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I.1. “Miguel Lillo” Lecture

MOLECULAR BIOLOGY OF PITUITARY TUMORS AND TUMORS FROM THE CENTRAL NERVOUS SYSTEM: NEW GENES INVOLVED, HYPOXIA AND SENESCENCE

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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 tumorigenecity in nude mice, we found the expression of a novel gene RSUME.

BMP-4 has a dual role in lactotrophas 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 lactosomatotrophic 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) were it is involved in angiogenesis and vascularization of these tumors trough a mechanisms involving HIF and VHL. These proteins provide new interesting targets for inhibiting different steps involved in the development of pituitary adenomas.

I.2. MOLECULAR MECHANISMS OF CALTRIN, THE SECRETORY PROTEIN FROM MAMMALIAN SEMINAL VESICLES

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Ca²⁺ 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) [Ca²⁺] can be raised by either Ca²⁺ influx through plasma membrane channels, or Ca²⁺ release from intracellular stores. High [Ca²⁺] 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, [Ca²⁺] should be kept low until sperm rich the oviduct and conform the reservoir to wait for ovulation. Low [Ca²⁺] 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 Ca²⁺ 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 [Ca²⁺] 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.
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 Epitelial 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 D. 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 FLORUENOSA 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 Flourenosia against P. larvae. Hexane, chloroform (CE) and ethyl ether (EEE) extracts from the aerial parts of Flourenosia 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 Flourenosia 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 for pest control for agriculture, forestry and public health. This microrganism produces delta-endotoxin (DE) and hydrolytic enzymes that increase its pathogenicity to target insects and could be exploited for pest control for agriculture, forestry and public health. The Argentinean 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 29293 and Enterococcus faecalis 29212. Quality control was made with ciprofloxacin (MIC29213:0.015 μg/ml; MIC29212:0.25 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 29213 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.

Co3. ANTIBACTERIAL ACTIVITY OF AN AQUEOUS EXTRACT OF Caesalpinia gilliesii (Wall.ex Hook.) LEAVES

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The extraction yield was 36.27% (w/w) and 3.89% (w/w) for PC. EEE from agro-industrial wastes). DE was determined using the alkaline solubilization method. Hydrolytic activities were evaluated using the casein solubilization method. Hydrolytic activities were evaluated using the complete exposure technique.

The results show that the above extracts are a viable alternative for use on infected P. larvae hives.

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 aw 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.
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 ARNt, 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 37ºC 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 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.

In recent years, fungal infections have increased, especially in immunocompromised hosts. Candida spp. represents one of 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.

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 Nougués, 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 μmol/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 pet, 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.
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.

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 has been related to a greater frequency of cancer of the lymphatic ganglia in female mice. The maximum limit established in Argentina and in the European Union. Fruits presented a carbendazim concentration that does not exceed the maximum limit established in Argentina and in the European Union.
There are no accurate data about the prevalence of diabetes in inhabitants of the highland, particularly in Argentina. The population of Jujuy is distributed into four geographic regions: 4) above sea level (MASL), Valle, 1200 MASL, Quebrada, 2500 MASL and Puna, above 3500 MASL. This study was carried out in 1317 patients grouped into Valles n=607, Yungas 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 tests 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.

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 Tucuman 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 immunonflourescence (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.
Results indicate that DhL induced activation in a dose dependent extracellular Ca\(^{2+}\) in DhL-induced activation in oocytes matured in vitro. The aim of this paper is to analyze the importance of both intra-and extracellular Ca\(^{2+}\), (DhL), is capable of inhibiting MPF activity and inducing oocyte activation. DhL inhibition does not significantly affect the process. These results suggest that DhL requires no extra cellular Ca\(^{2+}\) to exert its effect although intracellular Ca\(^{2+}\) is critical. RyR appears to be the largest contributor to the release of Ca\(^{2+}\) in the DhL-induced activation in this species.

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, Tucuman. 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 MGG stain and 30 with Pap stain. All the smears were assessed for cellularity and scored for MN. Conclusions: Pap is a better stain than MGG for the micronucleus assay screening of buccal cells.

