolism of carbohydrates. In this work we evaluated the content of glucose and fructose in extracts of lyophilized leaves of different species and provenances of *Cedrela* (*C. lilloi*, *C. balansae*, *C. fissilis* and *C. saltensis*) in autumn and winter, using a SenTec enzymatic kit. The experimental design was completely randomized with 2 replicates per sample in the nursery of the INTA-EEA Famaillá, Tucumán. We used ANOVA (proc GLM-SAS) and a correlation analysis between variables.

The results show that glucose values were higher than those of fructose in both seasons. In autumn, glucose showed significant differences between species, it being lower in those that grow naturally at higher altitudes such as *C. lilloi* (1300 m.a.s.l.) and higher for *C. fissilis* (350 m.a.s.l.), which grows at lower altitudes. The linear correlation coefficient between glucose content and height was significant, high and with a negative tendency ($r=-0.95$). In a preliminary way it can be inferred that the species which presented lower glucose concentration in leaves moved this sugar to storage organs, fostering the process of acclimatization and providing greater aptitude against low temperatures.

78.

ANTIINFLAMMATORY ACTIVITY OF *Geoffroea decorticans* (CHAÑAR) FRUITS AND ARROPE

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Geoffroea decorticans constitutes an important component of the current diet of NOA communities, consumed directly or as a derivative product called "arrope". It is used in folk medicine for its emollients, balsamic, antitussive and expectorant activities. Previous findings from our laboratory showed that the aqueous extract of chañar fruits and arrope have antinociceptive activity in animal models of pain. The purpose of this study was to evaluate the antiinflammatory activity of extracts (aqueous and ethanol) and "arrope" orally administered at doses of 500 and 1000 mg/Kg. The antiinflammatory effect was evaluated by the method of carrageenan-induced paw edema in Wistar rats (250 g). Ibuprofen (100 mg/kg) was used as a positive control. The results showed that both extracts and arrope reduced the edema within 4h post dosing. Rats pretreated with the aqueous extract significantly decreased in a dose dependent manner, reaching maximum inhibition (100%) at 3 hours with a dose of 1000 mg/Kg. The antiinflammatory action of the ethanolic extract and arrope were 20% and 30% respectively at a dose of 1000 mg/Kg, at 3 hours after treatment. In conclusion, this study has shown that the aqueous extract of fruits of chañar has a significant antiinflammatory effect, probably through inhibition of prostaglandins biosynthesis, which is the mechanism of action of nonsteroidal antiinflammatory drugs.

79.

ANTI-HYPERGLYCEMIC EFFECT OF LEAVES OF *Smallanthus macrocyphus* AND ITS ACTIVE COMPOUND, POLYMATIN A

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Postprandial hyperglycemia is a risk factor for diabetic complications. α -glucosidase inhibitors delay the absorption of ingested carbohydrates, reducing postprandial glucose and insulin peaks. In previous studies we demonstrated that *Smallanthus macrocyphus* is a plant species that has promising properties for the treatment of diabetes. This work was undertaken to evaluate its possible anti-hyperglycemic mechanism.

In vitro assays showed that *S. macrocyphus* leaves decoction (DEC) and its active compound, Polymatin A (PA) significantly inhibited the activity of the α -glucosidase enzyme in a dose-dependent manner. Oral administration of DEC and PA to normal and diabetic rats caused a rapid decrease in the hyperglycemic peak after oral glucose load. Oral administration of DEC and PA prior to sucrose overload caused a significant decrease in blood glucose, demonstrating the inhibitory effect of the α -glucosidase enzyme *in vivo*. The DEC treated rats showed a better anti-hyperglycemic response than those treated with the pure compound.

This study demonstrates that decoction of *S. macrocyphus* leaves and PA exert their anti-hyperglycemic effect through the mechanism of inhibition of the α -glucosidase enzyme in the intestine. However, other targets of action are not excluded.

80.

EFFECT OF YACON ROOT ON FATTY ACID PROFILE IN THE LIVER OF DIABETIC RATS

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One of the most common manifestations of diabetes mellitus is the disturbance in lipid metabolism. Dyslipidemia plays a significant role in the development of premature atherosclerosis leading to cardiovascular disease. In previous studies we demonstrated that the administration of FOS-rich yacon [*Smallanthus sonchifolius* (Poepp. & Endl.) H. Robinson] flour to diabetic rats for 90 days resulted in a significant decrease in plasma triacylglycerol (TG) and very low-density lipoprotein levels. Since the liver is the main organ of synthesis of fatty acids (FA) and TG release, the aim of this work was to analyze whether the sub-chronic treatment of diabetic rats with yacon flour produced changes in the long chain saturated and unsaturated FA profile in the liver.

Total FA, cholesterol, and palmitic, stearic, elaidic, oleic, linoleic and arachidonic acid esters were determined in liver homogenates by GC-MS. Yacon treatment produced a significant decrease in total FA, palmitic, stearic, elaidic, oleic and linoleic acid esters concentration. No significant difference was evident in cholesterol or arachidonic acid values. This study demonstrates that FOS-rich yacon flour administered as a dietary supplement has positive effects on lipid metabolism in the liver of diabetic rats and could be potentially useful to prevent diabetic complications.

81. THE ANTHRONE METHOD FOR MEASURING CARBOHYDRATES IN INSECTS: ADVANTAGES AND DISADVANTAGES

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Variations of the original anthrone method of van Handel (1985) are used for the determination of lipids and carbohydrates in small insects. Whole organisms are homogenized and glycogen is precipitated (with chitin), while lipids remain in the supernatant. We observed that the absorption spectrum of glycogen had some differences with pure glycogen when the above technique was used. We hypothesized that coprecipitated insect chitin might influence determination. The aim of this study was to determine if the anthrone technique recognized (and measured) the presence of chitin, influencing the analysis. Measurements of homogenized insects, insect cuticle, chitin purified from shrimp shell, glycogen and glucose were carried out by this method. Results showed that insect cuticle and pure chitin produced two peaks, one at 607 nm clearly overlapping the one produced by glycogen (625 nm), and the other at 505 nm, of similar magnitude. Under the same reaction conditions, absorbance of glycogen at 625 nm was 44.4% higher than chitin absorbance. The results obtained demonstrate the need to modify van Handel's method through previous separation of glycogen from chitin. Thus, the anthrone method would enable the quantification of chitin, which is quite interesting and useful and has not yet been mentioned in this respect.

82. VASCULAR TONE IS ALTERED IN ANIMALS WITH SUBTOTAL NEPHRECTOMY: THE ROLE OF OXIDATIVE STRESS

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Nephrectomized rats (NefR) are a model of chronic kidney disease (CKD). The development of hypertension (HT) and alteration of vascular function in NefR is controversial. Nitric oxide (NO) reduction and oxidative stress alter vascular tone.

Objectives: To determine if NefR develop hypertension and study vascular tone, evaluating the role of NO and oxidative stress.

Materials and Methods: In aortic rings from NefR we evaluated: 1) basal tone: response to sodium nitroprusside (SNP); 2) vascular NO levels in basal conditions and in the presence of tempol or L-NAME; 3) basal membrane potential (Pm); 4) glutathione/oxidized (GSH/GSSG) ratio and thiobarbituric acid reactive substances (TBARS) levels. The results were compared with sham rats (SR).

Results: NefR developed hypertension with decreased creatinine clearance. Aortic rings from NefR showed endothelial dysfunction, decreased NO levels (SR: 32±2 nA, n=7 vs. NefR: 10±2, n=8, P<0.001), increased SNP reactivity, increased Pm, reduced GSH/GSSG and increased TBARS levels. Tempol improved vascular NO levels and Pm. NefR showed decreased NO and higher TBARS urinary levels.

Conclusions: NefR increased basal tone in which alterations of NO and oxidative stress are involved. These alterations may be implicated in the hypertension that is not hemodynamically compensated by the remaining kidney tissue.

