

# TUCUMAN BIOLOGY SOCIETY

Abstracts from the

XXI ANNUAL SCIENTIFIC MEETING

October 21-23, 2004

Tafi del Valle, Tucumán

ARGENTINA



**PLENARY LECTURE I****L. 1.****NITRIC OXIDE SINTASE (NOS) ACTIVATION BY NEURODEGENERATIVE PROCESS**

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Neuronal insults produced by irradiation, ischemia or intoxications are usually triggered by excitatory amino acids. These compounds initiate a cascade of molecular events leading to an increase of nitric oxide (NO) and free radicals production. The effects of this cascade have been studied in adult animals using three experimental models: a) streptozotocin induced diabetes (STZ), b) perinatal asphyxia (PA), and c) continuous illumination (CI) of the retina. The NOS expression was studied in the spinal cord (SC) and retina by histochemistry (NADPH-diaforasa) and immunocytochemistry using specific antibodies. Significant increase of the reactive area in moto-neurones and morphological changes in layer X were found in SC of STZ and PA animals. In the retina an increase in NADPH-d reactivity was found in the amacrine cells of PA and CI animals. In addition CI animals showed a significant increase in the production of free radicals after 1h of illumination. The specific antibodies corroborate the findings and showed an increase in the number of nNOS reactive horizontal and ganglionar neurons in AP. These results, suggest that NO, participate in the neurodegenerative process occurred in the three evaluated systems.

*(PIP0819/98, TM12, M047 M020).*

**PLENARY LECTURE II****L. 2.****METHANE PRODUCTION IN RUMEN. IMPORTANCE OF STUDY TO EMISSION DECREASE**

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The methane produced in the digestive system of herbivores (insects and humans included) is the final product of carbohydrate fermentation. Methane is considered a “greenhouse” gas and emission from ruminants (cattle, buffalo, sheep, goats, camelides) is estimated to be 70-100 Tg/year, and constitutes 20-35% of the total emitted into the atmosphere. Different resources are studied with the aim of reducing rumen methane production; addition of antibiotics to food rations is a common practice today. Ruminal micro-organisms, however, generate antibiotic resistance; Martin (1998) observed that this resistance can be cross-transferred to other microorganisms, to normal colonizers from cattle and man and pathogens (Nickolick, 1994). Exploration of other natural sources constitutes an alternative for modifying ruminal fermentation and reduce methane production. It is necessary to understand the mechanisms involved to reduce methane production through ruminal fermentation manipulation. From experimental results with forage, the importance of carbon compound on methane production and environmental conditions is analyzed. Finally, some strategies and alternative sources to reduce methane production are mentioned.

**PLENARY LECTURE III****L. 3.****THE STRUCTURE AND ORGANIZATION OF THE ENVIRONMENT AFFECT THE ACTIVITY AND STABILITY OF  $\beta$ -GALACTOSIDASE**

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Beta-galactosidase is an enzyme extensively studied due to its nutritional, technological and diagnostic importance. Moreover, it is widely used as a tool in genetic engineering and molecular biology. In all these cases, the activity of this enzyme is expressed in heterogeneous, dynamic and complex systems. As a consequence, cooperative phenomena, emergent properties, new control levels and fluxes of information, which are absent in homogeneous systems, can be observed. Taking these concepts into account, in our laboratory we evaluated the kinetics of hydrolysis of soluble substrates catalyzed by soluble  $\beta$ -galactosidases, occurring in the presence of lipid-water interfaces as well as in molecular crowded media. We used model membranes such as lipid vesicles, monomolecular layers at the air-water interface and thin films transferred to solid substrates. We also encapsulate the enzyme in a rigid silicate matrix. We observed a differential modulation of the enzyme activity coupled to the topology, compressibility, molecular packing and hydration level of the interfaces offered. This modulation involved effects on: a) partition equilibria and localization, within the lipid-water interface, of the chemical species participating in the reaction, b) on the kinetics of the reaction at the interface and c) on the functional and structural stability of the protein (evaluated through intrinsic fluorescence analysis and differential scanning calorimetry) at extreme pHs and temperatures. These results have theoretical and technological relevance.

*Supported by SeCyT-UNC, Agencia Córdoba Ciencia, CONICET and ANPCyT.*

## SYMPOSIUM I "BIOACTIVITY AND APPLICATIONS OF PLANTS PRODUCTS"

## S. 1.

**YACON. A PERSPECTIVE FOR DIABETES TREATMENT**

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Yacon (*Smallanthus sonchifolius* [Poepp&Endl.] H. Robinson) is a native Andean plant which was commonly grown and consumed since pre-Columbian times. In recent years, expansion to several extra-Andean countries have been stimulated by the presumed medicinal properties of both roots and leaves.

Yacon roots store fructo-oligosaccharides (FOS) as the main carbohydrate. These non digestible sugars are a new category of low energy sweeteners which have no detectable effect on fasting blood glucose levels, suggesting a potential use in diabetic patients. Moreover, we recently showed that yacon feeding decrease triacylglycerols levels in the post-prandial serum of normal and diabetic rats. The mechanism of this effect probably is related to the high content of FOS in the tuber.

Hypoglycemic activity of water extract of yacon leaves was demonstrated in normal and diabetic rats, and is associated to an increase in plasma insulin level. However, the nature of the molecule(s) responsible for such effect as well as the mechanism of this action require further investigation.

Recently, phenolic compounds contained in yacon leaves extracts and roots were shown to have antioxidant activity "in vitro". This finding may open the way for a potential therapeutic use in chronic diseases caused by radicals, e.g. diabetes mellitus.

Assuming that yacon leaves and roots have been used for centuries by original Andean populations as a traditional folk medicine for diabetes treatment, this presentation aims at reviewing the current scientific evidence supporting the potential antidiabetic properties of yacon.

## S. 2.

**PLANT EVALUATION AS A SOURCE OF NATURAL ANTIMICROBIAL AND ANTIOXIDANT AGENTS**

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In the last century, an increasingly interest on the study of folk medicines (plants and propolis) appeared in the world. Several approaches can be taken to establish the scientific basis for the success of folk medicine. One method is to begin with an anthropological approach in order to appreciate how and why a particular medical practice became establish and then to explore the chemical and biological reasons for the success of the practice. A rich heritage of traditional knowledge of the uses of plants as medicines can be found in the northwest of Argentina. The purpose of our studies was the demonstration of the antimicrobial and antioxidant activities present in plant species of the Northwest of Argentina. The prolonged use of antimicrobials provoked problems of importance for the society in relation with the growing resistance in the pathogenic population and the increased dependence from the synthetic drugs. Our efforts were centered to the demonstration of the antimicrobial activity of plant extracts (infusions, decoctions and tinctures) on antibiotic multiresistant Gram + and Gram - bacteria, on phytopathogenic bacteria and on yeasts, xylophagous and phytopathogenic fungi. Several techniques were applied for the detection and quantification of each activity and were compared with that of synthetic drugs. Bioautographic methods allowed the easy and rapid demonstration of the antimicrobial activity of components of an extract and more refined methodologies the determination of the MIC and the MBC. With the use of co-chromatography on TLC, column chromatography on Silica gel, HPLC, uv-visible spectra and different staining methods on TLC we could detect quercetine derivatives, a known flavanone and we isolated a new flavanone glycoside with high antifungal activity from *Larrea divaricata* ethanolic extract. Otherwise, *L. divaricata* extract showed lower cytotoxicity than ketoconazole and clotrimazole. The oxidation of biological molecules, membranes and tissues, induced by oxygen, mediated by free radicals or metallic ions is related with diverse pathologies (inflammation, carcinogenesis, aging, photobiologic effects, etc.). The main damaged molecules are DNA, proteins, carbohydrates and lipids. The damage on the DNA can be irreversible and consequently inheritable. Extracts from *Jodina rhombifolia*, *Leonurus sibiricus*, *Psittacanthus cuneifolius*, *Tripodanthus acutifolius*, *L. divaricata* and *Zuccagnia punctata* showed a high inhibition of the oxidative damage induced by *ter*-butylhydroperoxide on DNA. Their antioxidant activity was assayed by the inhibition of bacterial mutagenesis reversion in *E. coli* WP2 *trp65 uvrA rfa/pKM 101* (IC 188) and its isogenic *oxyR30* derivative (IC203) with and without metabolic activation to detect direct and indirect mutagens. Moreover, the photoprotective effect of extracts from *L. divaricata* and *Z. punctata* assayed with pBR322 also suggests the antioxidant effect of these extracts. Our results suggest that plants from the Northwest of Argentina are useful for their application as phytopharmaceuticals, in veterinary and as agrochemicals.

**S. 3.****STUDY ON PROPOLIS QUALITY FROM ARGENTINA**

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Propolis is a natural resinous product, elaborated by honeybees. Raw propolis is composed of resin (flavonoids and related phenolic acids and regarded as the polyphenolic fraction), wax, essential oils, pollen and various organic compounds. Up to now, more than 180 compounds, mainly polyphenols, have been identified as constituents of propolis. The chemical composition of propolis depends on the vegetation at the site of collection, honeybees type and recollection time. Because of the geographical differences, propolis samples from Europe, North America, South America and Asia have different chemical compositions. Due to this, the biological activities (antibacterial, antifungal, antiviral, antiinflammatory, antioxidant and anticancer activities) of propolis from different areas are also different.

At the present, in Argentina there are more than two millions of hives with a production of 300 g of propolis/hive/year. This product is able to become an important economical resource for Argentine.

The purpose of our investigation was determined the quality criterion for Argentina propolis (physicochemical parameters, biological activities as well as toxicity of them). Propolis from twenty-five regions were collected for this study.

The phenolic compounds composition of Argentina propolis has been found quantitatively and qualitatively variable, depending on the plant ecology environment. The North Argentina propolis were classified in four groups according to separation patterns in HPLC and RPHPTLC. Otherwise, some North Argentina propolis exhibit antibacterial, antimutagenic, anti-inflammatory and immunomodulatory activities. Protective action against oxidative modification of lipid and reactive oxygen species scavenging activities (ROS) were also demonstrated. Furthermore, this propolis do not exhibit mutagenicity, genotoxicity nor cytotoxicity in different biological systems (*Salmonella typhimurium* TA98 and TA100, *Allium cepa* and *Artemia salina*, respectively). Our results suggest a potential use of Argentina propolis as phytopharmaceutic products and for food conservation.

**SYMPOSIUM II “REPRODUCTION BIOLOGY”****S. 4.****AMPHIBIAN OOGENESIS**

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Oogenesis is a complex process that leads to the formation and differentiation of the female gamete. Within the gonad, the development of each gamete is mainly mediated through the follicles which undergo progressive cellular and molecular interactions.

One of the most relevant events in amphibian oogenesis is the marked gene expression and accumulation of transcripts during primary oocyte growth. The high pattern of accumulation of different RNAs is related to the requirement for stored components to be used in early development. In the *Ceratophrys cranwelli* species, the oocyte contains high levels of RNAs as a consequence of a gene amplification that produces multiple nucleoli and of the RNAs from the follicle cells present in the cortical vesicles. At present, the data on the possible functions of maternal localized RNAs is limited. We study the maternal connexin mRNA expression pattern, probably related with the vitellogenesis and maturation process.