In *Rhinella arenarum* oocytes, the fertilizing sperm induces an increase in Ca\(^{2+}\) concentration that causes the inactivation of MPF, allowing meiosis completion and oocyte activation. Ca\(^{2+}\) comes both from the extracellular environment and from intracellular stores. RyR appears to be the largest contributor to the release of Ca\(^{2+}\) in the DhL-induced activation in this species.

**ROLE OF CA\(^{2+}\) IN DEHYDROLEUCODINE- INDUCED ACTIVATION IN RHINELLA ARENARUM OOCYTES**

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In *Rhinella arenarum* oocytes, the fertilizing sperm induces an increase in Ca\(^{2+}\) concentration that causes the inactivation of MPF, allowing meiosis completion and oocyte activation. Ca\(^{2+}\) comes both from the extracellular environment and from intracellular stores. RyR appears to be the largest contributor to the release of Ca\(^{2+}\) in the DhL-induced activation in this species.
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 trihomes 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 radial anatomy and the presence of endomycorrhiza in var. *camarosa* are described for the first time.
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 merispores 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 Iguazu 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 arypica (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 DEFOILIATORS IN SOYBEAN CROPS IN TUCUMAN PROVINCE, ARGENTINA

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In northern Argentina, soybean crops are affected by several pest but Anticarsia gemmatalis (Hußen) (Catocalinae), Rachiplusia nu (Guenée) and Pseudolphis inclusus (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 Telenomuscyanophlyax 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 EFA 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 Curculionidae, 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: FORICULIDAE)

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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. lineare and 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 Pseudohemiomdon 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, Pseudohemiomdon laticeps, Hypostomus sp., Trichomycterus sp., Serrasalmus maculatus and Parodon tortuosus.

Andean and Parana forms of the Orders: Characiformes (45%); Families: Parodontidae, Characidae, Crenuchidae, Serrasalmidae and Erythrinidae; Order Siluriformes (27%); Families: Pimelodidae 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: CHRYSOPTIDAE) FED WITH Bemisia tabaci EGGS (HEMIPTERA: ALEYROIDAE)

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The whitefly Bemisia tabaci (Hemiptera: Aleyrodoidea) 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 off 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 TAIPIR (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 < 0.00001) 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 brasilienisis; Noteochordodes achosmosus; N. cymatium; N. desantisi; N. saltae; N. talensis and Pseudochordodes dugesii. The most abundant species was C. brasilienisis, 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 gordiidio 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.

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 Famalá, 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.

10. EVALUATION OF THE WATER QUALITY OF EL ARBOLOTO 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 bentonic insects per season of the year were obtained with a Surber sampler (300 μm 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 Store 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.

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.

11. INITIATIVE: CONSTRUCTION OF THE PROVINCE’S EMISSIONS INVENTORY. FIRST WORKSHOP RESULTS
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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°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 brasilienisis; Noteochordodes achosmosus; N. cymatium; N. desantisi; N. saltae; N. talensis and Pseudochordodes dugesii. The most abundant species was C. brasilienisis, 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 gordiidio 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.

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 Famalá, 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.
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. Fial. 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.

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

**EFFECT OF DIFFERENT PLANTING DATES ON QUINOA PRODUCTION IN TAIFI DEL VALLE, TUCUMÁN, ARGENTINA**

**BIOCELL 37(2), 2013 A-49 ABSTRACTS**

**A CALORIMETRIC ANALYSIS OF SOIL TREATED WITH EFFECTIVE MICROORGANISMS**

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

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⁻¹CO₂ 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.

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 pleioglossicida* 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 OD₅₆₀ measurements. Acetylated itrabrin and rollinastatin-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. PERICARP PHENYLPROPANOIDS: 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 benzoferum, 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 Tucuman, 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 control of root 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’,5’-dihydroxy-3’-metoxichalcone and 2’,4’,5’-dihydroxy-3’-metoxichalcone. 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) pups 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. gratelipes) 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. MIN and MTC 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. gratelipes, 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-oleylglycerol. 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 subjected to isolation studies and structural identification of new substances to determine their mechanism of action and the possible synergistic effect between them.