83. CALCIUM RESPONSE IN AORTAS FROM RABBITS WITH METABOLIC SYNDROME

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We previously demonstrated alterations in the agonist-induced contractile response in a rabbit model of metabolic syndrome (MS). Our aim was to determine whether alterations in the Ca²⁺ response (Ca-R) were responsible for these changes. Aortic rings from rabbits fed either a control (CD) or a high fat diet (HFD) for 12 weeks with (E+) and without (E-) endothelium were placed in an organ bath to register isometric contractions. Dose response curves to CaCl₂ (Ca-CDR) 10⁻⁴ to 5.10⁻³ M in Ca²⁺-free solution were performed after KCl 100 mM depolarization. Arteries were washed with Ca²⁺-free solution and a second Ca-CDR was performed. Some rings were stimulated with angiotensin II (Ang II) 10⁻⁶ M or noradrenaline (NA) 10⁻⁶ M before the second Ca-CDR. Results: Second Ca-R was increased in E+ arteries from both models. Ang II but not NA induced contraction in Ca²⁺-free solutions. In E+ arteries from HFD, Ang II increased and NA blocked the potentiation of the Ca-R. In E- arteries from HFD rabbits Ang II potentiated the Ca-R and NA blocked it. Conclusions: the endothelium plays an important role in the smooth muscle Ca-R. Ang II contractile mechanism involves the use of Ca²⁺ from intracellular stores while NA response is more dependent on extracellular Ca²⁺. The increased potentiation to Ca-R induced by Ang II in HFD rabbits showed sensitizing effects of the hormone in the MS.

84. HYPERCHOLESTEROLEMIA MODIFIES PROSTAGLANDIN RELEASE FROM RABBIT AORTA

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Prostaglandins (PRs) are mediators that have a variety of physiological effects such as regulation of the contraction and relaxation of the smooth muscle and platelet aggregation. The aim of this work was to characterize PRs release in aorta from rabbits fed either standard rabbit chow (CD) or chow containing 1% cholesterol (HD) for 5-6 weeks. Experiments were performed on isolated unrubbed (CE) and rubbed (SE) aortic rings in both basal and angiotensin II-stimulated conditions. PRs were extracted and resolved by HPLC. Results: An HD increased total cholesterol levels (g/l, 6.38±1.3 vs. CD: 0.59±0.06; p<0.001) and LDL-cholesterol levels (g/l, 4.82±0.9 vs. CD: 0.24±0.03; p<0.001). The PRs basal release from CE aorta (ng PRs/mg of tissue) was: PGI₂ (CD): 658.8±164 vs (HD): 62.4±9, p<0.05; TXA₂ (CD): 50.8±10 vs (HD) 56.2±22; PGF_{2α} (CD): trace vs (HD): 35±17, p<0.05. The ratio of PGI₂/TXA₂ was: (HD):18.2±5 vs (CD): 2.17±0.9, p<0.05. Angiotensin II stimulation did not modify PRs release. The PRs released from SE aorta were undetectable. Conclusion: a- PRs released from rabbit aorta are endothelium-dependent. b- The lower levels of PGI₂ together with the decreased PGI₂/TXA₂ ratio in HD rabbits may induce a prothrombotic state. c- Angiotensin II does not modify the release of the PRs analyzed.

85.

ROLE OF LIPIDS AND GENOMIC TRANSCRIPTION IN TESTOSTERONE-INDUCED OOCYTE MATURATION

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Oocyte maturation is a progesterone-mediated process that occurs in the absence of genomic transcription. Although progesterone (P_4) is a potent promoter of *R. arenarum* oocyte maturation *in vitro*, little is known about other steroids in this process. In this study we analyzed the role of lipids and genomic transcription in the testosterone (T) mechanism of action during oocyte maturation.

Oocyte maturation was induced by adding T (10^{-6} M) and time—response curves were performed with actinomycin D (2mM), quinacrine (0-20 μ M) (PLA₂ inhibitor) and indometacin (0-50 μ M) (COX inhibitor). In order to analyze the participation of phospholipid hydrolysis during maturation we used neomycin (0-2 mM). P_4 (10^{-6} M) as control. Meiosis resumption was scored by germinal vesicle breakdown (GVBD) at 22 h.

Our results showed that in *R. arenarum* oocytes T is a steroid inductor as efficient as P_4 . Maturation is induced by T-independent genomic transcription (95 ± 3 %GVBD). Inhibition of formation of AA by quinacrine does not affect oocyte T-induced maturation. COX inactivation by indometacin had an inhibitory effect on oocyte and follicle maturation. T-induced maturation was inhibited by neomycin in a dose dependent manner.

In *R. arenarum* T induces maturation in a genomic transcription-independent manner in which the second messenger derived from membrane phospholipids would be involved.

86.

MAPK CASCADE IN THE ACTIVATION OF *Rhinella arenarum* OOCYTES

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In vertebrates, mature oocytes are arrested at the metaphase of the second meiotic division through the action of the cytostatic factor (CSF), which is essentially made up of the components of the MAPK (mitogen-activated protein kinases) cascade. During fertilization a transient increase in cytosolic calcium occurs in the egg, triggering the morphological and biochemical changes characteristic of activation. Several molecules have been proposed as calcium-dependent effectors leading to MPF degradation and subsequent resumption of meiosis and early embryonic development. The aim of this study was to analyze the involvement of the MAPK pathway in *Rhinella arenarum* oocyte activation. Denuded ovarian oocytes matured *in vitro* with progesterone were incubated in the presence of PD 98059 (0.5 - 10 μ M), a selective inhibitor of MAP kinase kinase (MEK) and geldanamycin (5 - 20 μ M), an antibiotic able to inhibit MAPK due to its binding to Hsp90, a chaperone which in turn acts as a cofactor of various kinases. Treatment with PD 98059 showed a significant inductor effect. In contrast, geldanamycin was not sufficient to induce oocyte activation without previous increase in calcium levels. These results show that the MAPK pathway participates in the activation of *Rhinella arenarum* oocytes and that MEK is, as in other species, a critical step in this signalling pathway.

87.

LOCALIZATION OF THE UROKINASE TYPE PLASMINOGEN ACTIVATOR RECEPTOR (uPAR) IN THE BOVINE CUMULUS/OOCYTE COMPLEXES

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The urokinase-type plasminogen activator (uPA) is a serine protease involved in extracellular matrix remodeling through plasmin generation. When uPA is bound to uPAR, its proteolytic activity increases and it can also activate intracellular signaling pathways. The aim of this work was to study the localization and expression of uPAR in immature and *in vitro* matured (IVM) cumulus-oocyte complexes (COCs). Bovine ovaries were collected during slaughter and COCs were obtained by aspiration of ovarian follicles. After selection, COCs were separated into two groups, one of them being IVM. Detection of uPAR in immature and IVM COCs was performed by indirect immunofluorescence. To study the expression of uPAR, groups of 50 immature and IVM COCs were treated with hyaluronidase. Oocytes and follicular cells were separated to obtain total RNA; then they were analyzed by RT-PCR. uPAR was observed in follicular cells and oocytes plasma membrane using confocal microscopy. The RT-PCR assays showed a fragment of 164 bp corresponding to uPAR in follicular cells and oocytes, before and after IVM. These results suggest that the uPA/ uPAR interaction would allow the generation of plasmin on the surface of the oocyte and/or the activation of intracellular signals that would promote their maturation and fertilization.

88.