Besides RNAs, oocytes store components to meet all nutritional requirements of the embryo until it is able to consume food. Thus, a large number of yolk platelets accumulate during the vitellogenic phase.

When the oocytes complete their growth in the ovary (full grown oocytes) they are arrested at the prophase of meiosis I. However, they are not able to be fertilized or support embryonic development unless they undergo oocyte maturation. This process corresponds to a complex differentiation program that transforms the oocyte into an egg that is fertilization competent. We have demonstrated a possible connection between the intra-oocyte cAMP level and the coupling/uncoupling of gap junctions. cAMP was proposed as a regulatory molecule in the meiotic arrest of *Bufo* oocytes.

Analysis of the oocyte-follicle cell interface during the amphibian oogenesis revealed the development of a complex cell-cell interaction that changes throughout the various oogenetic periods.

**S. 5.****SECOND MESSENGERS INVOLVED IN SPONTANEOUS MATURATION OF *Bufo arenarum* OOCYTES**

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In amphibians, immature oocytes are arrested in G2-M until progesterone released from the surrounding follicle cells triggers completion of meiosis I and progression to meiosis II. Progesterone interacts with the oocyte surface and starts a cascade of events leading to the activation of maturation-promoting factor (MPF) that induces germinal vesicle breakdown (VGBD). Although progesterone is the maturation inducer in amphibians, it has been demonstrated that *Bufo arenarum* oocytes resume meiosis with no need of exogenous hormonal stimulus if deprived of their enveloping follicle cells. This phenomenon, called spontaneous maturation, is quite rare in amphibians. In *Bufo arenarum*, spontaneous maturation takes place only in oocytes obtained during the reproductive period. These oocytes also had a respiratory activity characteristic of mature oocyte.

In mammals it has been suggested that the somatic component of the follicle exerts an inhibiting influence on the oocyte, preventing meiosis progression. Specific follicular molecules thought to mediate this meiotic arrest are AMPc and purines. Also, in amphibians, a reduction in the levels of AMPc is required to meiosis reinitiation. In *Bufo arenarum*, elevated intracellular levels of purines as the AMPc and the guanosine can inhibit the spontaneous maturation. The participation of purines in the reinitiation of meiosis is confirmed by the fact that the mycophenolic acid, a specific inhibitor of inosina monophosphate deshidrogenasa, is able to induce the maturation in incompetent oocytes. In addition to AMPc, the hydrolysis of phosphoinositides and the activation of PKC, are involved in the oocyte maturation. Thus, inhibition of PIP<sub>2</sub> hydrolysis with neomicine blocks the spontaneous maturation, suggesting that products of this process, DAG and IP<sub>3</sub> participate in the maturation. Moreover, the activation of the PKC, by means of phorbol ester or H-7 induces the germinal vesicle breakdown in incompetent oocytes and elevates the percentage of spontaneous maturation.

In the amphibians Ca<sup>++</sup> has been proposed as a second messenger for maturation. In *Bufo arenarum* although its influx it is not sufficient to reinitiate the meiosis, are necessary suitable levels of the cation, since its depletion inhibits the spontaneous maturation. Nevertheless, the spontaneous maturation is an independent process of the extracellular Ca<sup>++</sup> concentration. The possibility of inducing spontaneous maturation in species like *Bufo arenarum*, opens interesting perspective for the study of the mechanisms involved in the process of the maturation and constitutes a very useful tool in the involved processes of signaling in the control of the cellular cycle.

**S. 6.****SIGNAL TRANSDUCTION PATHWAYS THAT REGULATE MAMMALIAN SPERM CAPACITATION AND ACROSOMAL REACTION**

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Upon the arrival of sperm to the female genital tract, they begin several changes known as Capacitation. At the end of this step sperm can support the acrosomal reaction. Both events are necessary for oocyte fertilization. They are well-known topics in sperm physiology but the molecular regulations are under study in many laboratories around the world looking for a consensus in these topics. It had been demonstrated that bicarbonate and albumin (BSA) are necessary for sperm capacitation. Bicarbonate stimulates adenilate cyclase (AC) and BSA accepts the cholesterol from the plasma membrane. Both mechanisms stimulate the AC and increase the cAMP. That promotes the Protein kinase A (PKA) activation and them; an increase in tyrosine phosphorylation could be expected due to an increase in tirosin kinase activity. This molecular cascade activates a subset of protein and simultaneously a membrane hyper polarization could be verified, probably by the open of Na/K channels. Recently a raft microdomains were also involved in this undefined phenomenon. On the other hand, several pathways are proposed to work out during acrosomal reaction. One of them, is trigger by Progesterone (P) that is associated to G proteins. That in turn stimulates two phospholipase, C and A<sub>2</sub>. Both increase the intracellular level of Ca<sup>++</sup> promoting the membrane fusion during acrosomal reaction. Several details are discovered but others still unclear.

**S. 7.****EFFECT OF OVIDUCTIN ON AMPHIBIAN OOCYTES AND ITS RELEVANCE IN FERTILIZATION**

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Gamete interaction in anuran amphibian depends on the action of the oviduct on oocyte. In these animals, recently ovulated oocytes are not fertilizable *in vitro*. The first portion of the oviduct, the pars recta (PR), produces changes in the extracellular matrix (ECM) of the oocyte that cause its transformation into a "fertilizable" state. This a common event first reported in *Bufo arenarum* and later verified for all amphibian species. One of the ECM component, the viteline envelope (VE), has been clearly demonstrated to be the main site of gamete interaction and induction of the acrosome reaction. The structural changes in the ECM are accompanied by a limited hydrolysis of the proteins that constitute the VE and by release of surface peptides due to the effect of a glycoprotein with serin-protease activity and characteristics similar to trypsin and plasmin. This enzyme is synthesized and secreted by the action of steroid hormones in the PR. Based on the fact that the PR secretion is formed by specific proteins and by other from the blood plasma, we demonstrated that, besides the protein specifically synthesized and secreted by the PR, proteins transudated from the plasma are involved in the reproductive process. Consequently, we detected the presence of C3 in the EV of amphibian oocytes and its C3b receptor in the plasma membrane. We also demonstrated that the antibodies against *Bufo arenarum* C3b inhibit gamete interaction in this species, a decrease in fertilization percentages being observed. A PR protease called oviductin that selectively hydrolyzes certain glycoproteins is involved in the transformation of the EV into a fertilizable state. *In vitro* experiments, binding of proteins from the EV to the head and middle piece of the sperm occurs only after they have passed through the oviduct. The electrophoretic pattern indicates that the oviductin selectively hydrolyzes GP84 and GP56. The action of oviductin also causes a change in the concentration of GP48, GP42 and GP39.

The oviductin from *Bufo arenarum* was cloned and the analysis of its sequence revealed that it is an unusual mosaic with several protein domains. Besides the domain proper to oviductin, there is non functional catalytic domain. There are also present CUB domains related to "spermadhesin" molecules involved in the sperm-oocyte envelope interaction of mammals. However, the biological action of the PR, in *Bufo arenarum* at least, exceeds the mere proteolytic effect on the ECM since assays with the purified enzyme resulted in lower fertilization percentages and abnormal embryo development with respect to the effect of the PR total fluid in "*in vitro*" fertilization assays.

**1. EVALUATION OF BEAN (*Phaseolus vulgaris* L.) SEEDS INOCULATION WITH FLUORESCENT 51B *PSEUDOMONAS*: I) GERMINATION AND GROWTH OF SEEDLING**

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Argentina's contribution to world bean production reaches 1,8%. One reason for low harvest performances is the use of low-grade seeds. This study was aimed to evaluate the effects of inoculation of seeds of two cultivars of white bean (Alubia and Paloma) and two of black bean (Norte and Cerrillos) with fluorescent 51B *Pseudomonas*, on the germination percentage, as well as on growth of normal seedling; this was done through dry weights of aerial and root plants. Treatments have been: a) unharmed seeds (control), and b) with 1 day of accelerated ageing; this one subdivided as follows: i) not inoculated, and ii) inoculated with Rhizobacteria ( $10^8$  cfu/ml<sup>-1</sup>).

It has been observed that while inoculation did not modify the percentage of germinated seeds of white beans it promoted significant increases ( $p \leq 0.05$ ) in the control of cv. Norte, and with 1 day of damage for Cerrillos. On the other hand, biometric analysis has shown that Rhizobacteria stimulated lightly the dry weight of aerial parts of controls in the case of cvs. Paloma, Alubia and Norte; in both the two last over, the dry weight of seedling roots with on day of damage, was stimulated; and it was inhibited in roots of the Cerrillos control, with regard to those not inoculated.

It is concluded that response -beneficial, neutral or detrimental-attributed to this Rhizobacteria, is in accordance to the cultivar and physiological quality of employed bean seeds.

**2. HEMATOLOGICAL PARAMETERS IN THE CICHLID FISH *CICHLASOMA DIMERUS* (TELEOSTEI, PERCIFORMES)**

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Changes in hematological parameters may be applied in experimental effects studies or field monitoring. The purpose of this study was to obtain a basic knowledge of the hematological parameters of *Cichlasoma dimerus* and consider the validity of changes in blood indexes as biomarkers associated with xenobiotic-induced hematological stress. Blood samples were obtained from the caudal vein of adults individuals. Assays with fish exposed to different concentrations of the xenobiotic octylphenol (OP) were performed. The major morphological features of blood cells were described. Erythrocytes and five types of leucocytes (thrombocytes, lymphocytes, monocytes, heterophils and eosinophils) were characterized and basically follow the fish hematological patterns. Basophils were absent. Control individuals had: hematocrit (Htc) = 33,12 +/- 3,37%, erythrocyte count (EC) = 3,06 +/- 1,43 x 10<sup>12</sup> erythr/l. Blood parameters in individuals exposed to OP 300 mg/l were different from those of control fishes: Htc= 14, 96 +/- 3,5%; EC = 1,42 +/- 1,12 x 10<sup>12</sup> eritr/l. Our results suggest that certain hematological parameters like Htc and EC could be used as biomarkers of response in environmental toxicology.

**3. EFFECTS OF HIPOPROTEIC DIET AND SOY MILK ON RAT GESTATION, LACTATION AND COGNITIVE DEVELOPMENT**

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We have studied the effect of soy milk diet, as a supplement of a hypoproteic diet, on both pregnancy-lactation, and on body mass and behavior of the offspring. The females with hipoproteic diet were pregnant after soymilk rehabilitation. The gestation was similar to control ( $22 \pm 1$  d). The littermate number was smaller ( $5 \pm 1$  r) than controls ( $10 \pm 1$  r). At weaning, animals weighed  $60 \pm 5$  g (control:  $65 \pm 5$  g). The littermate from the females with soymilk diet plus corn flour weighed  $43 \pm 2$  g. When these groups were administered control diet, the littermate weight was similar to control. The 100% of progeny of all groups present cognitive deficiencies measured by a labyrinth test. Our results shown that soy milk is not sufficient to cover nutritive needs for normal pregnancy, because offspring had all the features of a prenatally malnourished rat including cognitive deficiencies.