23. **CYTOTOXIC AND INSECTICIDAL ACTIVITY OF EXTRACTS FROM Vernonia nebularum AND Vernonia fulta**

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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 fulta* (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. fulta*, 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. fulta* 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.
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. Results: Four compounds (two chalcones, one flavone and one flavanonone) 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 mc., K. apiculata mF and O. oeni X L to grow in grape juice medium. Yeast mixed cultures were performed as follows: 1-mF 106-mc 106 CFU/mL, 2-mF 106-mc 106 CFU/mL. Media were fermented, filtered and inoculated with 106 CFU/mL-X L (sequential culture-SC). Simultaneous cultures included mF, mc and X L strains (106 CFU/mL each). All the cultures were incubated at 30°C in microaerophilic. 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%. X L strain grew in SC. Malate was consumed and 4.9 mM lactate, 3.6 mM acetate and 2.5 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.
29. IN VITRO EVALUATION OF IRRIGATION SOLUTIONS FOR THE DISINFECTATION 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) 0.5% 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. Partially subsidized by CIUNT.

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 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 24 h. 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.

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 24 h. 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 B9 NATURALLY BIO-ENRICHED YOGURT

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ACID BACTERIA

In this work, *E. faecalis* proved to be the prevailing pathology. Highest 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.

**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 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 24 h. 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.

**The aim of this work was to study the effect of heat treatment on folate concentration and stability in a B9 naturally bio-enriched yogurt. 3 yogurts were elaborated using B, 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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Diphyllobothrium and Spirometra are the most representative taenias of the Pseudophyllidea order due to their zoonotic importance. They may live as a parasite in the small intestine of men, mammals and birds. They are heteroxenous. Diphyllobothrium uses a copedop 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 Pseudophyllidians 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 Pseudophyllidea. 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. ASSESSEMENT 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 (10^9 CFU/mL) and preserved with hypobiotic methods: storage under mineral oil and anabiotic methods: freezing to -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 10^6 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 INTEGROS 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 blα-SIV2, blα-POP2 and blα-CTX-M-2 and to detect complex integrons using primers directed to intI1 and orf 513 genes by PCR. The ESBL enzymes were characterized as CTXM-2, PER-2 and SHV with CTX-M-2 prevalence. Out of these strains, 44 (70%) were associated with classI complex integrons. This multicenter study reflects the high incidence of ESBL associated with classI 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 μL 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. Subsidized by CIUNT.
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 FCEFyN 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.

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 = 213; September = 123; October = 1316, σ = ± 0.31; November = 1389, σ = ± 1.35 and December = 4245, σ = ± 2.6. b) Food nutritional value; diet 1 (August-September): CP = 7.34%; NDF = 74.96; diet 2a (October-November) CP = 4.13%; σ = ± 0.1.35 and December = 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.

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 metylated fatty acid and from 1.59 to 5.99 % of metlated 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.

**Preliminary Study of Fatty Acids Levels of *Eisenia andrei* using Gas Chromatography**

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*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 CITRUS 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 rootstock spots 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 tephritids, 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 25-30ºC and a 12h photoperiod. Assessment was made on the seventh day, identifying fungal agents. The soybeans which were not disinfected presented significantly different 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, P usarum 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%), DM5.8 (17%), DM 8002, Munasqa and DM 7.8 (13%).
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.

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: Sphaerelcea bonariensis 12; Argeome subflusiformis 8; Triboliris pluriflora 3; Glandularia peruviana 4. Nov: S. bonar.26; A. subfl.2; T. plur.2 and G. peruv.12; Quenopodium album 45; Amaranthus quitensis 21; Portalaca oleracea 11; Heliotropium procmumens 6; Parietaria debilis 1. Dec: P. oler.5; S. bonar.27; A. quit.26. Jan-Feb: no spp. Mar: A. subfl.1; Apr: S. bonar.1. Precipitation: 751 mm. 2011-12, Oct: S. Bonar.9; A. subfl.9; T. plur.4; G. peruv.2. Nov: S. bonar.11; A. subfl.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.
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 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 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.

The crop was managed with mechanical culture without herbicides, without watering, with nitrogen fertilization (90 kg.N2 ha⁻¹). The parameter statistical analysis was made in initial, intermediate and final populations using ANOVA and Tukey’s test for α = 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.

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.
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 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 $A_{FI}=0.7241x + 0.978$. For Argensil 165 Bio, the equation is $A_{FI}=0.7369x - 0.982$. 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.