DETECTION OF BMP-5 IN BOVINE OVIDUCTAL FLUID AND ITS INTERACTION WITH *IN VITRO* MATURED BOVINE OOCYTES

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Bone morphogenetic proteins (BMPs) play crucial roles in mammalian reproduction. In previous studies we demonstrated that BMP-5 is differentially expressed in the isthmus of bovine oviduct. The aim of this study was to evaluate the presence of BMP-5 in the bovine oviductal fluid (bOF) and to study its interaction with matured oocytes. Genital tracts from cows slaughtered at a local abattoir were classified into proestrus, metestrus and diestrus. The presence of BMP-5 in bOF, collected from oviducts of each stage, was evaluated by Western blot using an anti-BMP-5 primary antibody. As a result, a protein band of 21 kDa corresponding to the mature form of BMP-5 was detected in all the samples. Interaction of BMP-5 from bOF with oocytes was assayed *in vitro* by incubating matured cumulus-intact oocytes, cumulus-denuded oocytes and zona-free oocytes in media with or without bOF. Samples were then evaluated by indirect immunofluorescence using the anti-BMP-5 antibody and confocal microscopy. BMP-5 was observed to bind to cumulus cells, oocytes plasma membrane and zona pellucida. These results allow us to consider that BMP-5 could have biological effects on the female gamete during its transit through the oviduct.

89. EFFECT OF STREPTOZOTOCIN ON TELOMERES OF MAMMALIAN CELLS

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The effect of the antitumoral and diabetogenic agent streptozotocin (STZ) on telomeres was analyzed in the progeny of mammalian cells. Chromosome damage and its relationship with telomeric sequences was studied in rat cells derived from adipose tissue (ADIPO-P2 cell line) exposed to STZ. The short- and long-term effects of STZ on telomeres were assessed at 18h and 10 days after treatment, respectively. During the log phase of growth, cells were treated for 30 min with 2mM of STZ. Fluorescence *in situ* Hybridization (FISH) with a peptide nucleic acid (PNA) telomeric probe was applied on untreated and STZ-treated ADIPO-P2 cells. Cytogenetic analysis revealed that 59.6 and 77.2% of the total aberrations induced by STZ in ADIPO-P2 cells harvested at 18h and 10 days respectively, consisted of chromosomes lacking one or more telomeric signals. Additional telomeric signals were also observed in STZ-exposed cells. The majority of the additional signals corresponded to chromatid-type telomere duplications (12.4 and 9.4% of the total telomeric aberrations at 18h and 10 days after treatment, respectively) and chromosomes lacking one end (incomplete chromosomes) (8.0 and 4.4% of the total aberrations observed at 18h and 10 days, respectively). Our data indicate that STZ induces telomeric dysfunction and persistent telomeric instability in mammalian cells.

90. STUDY OF LIPID PROFILE IN A CHILD POPULATION WITH TYPE 1 DIABETES

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Lipid metabolism abnormalities contribute to increase cardiovascular events in type 1 diabetes (T1D) patients. The aim of this study was to evaluate the lipid profile in a child population with T1D and its relation with glycemic control and disease duration. Forty-one T1D patients (22 M/19 F), mean age 12.1±2.0 years, disease evolution of 3.8±3.3 years, were compared with 20 healthy subjects. Fasting blood glucose (FBG), HbA1c, total cholesterol (TC), HDL-C, LDL-C, triglycerides (TG) was determined and non-HDL-C, CT/HDL-C, TG/HDL-C were calculated. Data was expressed as mean±SD. Pearson's correlation coefficient was used to determine correlations between variables. No statistical differences were found in the lipid profile of T1D patients compared to controls. When diabetics were grouped according to disease duration (<or> 3 years), those > 3 years had higher CT values (182±42 vs. 152±29 mg/dl, p=0.01) and non-HDL-C (136±43 vs. 110±32 mg/dl, p=0.03). Diabetics with poor glycemic control (HbA1c> 8%) had higher CT (172±36 vs. 136±28 mg/dl, p=0.04) and HDL-C (46±12 vs. 37±5 mg/dl, p=0.02). A good correlation of FBG with CT (r=0.57, p=0.0001), LDL-C (r=0.46, p=0.002), TG (r=0.45, p=0.003), non-HDL-C (r=0.55, p=0.0001) and TC/HDL-C ratio (r=0.38, p=0.01) was found. The results show that lipid profile alterations in T1D are highly dependent on glycemic control and diabetes duration.

91. PREDICTIVE VALUE OF SERUM PROSTATE-SPECIFIC ANTIGEN (sPSA) IN PATIENTS WITH PROSTATE CANCER (PC)

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The aim of this work was to analyze the usefulness of sPSA in the follow-up of patients with PC during their treatment. From October 2008 to July 2012, 6 patients were studied. Mean age of the examinees was 60.8±3.1 years. Histological examinations of the adenomatous tissue detected prostatic adenocarcinomas that were graded according to Gleason's grading system as 8 and 9. Androgen deprivation, radiotherapy and chemotherapy were mainly used to treat patients after radical prostatectomy with curative effect. sPSA determinations were performed by enzyme immunoassay and the reference range (RR) was between 0 and 4.0 ng/mL. The median observation period was 25.3±17.5 months (range: 12-59 months). Three patients showed a good response to therapy with sPSA, reaching values within the RR correlating with the clinical stage. A patient had a marked decrease in sPSA levels, not reaching RR. Two patients showed a progressive increase in sPSA. The presence of detectable sPSA levels enabled the detection of tumor recurrence even before any other diagnostic (radiological or scintigraphical) investigation could document it. These results suggest that sPSA can predict disease recurrence/progression and stratify patients who are likely to benefit from more aggressive treatments.

92. HDL CHOLESTEROL IN EXPOSURE TO HIGH LEAD CONCENTRATIONS

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High density lipoproteins (HDL) carry cholesterol from body tissues to the liver. Epidemiological studies showed that high HDL concentrations are protective against cardiovascular diseases such as ischemic heart disease. Lead is a cardiovascular risk factor able to alter carbohydrate and lipid profile. Objective: to determine if exposure to high lead concentrations (1000 ppm), modifies HDL blood cholesterol levels in an experimental model. Materials and method: adult Wistar rats, divided into two groups, n 6 in each group: one with 1000 ppm lead acetate added to the drinking water (one month) and controls with lead-free water. Determinations: erythrocyte ALA-D as a marker of lead exposure and total cholesterol and HDL cholesterol. Statistics: Student's *t* test. Results: HDL cholesterol decreased significantly compared to the control group 0.36±0.09 g/l vs treated group: 0.22±0.05 g/l; Total cholesterol: 0.63±0.33 g/l control vs treated group 2.19±0.25 group gr/l; ALA-D: control group: 17.4±3.5 u/l vs 6.86±0.25 u/l treated group; plumbemia: control group: 2.8±1.1 µg/dl vs 16.8±4.5 µg/dl treated group. P<0.05, significant for all variables. Conclusions: This study highlights the possibility that exposure to high lead concentrations increases cardiovascular risk since it significantly decreases HDL cholesterol.

93.

ASSOCIATION BETWEEN SERUM PROSTATE SPECIFIC ANTIGEN (sPSA) LEVELS AND PROSTATE VOLUME (PV) IN HEALTHY MEN FROM TUCUMANRuiz Díaz HR³, Tefaha LM², Guber RS¹, Arias NN¹, Masuero O³, Toledo R², Penida A², Martínez MM², Soria de González A¹.¹Facultad de Bioquímica. ²Facultad de Medicina. UNT. ³Servicio de Urología Hospital Centro de Salud. Tucumán. E-mail: draanaliasoria@arnet.com.ar

Aim: To analyze the association between sPSA levels, age and PV in a population of healthy Tucuman men. We studied 211 healthy men who underwent a detailed clinical evaluation including sPSA determination and prostatic transrectal ultrasound to determine volume. We divided the subjects into 4 groups by age, Group A (GA), 8.0% (age range younger than 50), Group B (GB), 42.7% (age range 50-59), Group C (GC), 31.8% (age range 60-69) and Group D (GD), 17.5% (age range older than 70). The mean±SD of the sPSA were 0.96±0.55 ng/ml, 1.29±0.77 ng/ml, 1.70±0.98 ng/ml, 1.60±0.93 ng/ml and of the PV were 36.9±11.1 ml, 33.4±13.0 ml, 30.9±10.8 ml, 45.9±23.3 ml for GA, GB, GC and GD respectively. sPSA levels were statistically significant between GB and GC (p<0.007) and PV between GC and GD (p<0.001). These results suggest that sPSA levels increase with age and that the cutoff value of the sPSA level in Tucuman men was 3 ng/ml in men under 59 and 3.6 ng/ml in men over 60. In addition, sPSA levels were not significantly influenced by PV. Lower cutoff values may help improve the detection of prostate cancer among healthy men.