**4. IMPORTANCE OF THE EARLY DETERMINATION OF THE THYROID FUNCTION AND AUTOANTICUERPOS LEVEL IN THE PREGNANCY**

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**Objectives:** a1-study the thyroid function and the autoantibodies level during pregnancy and puerperio, a2-establish an outline of screening minimum chord to the economic reality of the area, a3 - Promote the importance of the thyroid alterations in pregnant and their relationship with the maternal-infantile health, a4 - to Study a possible relationship of the hipotiroxinemia with the high grade of provincial school failure.

**Materials and methods:** Concurrent women's serum was obtained to outlying centers of health of La Rioja during its pregnancy and six later months to the childbirth (june 2003/agost 2004). The women had residence of one year or but in The Rioja. It is measured: TSH, FT4, ATPO for Chemiluminescence(ACS-180 BAYER), AAM and AATG for Microaglutition Pasive(Serodia). **Results:** Of 109 pregnant (R: 14-48 years; X: 25.16) it was determined in first trimester: Hyperthyroidism: 1.8%, Euthyroid: 62.7%, Subclinic Hypothyroidism: 30.9% and Hypothyroidism: 4.5%. The negative ATPO: 69.9%, positive: 25.2% and strongly positive: 4.9%. Could follow the evolution of 89 women, 7.8% developed tiroiditis pospartum and in them the positive value of the ATPO of first trimester was I predict of the pathology in 71.4%.

**Conclusions:** The results show a high hypothyroidism incidence during the pregnancy suggesting the necessity of epidemic surveillance. The screening but convenient it would be TSH and ATPO before the week 12 of gestation. We cannot establish the linking of the opposing indexes with the school failure, considering to this problem for future studies, recognizing an origin multifactorial.

**5. PREVALENCE OF ANTIPHOSPHOLIPID ANTI-BODIES IN PATIENTS WITH OBSTETRICAL COMPLICATIONS IN SAN MIGUEL DE TUCUMAN**

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The Antiphospholipid antibodies (APA): Lupus Anticoagulant (LA) and Anticardiolipin Antibodies (aCL) were associated to recurrent venous and arterial thrombosis, as well as with obstetrical complications. The objective of this work was to analyse the incidence of APA in patients with obstetrical complications. They were evaluated 77 women with obstetrical complications which were investigated for the APA presence. The LA were determined by activated partial thromboplastin time, dilute Russell viper venom time and thromboplastin inhibition test. Serum IgG and IgM-aCL were assayed by an ELISA test. From the total women studied, 36 presented a history of recurrent fetal loss, 36 fetal death, 1 early childbirth, 1 placenta detachment and 3 fetal growth retardation. The LA was positive in the plasma of 15 patients (19%). The aCL were positive in 18 women (23%) and 11 of them presented moderate title of IgG, 6 moderate title for IgM and 1 showed an elevated title of IgG. Our results demonstrated a high incidence of AFA in patients with obstetrical complications, specially those with recurrent abortions and fetal death. We consider important to study the APA presence in this kind of patients because the treatment can to prevent pregnancy loss.

**6. NORMAL PROFILE OF APOPTOTIC INDEX ON RAT ADRENAL GLANDS DURING THE SECOND HALF OF GESTATION**

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The balance regulation between the processes of remodeling is necessary requirement to maintain the cytoarchitecture and functionality of this gland. **Aim:** to prove, by the use of E.M. the apoptotic phenomenon, and its quantitative characterization in different zones of adrenal cortex in gestating rats. Fifteen Wistar rats were studied. They were maintained under controlled laboratory conditions. Adrenal glands of rats of 12, 17 and 21 days gestation were fixed and included in paraffin. The TUNEL technique was performed and were revealed with DAB to mark apoptotic nuclei, and contrasted for normal nuclei. Serial sections captured with a digital camera were quantitatively analyzed. The apoptotic index was obtained and with the SPSS program; the ANOVA and "a posteriori test" was applied. Samples for E.M. were processed. No statistically significant differences in the apoptotic index were observed among the three zones of the adrenal cortex in any of the three ages studied. It was evidenced that the gestation day highly influenced on the apoptotic index ( $p=0.0001$ ) which increased while the gestation progressed. The "a posteriori" analyses confirmed the significant differences between the days 12 vs. 17 and 12 vs. 21 ( $p<0.05$ ). The fact that the apoptotic index of the adrenal glands presents a progressive increase from day 12 to 21 due to the influence of the gestation day leads to state this as the normality profile during the second half of the gestation. Besides, it would be re-assured that the zone theory stating that each zone would independently regulate its morphofunctional behavior because they do not present any apoptotic index differences in any of the three cortical zones.

**7. LOCALIZATION OF NPY NEURONS IN DIFFERENT AREAS OF BRAIN RATS DURING FETAL DEVELOPMENT**

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Neuropeptide Y neurons are widely spread in the NCS in all vertebrates studied. This suggests that NPY is an important molecule not only for the regulation of brain functions but also in different physiological processes such as the hypophysis neuro-endocrine regulation and other physio-pathological conditions. In different brain regions the NPY neuron fibers are closely associated with cellular bodies and GnRH neuron fibers, favoring the neuro-endocrine stimulation and the growing of telencephalic vesicles. Its appearance and localization during the brain vesicles development of rat embryos has not been characterized. The aim was to demonstrate the localization and structures of NPY neurons in fetal brains of 15, 17 and 19 days of development. Wistar rats under controlled conditions were used. Fetal heads were sectioned in sagittal and para-sagittal cuts. I.C.Q. techniques were used for the detection of fetal NPY neurons. A rabbit anti-NPY polyclonal antibody were used and revealed with DAB. Our results showed that NPY neurons are scarce in 15 days, they are distributed in the anterior brain and their immune-mark is weak; at 17 and 19 days of age the expression of the NPY is relevant and grouped neurons are found particularly in the pre-optical area; anterior, medium and posterior hypothalamus, and in well shown groups in the mesencephalic and rhombencephalic area. These neurons are bipolar with broad axons that in the hypothalamus direct towards the ME. The wide distribution of NPY in the developing brain would suggest that NPY play an important role in neuroendocrine regulation of brain and hypophysis.

**8. DIPLOID PARENTAL CLONE SELECTION OF GRAMA RHODES TO OBTAIN ENHANCED SALT TOLERANT SYNTHETIC VARIETY**

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Grama Rhodes presents good forage production and variability to tolerate different abiotic stress. The objective was to select salt tolerant and divergent parental clones for a synthetic variety obtainment. The assay was carried out in sand and gradual salinization until NaCl 600 mM. Eight salt tolerant clones were obtained. P.II7, P.II8 and P.II9 clones (Western Africa origin) showed the highest survival (80-100%) and the lowest dry matter percentage (25%). The rest of clones showed a 50% of both traits. The three most tolerant clones but genetically different for RAPD and AFLP markers were planted on field to permit their outcrossing. Moreover, these clones outcrossed with other materials. A comparative yield assay with progenies was carried out, and fresh weight was evaluated. Progenies resulted from outcrossing among the most salt tolerant selected clones showed a significantly higher behaviour in relation to the ones obtained from outcrossing with other materials. Thus, these three clones are suggested as parental to obtain enhanced salt tolerant synthetic variety.

**9. INHIBITORY EFFECT OF PLANT EXTRACTS AGAINST FUNGI OF GENUS *ASPERGILLUS***

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Many moulds belonging to the genus *Aspergillus*, *Fusarium* and *Penicillium* are important agents in the biodeterioration of food, feeds and the raw material used in their manufacture. They can produce mycotoxins and when these products are ingested may cause health problems to human or farm animals. In the present work we study the fungitoxic activity *in vitro* of EtOH extracts of six plants of the region against species of genus *Aspergillus* (*A. parasiticus*, *A. flavus*, *A. nomius* 13137 and *A. nomius* VSC23) isolated from farm animal feed. They are able to produce aflatoxins, probably responsible for liver necrosis and involved in the epidemiology of human liver cancer. The most fungitoxic extracts were *Tripodanthus acutifolius* and *Larrea divaricata* (76-89% and 36-54% of growth inhibition respectively), while *Phytolacca dioica* and *Schinus molle* extracts exhibited almost no activity against all the fungi assayed. MICs were determined by microdilution test and confirmed these results. We suggest that medicinal plants are promising resources of novel antifungal compounds applicable to food and feed preservatives.

**10. HUMAN SACRIFICES AND TROPHY SKULLS FROM CAMPO DEL PUCARA (CATAMARCA – ARGENTINA)**

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Condorhuasi-Alamito culture was settled in Las Estancias valley (Catamarca province) between 200 and 450 AD. Alamito settlements are actually considered as "ceremonial centers" of Condorhuasi culture. These centers were institutions represented by socially organized spaces oriented through the development of religious activities. Pattern settlement analysis showed that the archaeological structures that composed each settlement were used essentially for ritual activities. In addition to settlement pattern there exist two other lines of evidences connected to these activities: the presence of metallurgical workshops for the working of bronze implements and the find of human sacrificed remains found in different archaeological contexts. The objective of this research is to evaluate the health and cause of death of five skull trophy found at this valley. The skulls were analyzed using radiographic and tomographic evidences. It was possible to determine that: Skull 1 (25-30 years old) female; Skull 2 (40-45 years old) male; Skull 3 (35-40 years old) female; Skull 4 (35-40 years old) female; Skull 5 (40-45 years old) male. In relation with pathologies it was possible to establish that all skull had post-mortem enlargement of the magnum foramen, with well developed symmetrical mastoid cells. This last feature reflects good health condition during the life of these individuals. It was possible to identify two kind of lesions. Some important and not cured injuries were made by a cutting weapon. These injuries could be the cause of death. Furthermore, Skulls 2 and 5 show cured lesions that make a compromise with all cranial bone with osseous remodeling. Both individuals were males and this kind of lesions could be a reflect of male activities, such as war or some kind of violent rituals.

**11. ANTIMUTAGENIC ACTIVITY OF EXTRACTS FROM ARGENTINIAN NORTHWEST PLANTS**

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The antimutagenic activity is related with the release of free radicals or reactive oxygen species that can generate an hereditary DNA mutation. Mutagenic processes are referred as responsible of certain pathologies such as diabetes, arteriosclerosis, cancer generation, etc. The objective of the present study is to determine the antimutagenic activity of different plant extracts on the mutation exerted by the chemical agent Terbutyl hydroperoxide (TBH) over the *E. coli* WP2 (IC 188) strains. This strain carries a punctual chromosomal mutation that makes it unable to synthesize Tryptophan (Trp -) and depends on it amino acid for their growing. TBH mutates this strains, making them independent of Tryptophan (Trp +). The assay employs a minimal growing medium (E4) with glucose as carbon source and inorganic salts. The S9 mix provides a source of enzymes for the TBH activation. Various concentrations of the plant extracts were assayed for the determination of the AC (antimutagenic concentration 50). The plant extracts with the most important antimutagenic activity were the tinctures of *T. acutifolius* and *P. cuneifolius*. The results show the advantage of using plants as a source of antimutagenic molecules.