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 develop 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. Sampleings 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 $A_{FI}=-0.0002x^2 + 2.2584x + 94.016; R^2=0.9549$, and for Argensil 165 Bio it is $A_{FI}=-0.0013x^2 + 2.2615x + 57.08; R^2=0.9573$. 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.
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 of 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 Medina, 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 CARI OGENIC 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 aim of this study was 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.
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.

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 faced, 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%).

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.

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. 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).

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 sinnuata (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 sinnuata* (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 *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 hyposomatic leaves. In cross section, unistrate epidermis with a thick cuticle, 1-2 palisade and 5-6 spongy parenchyma layers. Proteostelic vascular bundle surrounded by sclerocymatous 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 sclerocymatous tissue, parenchymatous cortex and pith. Diarch root with a sclerocymatous 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.

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* is a small fern, epipetric or terrestrial in high 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 hyposomatic leaves. In cross section, unistrate epidermis with a thick cuticle, 1-2 palisade and 5-6 spongy parenchyma layers. Proteostelic vascular bundle surrounded by sclerocymatous 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 sclerocymatous tissue, parenchymatous cortex and pith. Diarch root with a sclerocymatous 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 *Carica 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 papillode abaxial epidermis. In the midrib a parenchymatous marrow is observed, surrounded by collateral bundles 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-brachyhydromic. 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 isodiometric 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 and calcium oxalate crystals. Petiole subcircular with cystoliths and subepidermal (3-4). The parenchyma presents secretory channels and palisade tissue unistrata, spongy parenchyma (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 intersessional 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 FLAVONOIDS 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′-tri hydroxy-3′,7-dimethoxyflavanone, 3′,5,5′-tri hydroxy-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*.
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-EFA 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.

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

Geoffroea decoratcans 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, antiinflammaory and expectorant activities. Previous findings from our laboratory showed that the aqueous extract of chañar fruits and arrope have antiinociceptive 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 antiinflamatory 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 antiinflamatory 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 antiinflamatory effect, probably through inhibition of prostaglandins biosynthesis, which is the mechanism of action of nonsteroidal antiinflamatory drugs.

**ANTIHYPERGLYCEMIC EFFECT OF LEAVES OF Smallanthus macroscyphus AND ITS ACTIVE COMPOUND, POLYMATIN A**

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 macroscyphus 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. macroscyphus 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. macroscyphus 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.

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

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, unsaturated FA proportions. This study demonstrates that FOS-rich yacon 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 alter vascular tone.

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 SNAP 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 (PGs) 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 unbrubbed (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; PGF2α (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 (P₄) is known to promote the absence of genomic transcription, 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) in vitro with progesterone were incubated in the presence of PD 98059 (0.5 - 10 μM), a selective inhibitor of MAP kinase kinase (MEK) and geldanamycin (5 - 20 μM). 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 expression of BMP-5 in the bovine oviductal fluid (bOF) and to study its interaction with matured oocytes, we used neomycin (0-2 mM). P₄ (10⁻⁶ M) as control. Meiosis resumption was scored by germinal vesicle breakdown (GVBD) at 24 h. Our results showed that in R. arenarum oocytes T is a steroid inducer as efficient as P₄. Maturation is induced by T-independent genomic transcription (95±3 %GVBD). Inhibition of formation of meiosis and embryonic development. The aim of this study was to analyze the participation of phospholipid hydrolysis during maturation we used neomycin (0-2 mM). P₄ (10⁻⁶ M) as control. Meiosis resumption was scored by germinal vesicle breakdown (GVBD) at 22 h.

In vertebrates, mature oocytes are arrested at the metaphase of the second meiotic division through the action of the cytosolic 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 R. arenarum oocyte activation. Denuded ovarian oocytes matured in vitro with progesterone were incubated in the presence of PD 98059 (0.5 - 10 μM), a selective inhibitor of MAP kinase kinase (MEK) and geldanamycin (5 - 20 μM), 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 R. arenarum oocytes and that MEK is, as in other species, a critical step in this signalling pathway.

86. MAPK CASCADE IN THE ACTIVATION OF Rhinella arenarum OOCYTES

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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 0.63±0.33 g/l treated group. P < 0.05, significant

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.