94.

HEMOSTATIC PARAMETERS AS PROGNOSTIC FACTORS IN BREAST CANCER (BC) PATIENTSDíaz E, Soria de González A.

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Aim: To analyze hemostatic parameters in patients (P) with Breast Benign Pathologies (PBM) and BC with metastasis (BCM) and without metastasis (BCWM). 57 P were studied who were separated into: Group A (GA) 17 P with PBM; Group B (GB) 15 P with BCM and Group C (GC) 25 P with BCWM. Global coagulation parameters were determined: Platelet Count (RP), Prothrombin Time (TP), Partial Activated Thromboplastin Time (APTT), Thrombin Time (TT) and Fibrinogen (F) and Fibrinolysis Parameters: Tissue-type Plasminogen Activators (t-PA), Plasminogen Activator Inhibitor (PAI-1) and D-Dimer (D-Di) and also CA15.3 determinations. Results obtained (X±DS) were: RP 209765±44502, 256467±92001, 266200±141436/μl; TP 90.9±7.5, 91.7±8.4, 91.6±7.9%; APTT 39.9±5.1, 37.5±5.0 39.2±3.8 sec; TT 21.4±0.6, 21.7±1.0, 21.6±0.8 sec; F 299.9±57, 279.6±44.2, 304.8±58.2 mg/dl; t-PA 0.56±0.33, 0.46±0.21, 0.40±0.21 ng/ml; PAI-1 2.5±0.9, 2.5±0.9, 3.4±0.7 ng/ml; D-Di 0.8±0.0, 0.81±0.5, 0.86±0.2 ng/ml and CA 15.3 11.8±10.2, 12.7±6.7, 44.1±43.1 U/ml for GA, GB and GC, respectively. The parameters evaluated were similar between GA and GB. PAI-1 and CA 15.3 levels were statistically significant between GA and GC and between GB and GC. Results suggest that high levels of PAI-1 and CA 15.3 could provide additional information on a more aggressive tumor behavior in P with BC, which would be associated with a worse prognosis.

95.

DIFFERENCES IN PEROXIDASE AND IgA IN SALIVA FROM SMOKERS WITH PERIODONTAL DISEASE

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Periodontitis is an infectious disease that causes inflammation of the tissues surrounding the tooth. Variations at the onset and severity indicate two different clinical forms: early aggressive and chronic or adult periodontitis. Total saliva maintains oral health and can reflect periodontal disease. The aim of this study is to compare levels of secretory IgA and salivary peroxidase in patients with aggressive and chronic periodontitis, smokers and non-smokers, and to analyze their clinical diagnosis indices.

70 individuals were classified as: chronic periodontitis (CP), aggressive periodontitis (AP) and periodontally healthy (C). Inclusion and exclusion criteria were applied. Periodontal diagnosis included plaque and gingival indices, probing depth (PD), attachment level (AL) and bleeding on probing. Saliva samples were obtained by salivation. IgA was determined by the immune diffusion method and peroxidase by the Masson-Rahemtulla technique. Differences between groups were analyzed by one-way ANOVA using the SPSS software.

IgA increased in patients with AP compared to CP and C in smokers and non-smokers, although values were not significantly different (p>0.05). Peroxidase showed higher values (p<0.05) in non-smokers CP compared to AP. AL and PD showed differences (p<0.05) between AP and CP smokers compared to non-smokers.

Biochemical analysis of total saliva could be an additional tool to diagnose periodontitis.

96.

A PARAMETRIC STUDY OF MINERAL AND PROTEIC PROFILE IN DAIRY CATTLE SERUM DURING TRANSITION TO LACTATIONLuna ML, Roldán VP, Bellezze J, Manni C.

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The aim of this work was to evaluate blood levels of calcium (Ca), phosphorus (P), magnesium (Mg), potassium (K), sodium (Na), total proteins (TP), albumin, globulin and serum urea during the spring of 2011. The atomic absorption spectrophotometry technique was used to determine minerals and UV-visible spectrophotometry to assess TP, albumin, globulin and serum urea. The mean values and standard deviations for Ca(mg/dL), P(mg/dL), Mg(mg/dL), K(mmol/L), Na(mmol/L), TP(g/dL), albumin(g/dL), globulin(g/L) and urea(g/L) were: Prepartum 8.04±1.45; 6.94±1.17; 1.95±0.27; 5.18±0.45; 132.25±4.36; 6.73±1.08; 3.91±0.70; 2.87±0.92; 0.45±0.06. Parturition 7.89±1.05; 5.90±0.64; 2.44±0.58; 4.54±0.27; 129.43±3.26; 6.26±1.35; 4.18±1.31; 2.08±0.66; 0.47±0.05. Postpartum 8.19±1.03; 6.19 ±1.22; 1.88±0.39; 4.92±0.54; 132.32±2.50; 7.06±1.13; 3.88±0.67; 3.57±0.32; 0.44±0.07 respectively. The reduction in calcium levels during delivery is due to an important transference of this mineral from blood to colostrum and milk, levels being close to normal lower limits (8-10 mg/dL). TP (p<0.05) and globulins in delivery were below the reference values due to limited consumption during this period. Albumin (p<0.05) in postpartum is a consequence of high demand of this metabolite for milk synthesis. Mean urea values were high throughout the three periods due to a high protein intake in spring, when alfalfa supply is elevated.

97. EFFECT OF TRANSITION AND SEASON ON METABOLIC PROFILE VARIATIONS IN DAIRY CATTLE

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A factorial experiment was applied and the significance and interaction of physiological state and season were tested. Blood samples were taken from the jugular vein of Holstein breed bovines in autumn (a) and spring (s). Colorimetric methods were used for protein variation analysis. For calcium (Ca), phosphorus (P), magnesium (Mg), copper (Cu), iron (Fe) and zinc (Zn), the atomic absorption spectrophotometry method was applied. Flame photometry was used for potassium (K) and sodium (Na) determinations. A randomized complete block design was applied. $Y_{ijkl} = \mu + \beta_i + E_j + S_k + (ES)_{jk} + e_{ijkl}$; where μ is the overall mean, β_i is the established i-th effect, E_j is the j-th state effect, S_k is the k-th season effect, $(ES)_{jk}$ is the interaction effect between the j-th state effect and the k-th season effect and e_{ijkl} is the random error. Mean values were: P 5.31-5.04, Ca 9.55-12.45, TP 7.15-6.99, albumin 3.49-3.46 and urea 0.51-0.55 in physiological state and season, respectively. Low albumin values and high urea values with respect to the reference range indicate significant interaction ($p < 0.05$) due to the difference in handling and animal nutrition in each season during transition. Each season has its effect on Fe (a: 1.190 ± 0.281 ; s: $1.773 \pm 0.592 \text{ mg.L}^{-1}$) and Cu (a: 0.66 ± 0.098 ; s: $0.596 \pm 0.077 \text{ mg.L}^{-1}$) variations. The data above show the changes in forage supply as regards quality and quantity, as mineral availability in food varies according to the seasons.