**12. ARGENTINIAN NORTHWEST PLANTS AS SOURCE OF NATURAL ANTIOXIDANTS**

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The oxidation of biomolecules is mediated by free radicals or reactive oxygen species. An overproduction of species such as superoxide anion (:O-O<sup>-</sup>), alkyl radical (R<sup>·</sup>) hydroxyl radical (HO<sup>·</sup>), alcohoxyl radical (RO<sup>·</sup>) and alkylperoxyl radical (ROO<sup>·</sup>) is called "oxidative stress", and is harmful for lipids, proteins, carbohydrates and nucleic acids. This damage is related with various pathologies (inflammation, cancer generation, etc.) The present study compares and evaluates the antioxidant activity of different plant extracts. Three forms of plant extractions (infusion, decoction and tincture) were prepared from the air parts of 4 plant species. The DPPH assay, superoxide anion reaction and deoxyribose assay were carried out for the determination of the IC50 (inhibitory concentration 50). The results show that extracts from *T. acutifolius*, *P. cuneifolius*, *L. sibiricus* and *J. rhombifolia* have a powerful antioxidant effect against species as superoxide anion, alkyl and alcohoxyl radicals. The IC50 values were lower than those of known antioxidant patterns, such as quercetin, manitol and ascorbic acid. This suggests the potential use of plants as an important antioxidant molecules source.

**13. DIVERSITY OF PHLEBOTOMINAE (DIPTERA: PSYCHODIDAE) IN ORAN (SALTA, ARGENTINA)**

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American Tegumentary Leishmaniasis is an endemic disease in north of Argentina. Different epidemic and focused outbreak scenarios were registered in Salta. This antecedent shown the need of carrying out more detailed and recent *in situ* studies of vector. Objectives were, identify species of *Lutzomyia* and determine which of them was the most prevalent one. The collects were made in the Farm "El Oculito" Orán, Salta, belonging to the Yungas; collects were seasonal and during a year. These were made in non-modified environments, border zones and peridomestic sites. CDC miniature light traps were used, during four hours in the noon and Shannon trap with human protected bait during three hours from the twilight. In this study 1064 sand flies were identified, 93,9% *Lu. neivai*, 5,8% *Lu. shannoni* and 0,3% *Lu. cortezzi*. *Lu. neivai* was the most abundant species among all the environments and the only one in the peridomestic sites; in these places we can observe antropic changes. *Lu. neivai* shows a great adaptability to environments that suffered these changes. Although they were not registered leishmaniasis cases in the studied locality, this one is quite close to places of risk.

**14. EFFECT OF SCARIFICATION, TEMPERATURE AND LIGHT ON SEED DORMANCY OF WEEDS FROM THE NORTHWEST OF ARGENTINA**

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Seed dormancy of weeds is regulated by some factors such as seed coats, light and temperature. The aim of this work was to establish the response of seeds from three weeds to mechanical scarification, light and different temperature regimes. Germination assays were conducted in Petri dishes. In each Petri dish 25 seeds of *Amaranthus quitensis* L., *Sida rhombifolia* L. or *Brassica campestris* L. were placed on Whatman N°1 paper and 3 ml of distilled water were added. Groups of five Petri dishes of each species were subjected to different temperature regimes (10°C, 35°C, 20-25°C, 10-35°C) in the dark. Another group was placed in a photoperiod of 12hs/12hs (dark/light, 20-25°C). A known seed weight of each species was scarified with sand paper and exposed to the photoperiod indicated above. Seed germination was daily determined. Seed scarification increased the germination of *S. rhombifolia* and *B. campestris* seeds. Germination of *A. quitensis* was not affected. Light had not effect. The temperature regime of 10-35°C produced higher germination than constant temperatures and germination at 35°C was higher than that at 10°C on the three assayed species. Seed coats had an important role on seed dormancy of *S. rhombifolia* and *B. campestris*, but not on *A. quitensis*. *S. rhombifolia* and *B. campestris* were more sensitive to different temperature regimes than *A. quitensis*.

**15. ZEA MAYS RESPONSE TO THE INOCULATION WITH PHOSPHATE SOLUBILIZING BACTERIA**

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At the present time there is a strong tendency to revalue the maize crop in the Quebrada de Humahuaca, which is related to the native culture. With the purpose of developing biotechnological alternatives that promote sustainable maize culture, seven varieties were inoculated with phosphate solubilizing rhizobacteria. The native strain was isolated from a rocky sample and the exotic strain from common bean rhizosphere. Some of the selected maize varieties have soft endosperm and others hard endosperm. Four maize varieties were inoculated with native strain while the others with exotic strain. Ten repetitions were made in triplicate with respective witnesses. The assay was conducted in a seed-germination chamber. After eight days, fresh and dry weight from shoots and roots were evaluated. Significant differences ( $p=0,05$  and  $p=0,01$ ) were observed between soft and hard maize varieties for the measured parameters. Due to the growth promotion effects of both P-solubilizing rhizobacteria on some maize varieties, it is possible to select the right strain before sowing the maize on land.

**16. SOIL FOREST NUTRIENTS DYNAMICS**

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Soil nutrients dynamics is considered one of the fundamental aspects for forest maintenance and productivity. Partly it depends on soil maturity and leaf litter accumulation.

The objective was to determine the flow of soil nutrients released from the litter decomposition.

The study areas were situated at different altitude above sea level. Samples of forest floor were collected at regular intervals over the period from April 2000 to February 2001. Organic carbon (Corg), total nitrogen (NT) and extractable phosphorus (P) were evaluated. Results showed significant differences ( $p \leq 0,05$ ) for Corg and NT of mature forest areas. Between areas with different degrees of forest evolution and litter accumulation significant differences were observed for Corg, NT, P. These areas showed differences in temperature, humidity and pH. It is deduced that nutrients flow agrees with the leaf litter decomposition rate under the influence of environmental factors and tends to a balance as the forest reaches its maturity.

**17. PRELIMINARY OUTLINE OF THE SPECIES OF THE FAMILY *Cyperaceae* IN SAN LUIS (ARGENTINA)**

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In San Luis, at present there are no systematic studies into *Cyperaceae* species growing in the province. Antecedent studies were taken from Zuloaga *et al.* (1994,1999), Borisov *et al.* (1991). As a preliminary approach, we cite those species which we have surveyed and documented, as well as their habitat and distribution. Gathering was conducted in different natural environments. Soils were analysed and distribution data were collected. Determinations were carried out consulting the specific bibliography on the subject, and corresponding duplicates were sent to specialists for confirmation. The studied material was documented in the "Herbario de la F.I.C.E.S.- U.N.S.L." (VMA). The herbarium at E.E.A. INTA San Luis (VM) was also consulted. On the basis of the conducted field studies, and bibliography as well as herbarium consultation, we conclude that –to date- 33 specific and infraspecific taxa are recognized, 13 of which had not been previously cited for San Luis. The different taxa distribution is wide with regard to both altitude and provincial area. They are locally abundant on silty soils and loamy to sandy loamy ones. On high grassland specifically, the identified species sometimes occur as grasses or patches of dense vegetation on the banks of temporary or permanent streams. They grow on colluvial-alluvial terraces and shelves, where soils are rich in organic matter, saturated in water –sometimes permanently; the pH ranging from moderately acid to.

**18. STUDY OF THE PESTS INSECTS POPULATIONS IN THE COTTON NARROW ROW CROP**

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Cotton narrow row produces an different environment (larger plant density, smaller plant growth, rapid fast soil covering, that possibly could modify the behaviour of insects associated with the crop as well as their incidence over yield and fiber quality. The objectives of this study were to know the population's behaviour of trips, aphids, capulleras complex, leafworm, whitefly and the implications of injury on shield and quality of fiber in a cotton narrow rows crop, 0.50 m between them. The treatments were: T1 without insect control during all crop life, T2 control of insects since crop sowing to first square, T3 control of insects since sowing to first flower, T4 control of insects since sowing to the end of effective blooming, T5 control of insects during all crop life. The insects behaviour was evaluated taking samples every 3 to 7 days. The effect of injuries on the crop was evaluated through the cotton yield and fiber quality. The periods when insect populations were present were coincident with those stated by Integrated Pest Management in the Cotton Crops with a distance of 1 meter between rows. There were not significative differences between yield and fiber quality from the treatment without insect control and treatments with insect control. This is due to low density population during critical periods of crop produced by consequence of unfavourable climatic conditions.

**19. GLANDS IN THE SHOULDER AND NECK REGION OF *STURNIRA LILIUM* AND *S. ERYTHROMOS* (CHIROPTERA: PHYLLOSTOMIDAE)**

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Numerous bats of Phyllostomidae, Vespertilionidae and Molossidae families have glands of external secretion in the facial region and other areas of the body. Nevertheless have been mentioned in the literature in few species they have not been carried out histological studies to determine the gland type and their probable function. The salivary glands in Chiroptera have a particular development in relation to their nutritious habits.

The aim of this work is to clarify the micro-anatomical nature of an area in the region of the shoulders of both species that externally is observed with color coat different to that of the rest of the body and that it constitutes an attractive external character.

Samples of both species captured in Jujuy, Argentina, were processed for optic microscopy according to conventional technics. The results are similar in both species. Two types of tubule-alveolar glands below the dermis. The acinus are serous type, with morphology colorations we observed only one cellular type in each gland. In a transversal cut of skin there is an area of voluminous sebaceous glands.

**20. A CALORIMETRIC MODEL OF SOYBEAN SEED GERMINATION**

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The process of seed germination can be monitored by two methods: i) water uptake and ii) oxygen consumption measurements. Calorimetry measures thermal power ( $P = dQ/dt$ ) due to all processes involved in a germinating seed. Here, the calorimetric pattern of soy bean seed (*Glycine max*) germination is presented after 30 min of imbibition at 25°C. A microcalorimeter of the heat conduction type and a single seed placed over a wetted filter paper disk were used for each experiment at 25°C. The  $P - \text{time } (t)$  curves obtained are compared with rate of water uptake ( $v$ ) – time curves calculated from imbibition experiments. An initial increase of  $v$  is observed until 30 – 45 min then, values decrease until a steady state is attained at about 7 h. The curves  $P - t$  decrease between 30 and 120 – 200 min to smoothly increase again until the end of germination. Endothermic peaks are observed during the first 200 min and waves during the germination period. Germination in 0.2 ml water started 5 h earlier than in 0.1 or 0.15 ml. Calorimetry gives a full description of the process; the use of a single seed allows the evaluation of the physiological variability that exists in a given lot.