The results show that lipid profile alterations in T1D are highly dependent on glycemic control and diabetes duration.
93. ASSOCIATION BETWEEN SERUM PROSTATE SPECIFIC ANTIGEN (sPSA) LEVELS AND PROSTATE VOLUME (PV) IN HEALTHY MEN FROM TUCUMAN


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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, 1.60±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) PATIENTS

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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 (DDi) and also CA15.3 determinations. Results obtained (X±DS) were: RP 209776±44502, 256467±92001, 94.1±6.2; TP 90.9±7.5, 91.7±8.4, 91.6±7.9; APTT 39.9±5.1, 37.5±5.0, 39.2±8.8 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 0.5±0.3, 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 0.5±0.3, 0.8±0.2 ng/ml and CA 15.3 11.8±10.2, 132.25±4.36; 6.26±1.35; 6.19±1.22; 1.88±0.39; 3.92±0.54; 132.32±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). 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. Partu- rition 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 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. Partu- rition 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.

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.
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 factorial experiment was applied and the significance and interaction of physiological state and season, respectively. Low albumin values and high urea values with respect to the reference range indicate clinically 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±0.592 mg/L-1) and Cu (a: 0.66±0.098; s: 0.596±0.077 mg/L-1) variations. The data above show the changes in forage supply as regards quality and quantity, as well as the variation in forage supply in different seasonal groups. 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±0.78x109/L; LPS= 0.73±0.09; Lc= 2.12±0.23), but increased in PL. Also, ipi of LPS caused a decrease in A and TP with lower inflammatory reaction with lower accumulation of liquid in the peritoneum.

98. Lactobacillus casei MODULATES LEUKOCYTE RECRUITMENT AND PERITONEAL PERMEABILITY ALTERATION IN AN EXPERIMENTAL ENDOXENOMA
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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 endotoxonemia induced by lipopolysaccharides (LPS). Adult BALB/c mice were given Lc (105cells/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±0.78x109/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 SYNCTIAL 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 Tucuman. 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 Tucuman, 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±SD 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.
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±SD of the TC values were 211±53 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±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.

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 exciliated 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.
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 sperm. In conclusion, Cd2+ at a dose of 10 mg/kg can reduce sperm 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 leafs 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 glyconjugates (GAG) with neutral residue and phosphatic, carboxylated and sulphated acids, and Toliuidine 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 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 INMUNOHISTOCHEMICAL STUDY WITH p53 IN 10 SELECTIVE CASES
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Objective: To analyse the histopathological aspects of 37 cases and to make a histometric study in cases immunostained with p53 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 GII. 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 multicellular (5/8) and unicellular 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 amelodontinal boundary was measured. Arithmetic mean of enamel thickness in permanent teeth = 713.23 μm, difference in thickness (DT) = 272.61 μm (n=10), in deciduous teeth = 400.68 μm, DT = 140.45 μm (n=9), difference = 312.54 μm, 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-butylic alcohol and stained with hematoxylin-cosin 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.

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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 monopечetted ribbon formed by lamellae suspended in the mantle cavity. The ctenidium base has a simple epithelium with pigmented 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 acidophiles 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 acidophiles 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 Papa-nicolau 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 TELEOSTE <i>Leporinus obtusidens</i>

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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 <i>L. obtusidens</i> 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 alcianophilic contents at pH 2.5. Some mucocytes display mixed contents with peroxidate-reactive and alcianophilic 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 <i>L. obtusidens</i>.

114. HISTOLOGICAL ASPECTS OF THE EXTRADUCTAL SEGMENT OF Pomacea bridgesii (GASTROPODA PROSOBRAN-CHIA)

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<i>P. bridgesii</i> 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 <i>Equus caballus</i> 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 <i>Maackia amurensis</i> II and <i>Dolichus biflorus</i>. For detection and later development we used 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-acetylgalactosamine. In fetuses (G3) there was an intense reaction to sialic acid and N-acetylgalactosamine on the epithelial surface. We conclude that sialic acid and N-acetylgalactosamine 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 (<i>Rhea americana</i>) is a species unique to South America and is included in the industry called “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 Rio Cuarto, embedded in paraffin and then subjected to the lectinhistochemistry technique with <i>Dolichus biflorus</i> 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.
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 of the genital peritoneum in newborn males and females, without a concrete description of the period from birth to weaning. 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 Axioshot 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.
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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