98. Lactobacillus casei MODULATES LEUKOCYTE RECRUITMENT AND PERITONEAL PERMEABILITY ALTERATION IN AN EXPERIMENTAL ENDOTOXEMIA

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The aim of this work was to study the effect of *Lactobacillus casei* CRL431 (Lc) on permeability and leukocyte recruitment in the peritoneum during an experimental endotoxemia induced by lipopolysaccharides (LPS). Adult BALB/c mice were given Lc (10^9 cells/day/mouse) in the drinking water for 2d and then received an intraperitoneal injection (ipi) of 5 mg LPS/Kg of body weight (Lc group). Controls of LPS were inoculated only with LPS (LPS group). At different hours post injection (hpi), blood and peritoneal lavage (PL) samples were taken. We evaluated: a) total leukocytes in blood and PL; b) albumin (A) and total proteins (TP) in serum and PL. Results: ipi of LPS induced a decrease in leukocytes in blood (3hpi $C = 5.82 \pm 0.78 \times 10^9/\text{L}$; LPS = 0.73 ± 0.09 ; Lc = 2.12 ± 0.23), but an increase in PL. Also, ipi of LPS caused a decrease in A and TP in serum with a significant increase in PL with maximum values at 6 hpi. Lc treatment prevented the increase in A and TP with lower recruitment of leukocytes in PL. Conclusion: Lc allowed the alteration in peritoneal permeability to decrease, as evidenced by the lower concentrations of A and TP in PL and the lower leukocyte recruitment. In consequence, Lc administration caused a decrease in the intensity of the inflammatory reaction with lower accumulation of liquid in the peritoneum.

99. COMPARATIVE STUDY OF RESPIRATORY SYNCYTIAL VIRUS: 2008-2012

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Infection with respiratory syncytial virus (RSV), which manifests primarily as bronchiolitis or viral pneumonia, is the leading cause of lower respiratory tract infections (LRTIs) in infants and young children and a frequent cause of morbidity among the adult population. LRTIs are the third cause of death in infants in Argentina. Respiratory viral diagnosis is an integral part of patient management. This paper describes prevalence, seasonality and clinical presentation of RSV in hospitalized children under 5 years of age in Tucumán. From 2008 through August 2012 we obtained 10780 nasopharyngeal aspirates and tested them by fluorescent antibody staining of viral antigens for adenovirus, RSV, parainfluenza viruses and influenza A and B viruses. 36.4% of the samples tested positive for RSV and 11% for the other viruses. The rate of RSV in the first eight months of 2012 was 48.5%. The peak of RSV occurred in epidemiological weeks 30-32 for 2008, 16-18 in 2009, 26-29 in 2010, 18-20 in 2011 and 23-25 in 2012. Bronchiolitis was the most common disease in RSV patients.

Conclusion: RSV is the most common viral etiology of LRTIs and the timing of the RSV season changes from year to year. Guidelines about prevention and prophylaxis should be based on results of local RSV test data.

100. REFERENCE VALUES OF SIALIC ACID (AcS) IN INDIVIDUALS EXPOSED AND UNEXPOSED TO ARSENIC WITHOUT PROSTATIC PATHOLOGY

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Determination of AcS could be used as a complementary marker of Prostatic Specific Antigen (PSA) to diagnose prostatic cancer (PC). In the east of the province of Tucumán, high arsenic (As) concentrations are found in the drinking water and chronic exposure (E) has been associated with various types of cancer. Aim: To determine Reference Values (RV)

of AcS levels in serum of men without prostatic pathology in rural and suburban populations. A total of 276 healthy men were classified into three groups: 164 patients not exposed to As (GA) and 54 exposed to As (GB) respectively from a rural area and 58 suburban patients not exposed to As (GC). The methods used were: Gutzeit's test for As concentration in water and Warren's method for AcS levels. The statistical analysis was carried out with SPSS 20.0 software. The mean \pm SD of AcS were 746.5 ± 156.4 ; 874.4 ± 248.1 , 654.5 ± 91.4 mg/L for GA, GB and GC respectively. AcS levels were statistically significant between GA and GB ($p < 0.001$) and GA and GC ($p < 0.001$). The RV defined based on the 95th percentile were 1052, 1358 and 833 mg/L for GA, GB and GC respectively. There was no correlation between PSA levels and AcS or between age and AcS. Conclusions: The RV of AcS was found to be significantly elevated in rural areas with respect to the suburban population. Our results may help to increase the accurate assessment of AcS as a marker for the detection of PC in different groups.

101.

ASSOCIATION BETWEEN SERUM PROSTATE SPECIFIC ANTIGEN (sPSA) LEVELS, BODY MASS INDEX (BMI) AND LIPID PROFILE (LP) IN HEALTHY MEN

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Aim: To analyze the association between sPSA levels and BMI and LP in healthy adults living in a rural (Graneros, G) and a peri-urban community (San Pablo, SP) of Tucumán. We studied 69 men from G and 71 from SP who had sPSA levels of ≤ 4 ng/ml. BMI was calculated as weight in kilograms divided by the square of height in meters (Kg/m²). BMI groups were categorized as follows: normal weight (N) (BMI < 25), overweight (OW) (BMI 25-30) and obese (O) (BMI > 30). LP includes Total Cholesterol (TC), Triglycerides (T), High-density lipoprotein (HDL) and Low-density lipoprotein (LDL). sPSA, HDL and LDL of G and SP were not statistically significant. The mean \pm SD of the TC values were 211 ± 35 and 197 ± 33 mg/dl ($p < 0.017$) and T 181 ± 73 and 153 ± 71 mg/dl ($p < 0.03$) for SP and G respectively. The mean \pm SD of the sPSA were 1.1 ± 0.7 , 1.0 ± 0.6 and 1.1 ± 0.8 for G and 1.9 ± 1.0 , 1.4 ± 0.7 and 1.0 ± 0.4 ng/mL for SP in N, OW and O. The correlation analysis showed a negative correlation between sPSA levels and BMI for the SP (Pearson's correlation coefficient = -0.404, $p < 0.002$). These results suggest that the sPSA level was significantly influenced by the BMI for the SP community. We also found atherogenic LP of G which could be associated with the diet.

102.

INFLUENCE OF HEPATIC AND RENAL FUNCTION ON SERUM PROSTATE SPECIFIC ANTIGEN (PSA) IN HEALTHY MEN OF A RURAL AND A PERI-URBAN COMMUNITY OF TUCUMÁN

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Aim: To analyze the association between serum PSA levels and hepatic and renal function in healthy adults living in a rural (Graneros, G) and a peri-urban community (San Pablo, SP) of Tucumán. We studied 63 healthy male of G and 66 of SP who had serum PSA levels of ≤ 4 ng/ml. Liver function tests included aspartate aminotransferase (AST), alanine aminotransferase (ALT) and gamma glutamyl transpeptidase (GGT). Kidney function included determination of serum creatinine (Cr) and urea (U). Serum PSA, AST and ALT of G and SP were not statistically significant. The mean (SD) of the GGT values were 28.8 (15.1) and 19.6 (6.0) U/L ($p < 0.001$); of U 0.24 (0.08) and 0.19 (0.06) g/L ($p < 0.003$) and Cr 11.2 (2.1) and 9.2 (2.1) mg/L ($p < 0.001$) for SP and G respectively. There were no significant correlations between PSA levels and liver enzymes in a univariate analysis. There were positive correlations between PSA levels and Cr in G and SP. These results suggest that serum PSA level was significantly influenced by creatinine levels in both populations. We also noticed differences in the biochemical profile of G and SP which could be associated with the diet and lifestyle.

103.

GENOME DETECTION OF HUMAN PAPILLOMAVIRUS IN WOMEN AFTER TREATMENT OF PRE-NEOPLASTIC LESIONS OR CERVICAL CANCER

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Infection with oncogenic human papillomavirus (HPV) types is a necessary cause of cervical cancer, the second most frequently occurring cancer in women worldwide.

HPV types have been subdivided into low and high risk types, which are frequently associated with invasive cervical cancer. Conizations, surgery, radiotherapy or chemotherapy are the primary treatment modalities for pre-neoplastic lesions or cervical cancer.

The aim of this study was to detect the genome of the human papillomavirus (HPV) in women after treatment of pre-neoplastic lesions or cervical cancer.