**21. EFFECT OF CNICIN ON SOY BEAN SEED GERMINATION. A CALORIMETRIC STUDY**

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Many plant derived compounds appear to be selective for weed control. They are considered environmentally more benign than synthetic pesticides. Here we report the effect of cnicin - a sesquiterpenelactone isolated by us from *Centaurea diffusa* - on the germination of soy bean (*Glycine max*) seeds. A microcalorimeter of the heat conduction type and a single seed placed over a filter paper disk wetted with distilled water (control) or cnicine solution were used for each germination experiment at 25°C. The  $p - t$  curves recorded show the exact time at which the root starts to protrude. Seeds imbibed in 50 and 100 ppm of cnicine germinated 4 and 12 h later than control seeds, resp. Root length of germinated seeds after 72 h in germination chamber were  $68.2 \pm 11.3$ ;  $53.8 \pm 18.2$ ;  $33.4 \pm 4.1$  and  $9.8 \pm 2.4$  mm for control and 10, 50 and 100 ppm of cnicin, resp.; the corresponding water content was  $3.46 \pm 0.72$ ;  $3.44 \pm 0.64$ ;  $2.59 \pm 0.47$  and  $1.91 \pm 0.19$  g.g<sup>-1</sup> d.w, resp. We conclude that in some way cnicin is involved with the influx of water delaying the germination process.

**22. SUPEROXIDE DISMUTASE ACTIVITY AND LIPID PEROXIDATION IN COLD AND HEAT STRESSED COTTON**

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Plants have a large battery of enzymes that aid in their defense against adverse environmental conditions. The effects of cold and heat stresses on superoxide dismutase activity (SOD) and rate of lipid peroxidation were investigated in cotton (*Gossypium hirsutum*) seedlings. Plants were moved from a growth chamber at 25°C and placed at 5 °C or 40°C for 0, 24 or 48 h. At the indicated times the plants were harvested for chemical determinations. The experimental design was completely randomized, with five replicas. ANOVA and Tukey Test were practiced. SOD activity remained constant in plants exposed to cold and increased almost 90% in the heat. Malondialdehyde (MDA) concentration is frequently used to quantify the level of peroxidation in tissues. In plants stressed with cold, MDA concentration increased with time of exposure. Heat-stressed plants had MDA levels approximately equal to controls. This results suggest that heat tolerance in cotton may be correlated with a stimulation of antioxidant enzymes and that these may control lipid peroxidation and reduce membrane degradation. In cold-stressed plants de SOD remained constant and the lipid peroxidation was high.

**23. EXPERIENCE IN THE DICTATION OF SPECIALTY COURSES IN ANIMAL PHYSIOLOGY**

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The dictation of the Specialty Courses (SC) is carried out in our Faculty of Natural Sciences and IML. In the Area of Specialization "Animal Physiology", our Chair of Physiology Animal dictates several subjects, several of which are related to each other. The aim of the present work was to make a balance on the experience gathered in the dictation of nine SC through 18 years and to determine the meaning, value and utility that to let these subjects for the student and the teacher. To such aim methodology consisted of the dictation of theoretical and practical classes, evaluation of information, experimental, partial tests, seminars and monographs was used. The results showed that total students who attended the dictated subjects, 15% were later dedicated to work in subjects in which the information would take advantage of suitably, 60% was oriented towards labor fields in which the information would take advantage of only partially, and 25% work in areas in which the received information contributed only to the general formation. The dictation of SC means an additional effort that had to stand out the teachers. However, these SC are absolutely necessary for formation and later labor occupation of the students.

**24. COMPARISON OF HOMOLOGOUS ECOSYSTEMS AS METHODOLOGY FOR DETERMINATION OF THE USRS (URBAN SOLID REMAINDERS) ENVIRONMENTAL IMPACT**

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Objective: to determine urban ecosystem environmental deterioration done by dump "La Aguada" (N of San Fernando del Valle de Catamarca, Argentina) trough comparison means with a homologous ecosystem. Methodology: comparing dump ecological area with homologous (control) area that isn't affected by USRs. Both areas present: 1- Antropics alterations corresponding to overpasturing activities, destroys and burns (post-Hispanic period). 2- Climatic, topographic and edafics factors with very similar structure. 3- Similar floristic and fauna composition (Arid Chaco Bioma with presence of Mountain Chaco species). Results: 1- Greater cover of annual herbaceous species (Family Asteraceas, Amarantaceas and Poaceas, among others) in the rubbish dump. 2- Re-populating of *Prosopis sp.* in left dump sites. This suggests that plants Families and species indicate ecosistemics changes in dump zone, it lead to a microenvironment formation associated to a USRs presence.

25.

**FLORAL BIOLOGY OF *CENTROSEMA VIRGINIANUM* (FABACEAE)***Etcheverry AV, Alemán MM.**Facultad de Ciencias Naturales, Universidad Nacional de Salta, Calle Buenos Aires 177, 4400 Salta, Argentina.*

Floral morphology, floral phenology, pollen presentation and floral visitors of *Centrosema virginianum* were studied in Departamento La Caldera, Salta (1200 m. a. s.). Anthesis last 12 h (from 7 h to 19 h). The flower is papilionaceous, inverted, and homogamous. Flowers pass through three phases a) Nectar and pollen are abundant, stigmas are receptive and most visits occur; b) nectar and pollen are moderate c) there are no rewards, visits are scarce and the stigma is not receptive. The wings are firmly united to the keel and the vexillum is reinforced by a dorsal spur near the floral entrance. When a bee presses its head against the wing-keel complex and depress the vexillum, androecium and gynoecium emerge from the keel and contact the back of the insect (nototribic pollination). *Bombus* sp. and *Eufriesea mariana* trigger the pollination mechanism.

26.

**INFLUENCE OF THE INOCULATION WITH RHIZOBACTERIAS ON THE PRODUCTIVITY OF BLACK BEAN NAG 12***Torres N<sup>1</sup>, Altamirano F<sup>2</sup>, Pérez Brandán C<sup>1</sup>, Romano S<sup>2</sup>.**<sup>1</sup>EEA-INTA-SALTA. Ruta Provincial 68. <sup>2</sup>Department of Agrobiolology, UNJu. Alberdi 47. S.S. de Jujuy. E-mail: nancyalejandrat@yahoo.com*

Field culture productivity can be improved by using Plant Growth Promotion Rhizobacterias (PGPR's). The aim of this work was to evaluate the influence of the inoculation with two PGPR's strains on the *Phaseolus vulgaris* L. productivity. This experience was carried out in the Agriculture Experimental Station - INTA - Salta, under conventional farming. Four treatments with five repetitions were performed, T1: inoculated with 51B strain, T2: with D3 strain, T3: with a combination 51B and D3 and T0: Control. Productivity and number of seeds/100g were statistically analyzed ( $p < 0,05$ ). The results show that T2 treatment obtained more seed production ( $p = 0,0158$ ), but T3 yielded bigger seeds ( $p = 0,0231$ ). In this study, the strain D3 positively influenced the bean productivity in simple and combined inoculations. It is possible that others mechanism besides phosphate solubilization, were involved.

27.

**EVALUATION OF THE GERMINATION IN BLACK BEAN WITH PHOSPHATE SOLUBILIZATOR RHIZOBACTERIAS***Pérez Brandán C<sup>1</sup>, Altamirano F<sup>2</sup>, Torres N<sup>1</sup>, Corvalán E<sup>1</sup>.**<sup>1</sup>EEA-INTA-Salta. Ruta Provincial 68. <sup>2</sup>Department of Agrobiolology, UNJu. Alberdi 47. E-mail: c\_perez\_brandan@hotmail.com*

The effects of the activity of soil microorganisms, between them, the phosphate solubilizers, constitute an important alternative for improving the agronomical productivity. The aim of this work was to evaluate the effect of two different PGPR's strains in the seeds of black bean quality, obtained after harvesting. The experience was carried out in the EEA-INTA, Salta in conventional farming. Four treatments with five repetitions were development, T1: inoculated with 51B strain, T2: with D3, T3: 51B and D3 and T0: control. The inoculo concentration was 0,5ml/100g ( $10^8$  cfu. ml<sup>-1</sup>). After the harvesting the seeds were collected and carried to the laboratory. Germinative power (normal plants, abnormal plants and dead seeds) and germinative energy were evaluated. The tukey's test shows differences among treatments, T2 was the most effective in its influence on the plant behavior ( $p = 0,0168$ ) and the seeds quality ( $p < 0,001$ ). The results suggest that the inoculation with PGPR's strains besides of increasing the bean productivity, can improved the seeds quality.

28.

**PRODUCTION OF A PIGMENT BY *Escherichia coli* CELLS EXPOSED TO HIGH COPPER CONCENTRATIONS***Volentini S, Rintoul R, Scaravaglio O, Winik B, Farías RN, Rapisarda VA, Rodríguez-Montelongo L.**Dpto. Bioq. de la Nutrición del INSIBIO e Instituto de Qca. Biológica "Dr. B. Bloj", CONICET-UNT. Chacabuco 461, S. M. de Tucumán. E-mail: sabrinav@infovia.com.ar*

Several microorganisms are able to synthesize colored products in stress conditions as an adaptation to the environment. In this work, we present the production of a pink-brown pigment by *Escherichia coli* cells exposed to high non-lethal copper concentrations. The pigment was detected in the growth media and attached to the cells. Afterward, we saw that it remains strongly bound to spheroplast and membrane preparations. The production of the colored compound increases in stationary phase and is independent of the *E. coli* strain or the kind of medium. These cells studied by scanning electron microscopy revealed conspicuous change in the size and shape. Transmission electron microscopy showed electron-dense inclusions scattered throughout the cytoplasm and in close association to plasma membranes. Visible spectra of the cell supernatant showed two peaks at 360 nm and 920 nm and a shoulder around 520 nm. The formation of this kind of compound can be related to a protective effect under oxidative stress conditions. Further studies should be done to elucidate the chemical nature of the compound and its biosynthetic pathways.

**29. IMMUNOHISTOCHEMISTRY IDENTIFICATION OF VASOACTIVE INTESTINAL PEPTIDE (VIP) IN THE INTESTINAL TRACT OF HORSES FOETUS**

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The gastrointestinal hormones are peptides that practice great effects over the regulation, motility and growth of the digestive tube, to act on tissues like epithelium, connective, muscle and nerve. In humans, pigs, VIP's presence was detected in foetus, and its distribution comprise different organs of the digestive tract; each gastrointestinal hormone execute a specific function. The aim of this work is identify VIP in the gastrointestinal tract of horses foetus. The age of the sample was ten months and their was obtained from Aimar cold-storage plant. Their was extracted of different regions gastrointestinal and fixed in formaldehyde buffered 10% and embedded in parafin. Afterwards it made cutting of 3-4 micron. The observations showed positive cells in the glands epithelium and cells situated between layer muscle tunic of duodenum; in jejunum-ileum was observed positive reactions located in the connective tissue of the downiness and in the muscle tunic; while in the caecum in the connective tissue was observed positive cells. It conclude that VIP its present in cells situated at the mucosae and muscle tunic in the intestinal tract of horse's foetus.