All participants were interviewed about risk factors and they signed informed consent forms according to the recommendations of the IARC-WHO. Samples of exfoliated cells were collected from the cervix with cytobrush. Virus detection was performed by PCR with primers My 09/11 specific for the L1 region of the HPV genome. Viral type was identified by restriction fragment length polymorphism assay (PCR-RFLP). DNA from the HeLa cell line C229 was used as a positive control. No HPV DNA was detected in the samples. HPV presence evaluation can be a useful tool for post-treatment monitoring to determine the degree of recurrence and the effectiveness of treatment as an indicator of the evolution of short and long term lesions.

104.

EFFECT OF ORAL ADMINISTRATION OF CADMIUM ON HEMATOPOIETIC ORGANS OF RATS

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The aim of this study is to evaluate the early signs of Cd²⁺ toxicity at histological levels in spleen and red bone marrow (BM) of rats treated with long-term low doses. A group of male Wistar rats were treated orally with a solution of 14% sucrose (control) or 10 mg/kg of CdCl₂ in the same solution (treated) for 12 weeks. The animals were sacrificed on the 4th, 8th and 12th week after the start of the treatment. Sternum and spleen samples were processed and stained with hematoxylin-eosin. The spleen in both groups showed no changes in cytoarchitecture. The BM showed no histological alterations up to the 4th week. However, changes were observed since the 8th week in treated animals. Hypercellularity was evident in the hematopoietic series; reversal of the myeloid-erythroid relation, immature and semimature myeloid elements with centro-trabecular arrangement and erythroid elements with central and para-trabecular distribution. We also found isolated megaloblasts, increased numbers of megakaryocytes, some small, some dysmorphic, and hematic extravasation with mild stromal edema. On the 12th week of treatment with cadmium these lesions remained. The results show that only the BM evidences sensitivity to xenobiotics since the 8th week of treatment.

105. EFFECT OF LOW DOSES OF CADMIUM ON TESTIS AND SPERM OF RATS

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The objective of this work was to analyze signs of toxicity of cadmium (Cd²⁺) in testis and sperm of rats treated with low doses. Male Wistar rats were treated orally with a solution of 14% sucrose (control) or 10 mg/kg of CdCl₂ in the same solution (treated) for 12 weeks. Every 4 weeks, testis and sperm were obtained from the epididymis tail. The gonad was processed with the routine histological technique. Gametes were incubated in Tyrode's solution and the following were determined: (a) sperm viability with eosin-nigrosin stain, (b) sperm morphology with toluidine blue, (c) motility, classified as: immotile sperm, sperm with *in situ* motility and sperm with straight progressive motility. The results showed preservation of testicular cytoarchitecture, morphology and viability of sperm in control and treated animals throughout the experimental period. The motility of sperm from animals treated for 4 and 8 weeks showed no significant differences from controls. Those treated for 12 weeks showed a significant decrease in the *in situ* motility and straight progressive motility of sperm while there was a significant increase in immotile sperm. In conclusion, Cd²⁺ at a dose of 10 mg/kg can reduce sperm motility without affecting the cytoarchitecture of the testis.

106. THE UNEXPECTED ROLE OF VESICLES ON THE DEVELOPMENT OF *Phyllomedusa azurea* (ANURA-HYLIDAE)

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All species of *Phyllomedusa* lay their eggs in clutches contained in nests built with folded leaf above the water, along with a significant number of transparent vesicles. Traditionally it was thought that the vesicles contained water, which helped to keep the moisture of the nest, but recently we demonstrated that they contain glycoconjugates with diverse kinds of residues, suggesting more complex interactions between vesicles and oocytes. Ovisacs of *Phyllomedusa azurea* were fixed in Stieve, stained with PA-Schiff (PAS) combined with Alcian Blue (AB) at pH 2.5 and 0.5 for glycoconjugates (GAG) with neutral residue and phosphatic, carboxylated and sulphated acids, and Toluidine Blue (TB) pH 5.6 and 3.3 for the identification of different residues. The vesicles, with diverse content organized in a fibrillar, amorphous matrix, are in intimate contact with the oocyte's envelope, forming well defined channels due to the condensation of GAG. In turn, the cortical layer of the oocyte shows dehiscence zones which displace the vitelline cover. Through the channels thus formed the contents of the vesicles flow, the neutral GAGs entering first, followed by the acid ones, both carboxylated and phosphated. The incorporation of GAGs from the vesicles, a fact not reported previously, may serve to nourish the embryo during its subsequent development.

107. HISTOPATHOLOGICAL ANALYSIS OF 37 ORAL SQUAMOUS CELL CARCINOMAS (SCC). HISTOMETRIC AND IMMUNOHISTOCHEMICAL STUDY WITH p53 IN 10 SELECTIVE CASES

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Objectives: To analyse the histopathological aspects of 37 cases and to make a histometric study in cases immunostained with p 53 in relation to associated epithelial changes (AEC) present in some SCC. **Methods:** A transverse retrospective analysis was made over 37 patients with SCC (data provided by the Pathology Department of the Padilla Hospital, Tucumán). The parameters studied were: age, sex, location, grade of differentiation and AEC. p53 was immunodetected in 10 cases and measured histometrically on digital photos. The frequency and the association of variables were analyzed with the Chi square test with a significance of 5%, using SPSS software. **Results:** 81% were men with an average age of 66; 38% SCC were found in the tongue; 53% were grade II, 41% Grade III. 83% of the SCC of the tongue were GIII. AEC were: *in situ* carcinoma (ISC) 37.5%; epithelial hyperplasia 87%; epithelial dysplasia 71%. 50% (5/10) were positive, with more than 45% of nuclear positivity. 40% of the cases showed associated ISC, also with high immunoreactivity. **Conclusions:** The study agrees with the literature with respect to age, sex, location and more aggressive development in SCC of the tongue. A quantifiable correlation between SCC and the type of AEC was also detected.

108. CLINICAL AND PATHOLOGICAL ANALYSIS OF 19 CASES OF SOLID MULTICYSTIC AMELOBLASTOMA (ASM)

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The aim of this work was to study 19 Solid multicystic ameloblastomas (ASM) and their recurrence. **Methods:** 19 cases of ASM from the department of Pathology at the Hospital Padilla and private practice (1995-2012) had been studied with these parameters: age, sex, recurrence, location, radiographic aspect and involvement of soft tissues. **Results:** The average age was 36 years old. 57.8 % were women. 47.3% showed recurrence after 2 and 10 years. 42.1% showed involvement of soft tissues. Radiographically we found multilocular (5/8) and unilocular radiolucent lesion (3/8). 57.8% showed a basic plexiform pattern, 36.8% a basic follicular pattern and 0.8% were mixed. 52.6% showed squamous metaplasia and 5.26% a granular cell pattern. In 2 cases we observed ameloblastic proliferation of the surface epithelium. At the time of the diagnosis these cases were intraosseous tumours. 26.3% showed coexistence between ASM and odontogenic cyst growth. **Conclusion:** The parameters related to an aggressive biological behaviour are recurrence and degree of involvement of soft tissues. Both are frequently present in our series. The histological characteristics of ASM are not related to tumour behaviour. The coexistence of ASM with odontogenic cyst growth implies neoplastic transformation.

109.

COMPARATIVE STUDY OF HUNTER SCHREGER BANDS

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Hunter Schreger bands are specializations to strengthen enamel microstructure. Under Scanning Electron Microscopy their orientation varies according to the tooth zone. The purpose of this work was to compare band inclination and enamel thickness in permanent and deciduous teeth. Incisors and canines were selected. Epoxy resin-embedded crowns were ground, polished, acid-etched and observed under Environmental Scanning Electron Microscopy (ESEM). Enamel thickness was measured in the vestibular and palatine medial third and enamel types were identified. A copy of the band inclination was obtained and the angle formed by the band direction and the amelodentinal boundary was measured. Arithmetic mean of enamel thickness in permanent teeth= 713.23 μ , difference in thickness (DT)=272.61 μ (n=10), in deciduous teeth= 400.68 μ , DT=140.45 μ (n=9), difference in thickness= 312.54 μ , d=3.18 p= 0.007. Arithmetic mean of the band angle in permanent teeth= 81.00° DT=9.94° (n=10) and in deciduous teeth= 66.67° DT =13.95° (n=9), difference= 14.33°, d= 2.60 p= 0.019. In deciduous teeth the inner and outer surfaces are more parallel-oriented and prisms form a smaller angle compared to permanent teeth. The significant difference in band inclination and enamel thickness are a consequence of the different biomechanical requirements in both groups of teeth.