**30. IMMUNOCYTOCHEMISTRY LOCALIZATION OF VIP (VASOACTIVE INTESTINAL PEPTIDE) IN THE INTESTINAL TRACT OF A THERINE. (*Odonthestes bonariensis*)**

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In the last years it has verified a considerable increase in the comparative studies of the endocrine system in different species, however, the analysis of this hormonal system even continues few investigated. Dissimilar structures of the digestive tract like mucosa, submucosa and the muscular tunic are involved with endocrine cells producer of gastrointestinal peptidic hormones just as gastrin, secretin, substance P, VIP, motilin and others. The purpose of this work is to determine the presence of VIP in the different regions of intestinal tract. Adults samples of intestinal tract proceeding of atherine captured in the south of Córdoba lacunas, were used. Were fixed in formaldehyde buffered 10% and embedded in parafin. The histological preparations obtained were processed with immunocytochemistry technique using as a marker the primary antibody against the VIP and subsequent detection and revealed employing the universal complex avidin/biotin peroxidase and the peroxidase diaminobenzidine respectively. From the analysis and microscopic observations of histologic sections there were positive marking in cells situated in corion/submucosa of the intestinal tract having that cells cytoplasm with a granular aspect. It conclude that VIP its present in localized cells in the connective tissue of the anterior intestine while in the others intestine regions was a negative reaction.

**31. PLASMINOGEN ACTIVATOR ACTION IN BOVINE *IN VITRO* MATURATION**

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It was reported a close correlation between the cumulus cells (CCs) expansion during *in vitro* maturation (IVM) and the fertilization rates. Taking into account that i) plasminogen activators are involved in the rebuilding of different tissues, ii) they are secreted by CCs during expansion, iii) they are observed in the extracellular matrix of cumulus-oocyte complex (COC), the study of the effect of exogenous plasminogen activator, streptokinase (SK), during IVM was the aim of this work. Bovine COCs were obtained from ovaries collected in slaughterhouse and separated in two groups (Control and SK). Both groups were IVM in TCM-199 medium with FSH, at 38.5°C (5% CO<sub>2</sub>) during 22 hrs. The SK at pharmacological doses, incorporated to the medium at 0 and 11 hrs of IVM, produced dissociation of CCs and facilitates oocyte denudation by hyaluronidase. By using zona pellucida dissolution time assay no differences were observed between Control and SK groups. Interesting the extrusion of the first polar body (one of the parameters of a IVM successful) was increased by SK treatment. It is suggested that localized generation of plasmin by PAs could be the responsible of these effect.

**32. THE HEATED SOILS AND ADVANTAGE ENVIRONMENTAL IN THE TECHNIQUES OF DESINFECTIONS SOILS**

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The obtaining of seedling with level-up of sanitary be basic conditions for obtaining a harvest good. The farmers made high investments in this first side, controlling an underground plague and the soil diseased to cause for fitopathogens, with disinfection technique using BrMe Disulphure Dimethyl (DMDS), Methane sodium (Vapam), chemical compound of big contaminations environmental affections the ozone cape and low the quality environmental (CA) of farmer-systems fruit-horticulture in proportional directly in load chemical compound in relations chip applications doses (Kg/Ha) Vs. techniques of heated soils that present up-quality environmental (CA=1). In the locality of Lules-Tucumán RA to evaluate techniques in 105 Has of productions, 80 per cent of the area too keep with strawberry crops and the remaining tomatoes and green pepper in greenhouse. The result to show with the environmental quality less in a 50 per cent with the Br Me applications Vs. technique of the heated soils. *This study was supported by CIUNT; Uso del Suelo; Microbiología Agrícola; Fruticultura.*

**33. EVALUATION AND CHARACTERIZATION OF NATIVE BIND WITH ORNAMENTAL ABILITY, OF THE PROVINCE OF TUCUMAN, ARGENTINA**

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The province of Tucumán possesses a great variety of native vegetal species. These phylogenetic resources' potential is not fairly appreciated in our country, that's why we tend to divulge exotic species. This work's objective is to evaluate and describe native species of climbing habit as potentially ornamental plants. A selection of plants of climbing appearance was carried out. The systematic classification was carried out. The description of species was made considering only the more outstanding characters from an ornamental point of view: foliage (shape and leaf size), flowers (shape, size, color and smell), and fruit. Selected species were: *Ipomoea rubiflora* O'Donell, *Ipomoea alba* L., *Ipomoea cairica* (L.) Sweet, *Ipomoea nil* (L.) Roth, *Ipomoea purpurea* (L.) Roth, *Ipomoea quamoclit* L., *Ipomoea hieronymi* (Kuntzer) O'Donell, *Passiflora foetida* L., *Manettia cordiflora* C. Martius, *Mandevilla laxa* (Ruiz & Pavón) Woodson, *Cissus tweediana* (Baker) Griseb., *Cardiospermum halicacabum* L. These species could be incorporated to the market as an alternative product. Using these species as ornamental, we would raise the value and respect for our natural patrimony, keeping our own identity.

**34. REPRODUCTIVE BIOLOGY OF VIGNA CARACALLA (FABACEAE) AT TWO ALTITUDES IN SALTA (ARGENTINA)**

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Floral visitors, nectar production, reproductive system and fruit and seed production of *Vigna caracalla* were studied in two populations located at 935 and 1570 m. a. s., respectively. In the low-altitude site, a) nectar concentration, b) pollinator abundance, c) visitation rate, and d) fruit production were higher than the higher site. In the high-altitude site, automatic self-pollination occurred, as a mechanism of reproductive reassurance. The environmental conditions in the higher habitat (lower temperatures and shorter growing seasons) may reduce the possibilities of cross pollination and are believed to represent important driving forces in the evolution of self-pollination at high altitudes and high latitudes.

**35. ANALYSIS OF A NEW METHOD OF TEACHING IN PHARMACOLOGY FOUNT**

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**Aims:** analyze a new method of teaching about the theme *action mechanism of antibiotics on the protein biosynthesis* in pharmacology and therapeutics of FOUNT. The population was constituted by 47 students of 4<sup>th</sup> form of the career of dentistry that are coursing pharmacology during 2004. 49% of the students (group 1) received written material as theory support of the practice work (PW) of protein biosynthesis. The other 51% (group 2) watched an animation about the theme and also was used the written support. To evaluate the apprenticeship, all the students did a written evaluation before and after the PW. Group 2 also did an opinion inquiry in which was indagated in a scale of 1 to 4: a) grade of utility of the intervention, b) comprehension of the theme, c) which modality was considered more appropriate for the theme. **Results** of the questionnaire showed that the percentage of correct answers in-group 2 increased between 4% and 92%. The opinion inquiry revealed that more than the 90% answered 3 and 4. The 75% of the students considered that both, the animation and the written work are more appropriate for the apprenticeship. **Conclusion:** the interaction of both methods about complex biological processes facilitated and motivated the apprenticeship.

**36. ANTIBACTERIAL AND MOLLUSCICIDAL ACTIVITY OF ARGENTINE MEDICINAL PLANTS**

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Historically, most drugs have been derived from natural products. A major advantage of natural products for biological screenings is the structural diversity they offer, greater than that provided by synthetic drugs. The aim of this work was the investigation of the antibacterial and molluscicidal effects produced by extracts from *Adesmia boronioides*, *Aspilia aurantica*, *Azorella compacta*, *Grindelia chiloensis* and *Senecio puchii*. Chloroform and methanol extracts were tested against *Enterococcus faecalis* ATCC 39212, *Escherichia coli* ATCC 25922, *Staphylococcus aureus* ATCC 6538 P, *S. aureus* F7, *Klebsiella pneumoniae* F 350, *Pseudomonas aeruginosa* ATCC 27853, *Lactobacillus paracasei* ssp. *paracasei* CE 75, *L. acidophilus* ATCC 521, *L. plantarum* CE 105 and 358. The chloroform extract from *G. chiloensis* displayed antibacterial action on *S. aureus* and *E. faecalis* with MIC values lower than 312.5 µg/mL, being the methanol extract the most active with a MIC = 156.2 µg/mL for *S. aureus*. *A. boronioides* extracts resulted active against *S. aureus* F7 and *E. faecalis* with MIC values of 312.5 µg/mL and 625 µg/mL, respectively. On the other hand, our search for the molluscicidal activity against *B. peregrina*. showed that the chloroform extracts of *A. aurantica* and *G. chiloensis* displayed LD<sub>50</sub> > 100 ppm and LD<sub>50</sub> < 50 ppm, respectively.

**37. READING AND WRITING AT THE FACULTY OF DENTISTRY OF THE UNIVERSIDAD NACIONAL DE TUCUMAN. PROFESSOR'S OPINIONS**

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As university professors we find difficulties in the use of the language, in the reading, writing and in the oral expression of our students but we remain indifferent to these problems. The aim of this work is to analyze the opinions of first and fifth year professors at the Faculty of Dentistry of the UNT, on the importance of the correct use of the Spanish language by entering students and future professionals. In the first year, practical works are evaluated in oral and written form while in the fifth year the evaluation is mostly in the oral form. Professors of the first (68%) and the fifth (57%) year consider that the students have many spelling errors. Spelling error corrections are carried out by 63% of the first year professors but only by a 43% of the fifth year professors. Oral expression is considered as appropriate by the first (79%) and fifth year (61%) professors. Both, first (53%) and fifth (39%) year professors agreed to the incorporation of a Spanish language course in the curricula of the Faculty as part of an integral formation, to supplement and to complete the carried deficit of the secondary level. It would be of interest to call to the reflection of authorities and professors about the importance of this topic, which contributes to the student's intellectual development and therefore improves their professional acting.

**38. ENVIROMENTAL LEAD POLLUTION: BIOLOGICAL MONITORING OF A POPULATION GROUP AT RISK**

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Lead is one of the enviromental pollutants, which, when released, produces adverse effects on the health of the population. Amounts of lead measured in blood which are considered safe in men, are associated with lack of concentration, hyperkinesia, learning and behavior disorders in children.

Biological monitoring of a group of children with behavior, learning and memory disorders, whose source of pollution is a lead foundry is carried out in order to define whether these problems are caused by the metal or not.

ALA-D determination (dehydratase levulinic delta amino acid). Plombemia (Pb) determination, ALA-U (levulinic delta amino acid) determination in children attending at local school in the area between the ages of 5 and 12.

In 133 children: 45% with plombemia (10-20 ug/dl) and 55% over 20 ug/dl; dehydratase levulinic delta amino acid inhibited by lead (47%) and levulinic delta amino acid substrate determined in urine (59%).

The high percentage of children with values over the present day Pb references, remarks the importance of the disorders produced by lead in the long term. The diagnostics of intoxicación with lead has to be systematically included in routine search of etiology and anamnesis in children with neurobehavior disorders and/or neurological problems.