110.

HISTOLOGICAL STUDIES OF GONADS IN FRUIT FLY SPECIMENS OBTAINED FROM MUTATION INDUCTION AND USED FOR SEX DETERMINATION IN *Anastrepha fraterculus* (WIED.) (DIPTERA, TEPHRITIDAE)

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Anastrepha fraterculus is a species of economic importance and quarantine relevance in Argentina. Early recognition techniques of the sexes were used in the IGEAF through morphological markers which were confirmed by chromosomal analysis. In the present work, we performed a histological study on larvae and pupae of these genetic lines used in the IGEAF to confirm results obtained in the genetic studies of the gonadal primordium. The material was collected in a controlled breeding environment at a temperature of 25±2°C, 66±20% RH and a photoperiod of 14L:10D. Specimens were fixed in Bouin's solution, preserved in N-butyl alcohol and stained with hematoxylin-eosin and Mallory's trichrome. The results obtained confirmed previous cytogenetic observations with histological studies showing the identification of sex in larvae of *Anastrepha fraterculus*. We provide information on gonadal development and gametogenesis of the genetic strains of *Anastrepha fraterculus* used to control this pest in Argentina.

Convenio Cooperación Científica FML-INTA.

111.

CTENIDIUM OF *Pomacea bridgesii* (GASTROPODA, PROSOBRANCHIA): HISTOLOGICAL ANALYSIS

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Pomacea b. presents a double respiratory system: ctenidia and pulmonary sacs. We describe the histology of *P. bridgesii* ctenidium to provide knowledge for future studies on alterations caused by contaminants. Samples were processed with routine histological technique for light microscopy. The ctenidium is a monopectinated ribbon formed by lamellae suspended in the mantle cavity. The ctenidium base has a simple epithelium with pigmentary and mucous cells, a thin layer of muscle and connective tissue with abundant haemolymphatic lacunae. The lamellae are covered by a simple epithelium which determines three zones: apical, subapical and half-basal. The first has columnar acidophilic cells with short cilia and mucous cells. The subapical zone presents columnar cells similar to those of the preceding region but with long cilia and few mucous cells. The third zone has acidophilic non ciliated columnar and cubic cells and mucous cells. Below the epithelium there is an axis of loose connective tissue, a thin layer of longitudinal muscle fascicles and numerous haemolymphatic lacunae. Ctenidium histology presents a high degree of specialization to effectively carry out gas exchange. Mucous cells secretion forms a film that would afford protection against the invasion of pathogens and toxic substances. This work represents the first contribution to the histology of *P. bridgesii* ctenidium.

112.

PARTICIPATION OF PKA IN THE ACROSOME REACTION OF EPIDIDYMAL SPERM IN *Chinchilla lanigera* GRAY

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The low reproductive rate of chinchillas in captivity has a negative impact on their commercial breeding. In this sense the study of the signal transduction mechanisms involved in the acrosome reaction (AR) is of great importance to assess the factors affecting sperm function.

The aim of this work is to study the involvement of protein kinase A (PKA) in the sperm acrosome reaction of *Chinchilla lanigera* gray. Samples were collected by puncture of the cauda epididymis of sexually mature males. The sperm were capacitated in human tubal fluid and divided into two fractions. Fraction I was preincubated with various concentrations of H89, a PKA inhibitor, for 40 min and then AR was induced with progesterone. Fraction II was incubated for 15 min with different concentrations of dibutyryl-cAMP, a PKA activator. Cultures were made in atmosphere gassed with 5% CO₂ and 100% humidity. The acrosomal status was assessed with Papanicolaou stain modified for spermatozoa.

Fraction I showed a decrease in the percentage of AR in a dose dependent manner. In fraction II, increasing the activity of PKA led to an increase in sperm AR.

Our results show an association between the acrosome reaction and the increase in PKA activity in epididymal sperm, suggesting that low levels of cAMP are needed to produce PKA activation.

**113.
HISTOCHEMISTRY OF THE EPITHELIAL MUCOUS CELLS
OF THE GILLS OF FRESHWATER TELEOST *Leporinus
obtusidens***

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The gills of fishes are multifunctional organs involved in gas exchange, pH regulation and nitrogenous waste excretion. This work analyzes the histochemical epithelial mucosal cells of the gills of *L. obtusidens* in order to provide knowledge for future studies of the possible alterations of these respiratory organs in contaminated environments. Samples were processed and stained with a routine histological technique for light microscopy. The gills are formed by primary lamellae from which secondary lamellae arise toward each side. Secondary lamellae are covered by a single epithelium formed by different cell types: a) squamous cells distributed over the whole surface, b) chloride cells located toward the base of the interlamellar area and c) large mucin secreting cells with slightly basophilic floccular cytoplasm. These cells are located in the interlamellar and lateral region of the lamella. Secreting cells have alcianophylic contents at pH 2.5. Some mucocytes display mixed contents with periodate-reactive and alcianophylic carbohydrates. Mucus would be mainly constituted by carboxylated, phosphated and sialylated acid glycoconjugates. The secretions of mucous cells form a protective film against mechanical and toxic pathogens and constitute the first line of defense. This work represents the first description of gills in *L. obtusidens*.

**114.
HISTOLOGICAL ASPECTS OF THE EXTRADUCTAL SEG-
MENT OF *Pomacea bridgesii* (GASTROPODA PROSOBRAN-
CHIA)**

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P. bridgesii was introduced in Argentina for commercial purposes. The female genital tract is composed of the ovarian, kidney and paleal regions. Processes such as coupling, fertilization, egg envelopes contribution and oviposition occur in the paleal portion, which consists of three structures: seminal receptacle, albumen gland and extraductal segment or vagina. We analyzed the histological organization of the vagina for its performance in the context of the reproductive biology of the species. Vaginal samples were processed with a routine histological technique for light microscopy. The vagina has three layers or tunics. The inner layer is formed by a simple ciliated columnar epithelium and a glandular chorion. In the chorion we can see abundant mucous acini that discharge their secretions into the vaginal lumen through ducts arranged between the epithelial cells. The middle muscle tunic consists of two layers of different orientation. The outer layer or cover epithelium is a simple epithelium with acidophilic ciliated columnar cells. These cells alternate with intraepithelial glands. The folds would markedly increase the secretory surface. The vaginal secretion would favor coupling and provide cementing substance for adhesion of the eggs to water emerging elements. The muscle fibers of the vaginal wall would contribute to intraductal eggs transit and subsequent spawning.

**115.
IDENTIFICATION OF SIALIC ACID AND N-ACETYL
GALACTOSAMINE IN HORSE STOMACH FETUSES USING
LECTINS**

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There are many aspects to consider in the breeding of *Equus caballus* for commercial purposes such as the digestive system and the substances involved in the feeding process such as glycoconjugates. The aim of this work was to identify sialic acid and N-acetyl galactosamine in the stomach of horse fetuses. Fetuses from gestation periods G1 and G3 were used. Stomach samples were fixed in buffered formalin and embedded in paraffin. The identification of glycoconjugates was performed with the lectin histochemistry technique, using the lectins *Maackia amurensis* II and *Dolichus biflorus*. For detection and later development the avidin-biotin peroxidase complex (ABC) and the diaminobenzidine (DAB) chromogen were used. The samples of the gastric region of the fetus (G1) showed a weak reaction to the presence of sialic acid on the luminal surface of the epithelium, and a moderate reaction to N-acetyl galactosamine. In fetuses (G3) there was an intense reaction to sialic acid and N-acetyl galactosamine on the epithelial surface. We conclude that sialic acid and N-acetyl galactosamine are present in the gastric region of fetuses belonging to the two periods of gestation and that there is a positive relationship between the degree of fetal development and the distribution pattern and degree of reactivity of the glycoconjugates tested.