**39. SEEDS OF HERBACEOUS FABACEAE NATIVE TO CENTRAL ARGENTINA**

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The family *Fabaceae* is represented by 732 species in our country. Out of them, 711 are native or endemic, and 326 behave like herbaceous ones. Within the framework for the "Introduction of native Fabaceae to cultivation in the semiarid region of central Argentina", seeds of native herbaceous species were collected and studied. As a part of this work, a catalogue was made up including descriptions and iconography that facilitate species identification. For this purpose, seeds from country plants and from herbarium materials were collected, determined, photographed, and described. The diagnostic characters were taken into account were as follows: colour, size, texture, brightness, pilosity, and the modifications of the pericarpium or seminal tegument. From among the 54 species growing in central Argentina, 35 - belonging to the following genera - were described: *Chamaecrista* (Subfamily Caesalpiinoidea Tribe Cassieae); *Desmanthus* (Subfamily Mimosoideae Tribe Mimoseae); *Indigofera* (Subfamily Papilionoideae; Tribe Indigoferae); *Desmodium* (Subfamily Papilionoideae; Tribe Desmodieae); *Adesmia* (Subfamily Papilionoideae; Tribe Adesmieae); *Aeschynomene*, *Stylosanthes*, *Poiretia* and *Zornia* (Subfamily Papilionoideae; Tribe Aeschynomeneae); *Astragalus* (Subfamily Papilionoideae; Tribe Galegeae); *Clitoria*, *Cologania*, *Centrosema*, *Galactia*, *Macroptilium* and *Rhynchosia* (Subfamily Papilionoideae; Tribe Phaseloleae); *Cursetia* (Subfamily Papilionoideae; Tribe Robinieae); *Dalea* (Subfamily Papilionoideae; Tribe Amorpheae); *Lathyrus* and *Vicia* (Subfamily Papilionoideae; Tribe Vicieae) and *Lupinus* (Subfamily Papilionoideae; Tribe Genisteae).

**40. EFFECT OF GOAT YOGURT ADMINISTRATION ON BACTERIAL TRANSLOCATION IN A MODEL OF ACUTE LIVER INJURY**

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In acute liver injury (ALI), bacterial translocation (BT) would cause the infectious complications. Previously, we demonstrated that *Lactobacillus casei* and *Lactobacillus plantarum* partially avoid BT and liver damage extent in an experimental model. ALI was induced by intraperitoneal injection of D-galactosamine (DG) in adults BALB-c mice; controls were injected with saline solution. Samples were obtained 6, 12 and 24 hours post-inoculation. Groups of mice were orally administered with goat (GY) and cow yogurt (CY) for 2, 5 and 7 days before injection. BT was evaluated by ganglion, spleen and liver culture. Liver injury was studied by serum GPT and GOT. Serum C reactive protein (CRP) and total and differential leukocyte count were measured. After 7 days of feeding, both yogurts were effective to prevent BT but only CY reduced GOT to normal level. CRP was positive at 12 and 24 hours while leukocytes were not modified. GY administration was effective to avoid BT induced by DG, but it could not normalize serum transaminase levels. Probably BT and transaminase increase would be events that take place at different times. The effects were dose dependent.

**41. SOLVENTS FOR LIPOSOLUBLE NATURAL PRODUCTS IN ANTIBACTERIAL TESTS. DETERMINATION OF NON INHIBITORY SOLVENT RATES FOR *STAPHYLOCOCCUS AUREUS* AND *ENTEROCOCCUS FAECALIS***

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The solubility of compounds in tests for antibacterial activity is a critical aspect of the methods. Many liposoluble compounds from plants are tested for their antibacterial activity in the aqueous media where bacteria strains grow. A small amount of solvent may be employed to dissolve the compound, and a further addition of a tensioactive polymer allows a good dispersion of the liposoluble substance in the aqueous media. The percentage of organic solvent or polymer to be added to the aqueous bacteria culture should be precisely determined. MIC values of liposoluble compound obtained with these solvent systems are lower than the ones obtained in other conditions. The first step should be the determination of the maximum concentration of organic solvent or polymer that can be used in the dissolution without inhibiting the bacterial growth. We incorporated hexane-PEG 400, ethylacetate-PEG 400, DMSO-PEG 400, and ethanol-PEG 400, at 1, 3 and 5% of the organic solvent and the polymer. Our results indicate that 3% is the non inhibitory rate for *Staphylococcus aureus* ATCC 65389 P, *S. aureus* F 7 (methicillin resistant), and *Enterococcus faecalis* ATCC 39212.

**42. INFLUENCE OF PEG 400 IN THE BIOAVAILABILITY OF LIPOPHILIC COMPOUNDS IN ANTIBACTERIAL TESTS**

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The antibacterial activity of new compounds may be tested in liquid media, and the minimum inhibitory concentration (MIC), as well as the minimum bactericidal concentration (MBC) may be determined. A homogeneous dispersion or good solubility of the compound whose antibacterial power is being evaluated is a key point to determine the MIC and MBC values. We present here the results of the antibacterial activity of 8 sesquiterpene lactones. The values of MIC and MBC drop with the addition of 2.5% of the hydrosoluble polymer PEG 400 to the liquid culture media. Apparently the solubility of the sesquiterpene lactones is greatly improved with the addition of PEG 400 (which lowers the water surface tension). MICs and MBCs were determined for two pathogenic strains in liquid Müller Hinton medium: *Staphylococcus aureus* ATCC 65389 P and *Staphylococcus aureus* F 7 (methicillin resistant). DMSO was used as solvent for the sesquiterpene lactones. For the 8 lactones MIC and MBC values decreased with the addition of PEG 400. The greatest differences observed were a 45 times reduction in MIC and a 12 times reduction in MBC for one of the lactones.

**43. HYPOCHLORITE ACTION AGAINST LACTIC ACID BACTERIA**

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The aim of disinfection is to eliminate microorganisms present on food-contact surfaces thereby avoiding contamination of raw materials and products with spoilage or pathogens organisms. Sodium hypochlorite (NaClO) is one of the compounds more used for this practice. The objective of this work is to study the effect of different concentrations of comercial NaClO in the development of lactic acid bacteria (LAB) and to determine the minimum inhibitory concentration (MIC). The NaClO concentrations were in % v/v: 0.1; 0.5; 1; 2; and 5 in the Möeller culture media pH 6.8. Cell growth was determined spectrofotometrically at 560nm and by ufc/ml. The lowest concentration that inhibits bacterial growth during 24 h incubation was 0.5%. Two species of *Lactobacillus* developed after the lag phase of 24 h. After a contact time of 48 h with the corresponding MIC concentration of NaClO, 0,5% for coccus and 1% for bacillus, LAB were grown in agar media without NaClO. Colonies developed with a delay of 48 h related to control medium. These results indicate the bacteriostatic effect of NaClO. However its strong oxidant property, that act producing proteins denaturalization and nucleic acids and enzymes inactivation, the resistant cell wall of LAB and the acidification of the culture media by the bacterial metabolism, promotes chloro evaporation with the consequent lose of disinfectant activity.

**44. CHARACTERIZATION OF RHIZOBIA ISOLATED FROM SOLARIZED SOILS**

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Solarization is a natural hydrothermal soil disinfestation process, which is accomplished through passive capture of solar radiation in moist soil, covered with transparent plastic. Solarization is an important technology for the control of pathogen organisms but the treatment could have negative effects on beneficent microflora. For instance, the temperature may have some effect on rhizobial population, depending on the strains. The objective of this work was the characterization of rhizobia isolated from solarized soils. The experiences were carried out in the experimental field of Faculty of Agronomy. Solarization was conducted by covering tilled and irrigated soil with transparent polyethylene sheets (100 (thickness). Microdigital thermometer was used to measure soil temperature. The treatments were T (control), S<sub>30</sub> (soil solarized 30 days) and S<sub>45</sub> (soil solarized 45 days). Rhizobial strains were assessed by velocity of growth and intrinsic antibiotic resistance (Chloramphenicol, Rifampicin, Streptomycin and Ampicilin). The rhizobial strain from T and S<sub>30</sub> showed a similar behavior to the antibiotics and S<sub>45</sub> showed different values with the same test. These results may suggest the influence of solarization on the native population of rhizobia.

**45. CHEMICAL RIPENING EFFECTS ON DEHYDROGENAZE ACTIVITY AND COLD ACCLIMATIZATION IN SUGARCANE (*Saccharum sp.*)**

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Sugarcane is a subtropical-tropical herbaceous species. It is low temperature sensitive and is submitted to acclimatization and deacclimatization processes. A previous requisite for acclimatization is growth stop. Glyphosate and Fluzafoph as ripenings stop sugarcane growth and anticipate natural maturity. The objective of this work was to evaluate, through the dehydrogenaze enzyme activity, if Glyphosate and Fluzafoph confer cold acclimatization in sugarcane. The essay was made in a young sugarcane crop (Ratoon 1) of LCP 85-384 and RA 87-3 varieties from EEAOC Experimental Field (Las Talitas, Tucumán, Argentina). Treatments were: a) Fluzafoph p-butyl 40 g i.a./ha; b) Glyphosate 288cc i.a./ha and respective controls. Leaf pieces (2 were used). Data were taken from the experiments realized in field for 2 crop periods. Determinations were based on Steponkus and Lanphear (1967) technique and Activity index was applied. Results showed that mitochondrial dehydrogenaze enzyme is not affected greatly with respect to the control in RA 87-3 variety. Ripenings do not have any effect. In LCP 85-384 differential values between 10 and 35 days were observed, that could be owing to a cellular decompartmentalization process which is quickly repaired toward the normal values.

**46. CACATACEAE DIVERSITY IN BRACKISH ENVIRONMENTS OF OCCIDENTAL ARID CHACO (CATAMARCA, ARGENTINA)**

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The Occidental Arid Chaco in Catamarca Province is situated in the Central Valley and presents a severe degradation; Cactaceae Family is a typical one in the District and is preyed by collectors. However, no quantitative studies exist about their taxocenosis status in this zone. By this reason, we have had studying the Cacti in two of the four typical communities in it. The actual objective is to determine the structure and diversity of the Cacti taxocenosis in another community placed in a damping zone of the south Central Valley near Big Salt Mines, where the environment conditions are very restrictive because of the severe climate, the brackish soil and the men's damage. They were sampled 4,8 Ha and were find 355 individuals into 8 species; the most abundant ones were *Opuntia sulphurea* and *Echinopsis leucantha*; the diversity, (Shannon-Wiener index, as  $\log_2$ ), reach 1.4 bits.ind<sup>-1</sup> and the Dominance (Simpson Index) was D=0,44. The larger similitude (Sorensen quantitative Coefficient) was showed with the plain community, in the northern valley, whose climate and conservation status are similar to quagmire zone. It was conclude that the richness and diversity are low due to the soils fundamentally.