**116.
DETERMINATION THROUGH THE LECTIN
HISTOCHEMISTRY TECHNIQUE OF N-ACETYL
GALACTOSAMINE IN INTESTINE OF RHEA (*Rhea
americana*)**

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Rhea (*Rhea americana*) is a species unique to South America and is included in the industry call "Ratites". Although its commercial breeding is increasing in different countries, little is known about the role of glycoconjugates in the digestive process. The aim of this work is to determine the presence of N-acetyl galactosamine in the large intestine of rhea. Samples were drawn from the intestinal region of specimens bred in the area of Río Cuarto, embedded in paraffin and then subjected to the lectin histochemistry technique with *Dolichus biflorus* lectin. For detection and later development we used the avidin-biotin peroxidase complex (ABC) and the diaminobenzidine (DAB) chromogen. The analysis and interpretation of the data yielded the following results: intense reaction on the epithelial surface of the intestinal glands and negative reaction in enterocytes and goblet cells. We conclude that N-acetyl galactosamine glycoconjugate is present only on the apical surface of the epithelium of the large intestine glands of rhea.

117.

MEDIAN ARTERY OF BOVINE FOREFOOT: A CONTRIBUTION FROM HISTOLOGY TO ANATOMY

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Studies by various researchers confirm that good blood supply to the forefoot of cattle helps to maintain the integrity of the locomotive apparatus. In terms of diameter, the median artery is the most important blood vessel irrigating this region. In our experience in artery macroscopic measurement, we observed some operator influence on the reading of the measuring instruments. The aim of this study is to provide morphometric data obtained with objective histological methods that allow us to become independent of operator influence. Ten bovine forefeet from the Villa del Rosario abattoir (Córdoba) were collected on different days, so that they were independent samples. The samples of median artery extracted at the proximal level of the metacarpus were processed for histology and stained with hematoxylin/eosin. Lumen diameter and the diameter of the artery up to the tunica media were measured with an optical microscope and Axiophot software. The mean and SD for lumen diameter was 689.52 ± 197.58 and for artery up to the tunica media 2633.73 ± 269.32 . The correlation coefficient between the two variables was 0.82 ($p < 0.05$). The results of this research provide data for subsequent investigations and for adjusting techniques in the study of angiology.

118.

PERITONEAL FORMATIONS RELATED TO MALE AND FEMALE REPRODUCTIVE APPARATUS IN PIGS (FROM BIRTH TO WEANING)

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Pigs are among the best studied domestic animals with respect to their anatomical, physiological and reproductive aspects since they can be used for consumption and as an animal of choice for medical research. There is precise knowledge of the arrangement and conformation of the genital peritoneum of pig embryos, fetuses and adults, without a concrete description of the period from birth to weaning (21 days). The aim of this paper is to provide knowledge about the genital peritoneum during the neonatal period, with the hypothesis that there are no differences in the genital peritoneum between newborn piglets and adult pigs. Seventy male and female piglet carcasses from a farm in the town of Las Junturas, Córdoba, were used. Dissection was performed, observing the arrangement of the peritoneal folds related to the reproductive apparatus. Observations indicated that the arrangement of the genital peritoneum in newborn males and females has the same characteristics in terms of position and relationships as that in adult animals. The knowledge provided by this work will be useful in the development of surgical techniques, in the training of pediatric surgeons and in the increase in the efficiency of early castration techniques in swine production.

119.

CALCIUM/CALMODULIN KINASE II AND ITS PARTICIPATION IN THE CAPACITATION OF *Chinchilla lanigera* SPERMATOZOA

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The sperm of *Chinchilla lanigera* acquire their fertilizing capacity through the capacitation process (CP). CP changes the pattern of motility, enables the acrosome reaction (AR), and selects a subpopulation of gametes capable of fertilizing the egg. An important factor during CP is the increase in $[Ca^{2+}]_i$ that activates various cell signaling pathways. In some species the calcium/calmodulin (Ca/CaM)-dependent protein kinase and Ca/CaM (CaMKII) play a major role in membrane fusion. The objective of this work is to determine the role of the Ca/calmodulin-CaMKII pathway in the membrane events occurring during CP in epididymal sperm.

Sperm were obtained by puncturing the cauda epididymis of sexually mature males. The samples were washed by centrifugation. The suspension was divided into six fractions. Four of them were preincubated with different concentrations of KN93, a CaMKII inhibitor, for 30 min. and incubated in Tyrode capacitation medium for 4 hs. The other two fractions were used as control. CP was evaluated by the occurrence of AR induced by progesterone evidenced by Papanicolaou stain. The results indicate that KN93 (5 μ M) produces an inhibition in AR. This effect is maintained without significant differences at higher concentrations (10, 20 and 40 mM). The reversibility assay indicated no cytotoxicity at the doses used. Blocking of CaMKII has an inhibitory effect on CP, suggesting that this enzyme plays a regulatory role in the events involved in the CP.

120.

EPIDEMIOLOGY OF PERIODONTAL DISEASE

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Alterations in the physiology of the tissues that surround the teeth are called periodonto pathologies. They can be categorized as Gingivitis and Periodontitis. Their etiology, origin and characteristics should be determined in order to focus prevention and treatment.

Aim: To determine the frequency of Gingivitis, Chronic and Aggressive Periodontal Diseases and their relation to age, sex and risk factors.

Material and Method: 150 patients aged 18 to 65 who attended the Periodontics class in 2011 were selected. The periodontal diagnosis included: plaque (Silness & Loe, 1964) and gingival (Loe & Silness, 1963) indices, probing depth and attachment level.

Results: 25% of the patients showed gingivitis, average age 24, plaque index 88%, and gingival index 1.22. 31% showed Aggressive Periodontitis, aged 37, with plaque index 91% and gingival index 1.47. Patients with Chronic Periodontitis were 44%, average age 57, plaque and gingival indices 92% and 1.70. In relation to risk factors, 12 patients with Gingivitis smoked and 4 had systemic diseases. 19 subjects with Aggressive Periodontitis smoked and 2 had systemic diseases. In the Chronic Periodontitis group, 18 smoked and 26 showed systemic diseases. There were no differences in sex.

Conclusion: Chronic Periodontitis was the periodontal pathology most often found in the patients assayed. The subjects suffering from it were also older and exhibited higher risk factors.

121.

HISTOPATHOLOGICAL ANALYSIS AND DENDRITIC CELL EXPRESSION IN AN M3 MURINE EXPERIMENTAL ADENOCARCINOMA. INTRATUMORAL AND SYSTEMIC. IMMUNOPREVENTION

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Objectives: To evaluate the presence of dendritic cells (DC) in spleen and tumor (experimental mammary adenocarcinoma M3 (adca M3)) treated with systemic and local immune stimulation, and the histopathological features of tumor and spleen in control and experimental groups. **Material and Methods:** Day one: BALB/c mice inoculated with tumor cells (TC) were separated into 5 animals per group. The control group (CG) received only tumor cells, the vaccine group (VG) received 5 doses of IM vaccine (V) and the intratumoral vaccine group (IVG) were given 5 doses of intratumoral V. DC collected from target organs were marked with anti CD11c+ plus FITC and analyzed by flow cytometry. **Results:** There were statistically significant differences in spleen (S) in percentage of DC compared to CG. ($p < 0.001$) and there were no statistically significant differences between local vs systemic V administrations. In the CG the AdCa evidenced necrosis, 100% muscle invasion and 50% skin invasion. S: white pulp hyperplasia (WPH) 100%. IVG: 100% muscle invasion and 75% skin invasion. S: WPH and Red pulp hyperplasia (RPH) 100%. VG: 100% muscle and skin invasion. WPH 50% and RPH 50%. **Conclusions:** The immunostimulating effect of V increased the expression of DC in S, WPH and RPH. Both findings could suggest an activation of the immune system.

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