**47. EFFECTS OF ANNONACEOUS ACETOGENINS FROM *Annona cherimolia* (ANNONACEAE) ON *Spodoptera frugiperda***

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“Chirimoya” is the edible fruit from the native Peruvian tree *Annona cherimolia* Mill., that is cultivated in the northwest of Argentina. A group of annonaceous acetogenins (AA) have been isolated from its leaves, twigs and seeds. These compounds display cytotoxic action through the inhibition of the mitochondrial complex I. In addition, antiparasitic, pesticide, antimicrobial and herbicidal effects have been reported for AA. These effects encouraged us to investigate the AA content from the seeds of an Argentine collection of *A. cherimolia*. From our methanol extract we isolated and purified by extensive use of HPLC, nine AA that were identified by spectroscopic methods (HR-MS and mono and bidimensional NMR). We incorporated to the diet of 2<sup>nd</sup> instar larvae of the lepidopteran *S. frugiperda* an amount of each AA to leave 50 µg of acetogenin per gram of diet and observations on the life cycle were done. On the other hand, the antifeedant action was evaluated with a “choice” method. Our results indicated that all the AA of *A. cherimolia* produce severe mortality rates at the dose tested. Squamocin was the only AA to show antifeedant action and to alter nutritional behavior of *S. frugiperda* larvae.

**48. BIOACTIVE ANNONACEOUS ACETOGENINS FROM *Annona montana* (ANNONACEAE)**

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*Annona montana* is a tree widespread in the woody mountains of central Bolivia. Its leaves and seeds are employed by the native population as an insecticide. Our investigation of a methanol extract from the leaves yielded a group of annonaceous acetogenins (AA), two of which could be identified as gigantetronenin and murihexocin B by spectroscopic methods (HR-MS and mono and bidimensional NMR). The mentioned ethnical use encouraged us to evaluate the toxic effects of the two AA incorporated to the diet of 2<sup>nd</sup> instar larvae of the lepidopteran *S. frugiperda* at a dose of 100 µg of acetogenin per gram of diet. Additionally, antifeedant effects were also evaluated employing a “choice test”. Both AA produced 100% mortality at the dose mentioned, with a duplication of the duration of the larval stage and malformation of larvae and pupae. On the other hand, the mitochondrial NADH oxidase inhibition produced by gigantetronenin was evaluated, to find an IC<sub>50</sub> = 3.7 ± 0.1 nM. Noteworthy, rotenone, a known inhibitor of the respiratory chain displayed a lower effect (IC<sub>50</sub> = 5.1 ± 0.1 nM).

**49. STUDY OF INHERITANCE MODE OF GREY STANDARD AND GUNNING BLACK VELVET FUR COLOR IN *Chinchilla laniger* Prell.**

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*Chinchilla laniger* Prell is the most studied species of *Chinchilla* genus. It presents interesting variations in fur color. The Standard Grey are the wild type called "aguti". Gunning Black Velvet arises from Standard Grey by mutation and presents only two back colors: plumb grey (base) and black (tip). This mutation is recently known. From 1967 started the fur commercialization but its inheritance mode was not explained based on scientist basis. The objective of this work was to study the inheritance mode of Standard Grey and Gunning Black Velvet fur color in *Chinchilla laniger* Prell. by experimental crosses. The sample came from "Cabaña Cristal" (Tucumán, Argentina). It was worked with males and females of about 12 month age. Crosses were made with polygamic cross system and two replications each. Cross N° 1: ♂ Standard Grey x ♀ Standard Grey; N° 2: ♂ Gunning Black Velvet x ♀ Standard Grey; N° 3: ♂ Standard Grey x ♀ Gunning Black Velvet. Results were put in individual cards. Cross N° 1 it was obtained 100% of Standard Grey descendants. Parents has to be homozygous. Crosses N° 2 and 3: Standard Grey and Gunning Black Velvet animals were in 1:1 proportion so the Gunning Black Velvet animals has to be heterozygous. These studies have the purpose of recommending the breeders determined crosses for obtaining economical and productive profits.

**50. CYTOGENETIC STUDIES IN *Tradescantia fluminensis* Vell.**

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*Tradescantia* genus (*Commelinaceae*) has more than 35 species. *Tradescantia fluminensis* Vell., (Santa Lucía Flower), from South América is a herbaceous, perennial, creeping plant with white hermaphrodite flowers. It is also has great multiplication by little stem pieces; it can be considered as weed for some crops. A mitosis chromosomal study and their meiosis behavior with the object of contributing to this species cytogenetic knowledge was realized. Material came from Yerba Buena (Tucumán). For mitosis, tip roots, were pretreated with Paclisol solution, fixed in 3:1 (absolute alcohol: acético acid), hydrolyzed in HCl 1 N (60°C), and colored with hematoxiline 2%. For meiosis, young flowers were fixed in Newcomer. Different phases of meiosis were observed in pollen grain mother cells with the same technique. Results showed 2n=60 chromosomes. Darlington and Wylie pointed for this genus x=6 and x=12 as basic numbers. If x= 6 is considered, it is a decaploidy and with x=12, it is a pentaploidy. Chromosome size was 1,5 and 4,5 µ. In meiosis, it was observed a great irregularity, with monovalent and trivalent in Metaphase I, laggard chromosomes in Anaphase I and micronuclei in Telophase II and tetrads. The high chromosomal number and meiosis irregularity, would explain the infertility of this species, so the natural selection obligates it to having a vegetative multiplication.

**51. CHROMOSOMES OF A *EMILIA* GENUS SPECIES AND ITS BEHAVIOR IN MEIOSIS**

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*Emilia* genus, (*Asteraceae*), has about 25 species from Tropical Africa, Asia, Polinesia and América; annual or perennial, herbaceous plants, with hermaphrodite flowers and fruits with papus formed by abundant white hairs. There is a resemblance with *Sonchus* species, known as "cerraja verdadera". *Emilia coccinea* (Sims) F. Don and *Emilia sonchifolia* (L.) DC., known as "falsa cerraja" are annual and perennial crop, channel borders, road sides and uncultivated lands weeds. The objective of this work was to realize a cytogenetic study for contributing to the knowledge of *Emilia* genus. It was analyzed mitotic and meiotic chromosomes of one species from this genus came from Finca El Manatial (Tucumán). For mitotic analysis, tip roots were pretreated in Paclisol solution, fixed in 3:1 (ethilic alcohol:acetic acid), hydrolyzed in HCl 1N, 60°C, and colored with hematoxiline 2%. For meiosis, anthers were colored with the same technique described above. It was determined a 2n=10 chromosome number; it is a diploid species taking into account this genus basic number x=5; with two big chromosomes pairs and three of small ones. The chromosome behavior in meiosis was regular, with 5 bivalents in Diacinesis and Metaphase I, tetrads and normal pollen grains. This species penothype corresponds to *Emilia coccinea*. There is a taxonomic confusion between this and *Emilia sonchifolia*, named as synonymes This work suggests that it would be *Emilia sonchifolia* species.

**52. ESTERASE PROFILES OF A SPECIES OF *SONCHUS* L. GENUS**

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*Sonchus* L. genus (*Asteraceae*) is at the present time in all over the world. *Sonchus asper* L. and *Sonchus oleraceus* L., are annual or biannual herbaceous species, considered weeds in crops, gardens and labored lands. It was informed a chromosomal number 2n=18 for *S. asper* L. and 2n=32 for *S. oleraceus*. It is known a great phenotypical population variation, so the use of isoenzymes as interesting tools for identification. The objective of this work was to analyze the possible *S. asper* L. and *S. oleraceus* genetic population variability by means of esterase patterns. Twelve samples of each were randomly taken from El Manatial (Tucumán). A vertical polyacrylamide gel electrophoresis was used and revealed with α and β naphthyl acetate. For interpretation the zymograms and for the variability estimation a statistical cluster analysis were made. It was used a data base matrix and similarity among individuals was calculated with Jaccard Similarity Coefficient. (JSC). Bands that migrated at the same distance indicate similarity at structure level and different distances would indicate different genotypes. Dendrograms related individuals according JSC values. For *S. asper*, mostly individuals associated at a major distance to 0,51. For *S. oleraceus*, the similarity was major, associating at major values to 0,72. This indicated a small variability for esterases and little genome differences.

**53. TWO CHEMICAL RIPENING EFFECT ON COLD ACCLIMATIZATION CAPACITY IN SUGARCANE (*Saccharum sp.*)**  
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In subtropical sugarcane crop zones as Tucumán (Argentina), the crop is exposed to frost damage effect. Cold causes losses so it is very important to decrease them. Plants have different natural mechanisms of cold survival like acclimatization. The expression and effectiveness of acclimatization can be best with management strategies, like using cryoprotector products. In fact, ripenings appear as a useful alternative because they induce a quick inhibition of the stem elongation. Glyphosate and Fluazifoph p-butyl are the recommended ripenings in a commercial scale. The objective of this work was to evaluate two ripening effect in the capacity of conferring acclimatization to two sugarcane cultivars with contrasting acclimatization levels (LCP 85-384: good capacity; RA 87-3: poor capacity). Treatments with Fluazifoph p-butyl 40 g i.a./ha; Glyphosate 288cc i.a./ha and respective controls were evaluated. Data were taken from experiments in field for two crop periods. Consecutive cellular efflux conductivity determinations, according to Dexter technique, were realized and it was determined the tissue damage index (TII). The results showed that ripenings cause an advance in the acclimatization induction, permitting a more effective and longer in the time one. The best effects are registered in LCP 85-384, the good capacity variety of cold acclimatization.

**54. ATTITUDE AND BEHAVIOR OF DIFFERENT RISK FACTORS CANCER IN A STUDENT'S POPULATION**

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The pathogenesis and prevention of the cancer are involved different risk factors. Planning interventions to reduce it for cancer, it will limit of new cases number. The aim of this work was to evaluate the risk factors that may influence the development of the cancer. In a student's population at he school. An anonymous survey was carried out to 306 young men. A population were separated into three groups: A) men with 15-17 years, B) males with 18-21 years and C) men with up to 21 years olds. The 69%, 84% and 92% of the males were initiated of the sexual activity from groups A, B and C, respectively. The contraceptives method used showed a similar trend in the three subgroups. The number of sexual couples decreased in the three subgroups corresponding to the studies (35%, 36% and 17% for A, B, C groups respectively). 90% of the respondents knew about sexual transmission diseases. 45% of the B group were smokers and 31%, 72% and 76% were alcoholic drinks for the A, B, C groups respectively.

The analysis of these results would let us to conclude that the efforts must be addressed to formulate more effective strategies to decrease of risk factors in a student's population.

**55. REFERENCE VALUES OF THE PROSTATE SPECIFIC ANTIGEN SERUM DETERMINED BY IMMUNOASSAY**

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The Prostate Specific Antigen (APE) is the most important and clinically effective tumoral marker to predict prostatic cancer. Nevertheless, an increase of this marker raises in patients with benign pathologies. The aim of this research was to establish the reference values (VR) of the APE, analyzing the influence of the age, cigarette smoking and alcohol consumption on the serum concentration of this marker. In this work, the APE serum levels of 124 healthy men were evaluated. The mean age of the complete group was  $55,74 \pm 7,68$  years they were divided into three groups according to the age: 1) 40-49 years, 2) 50-59 years and 3) over 60 years old. The VR were of: 2,43 ng/ml, 3,04 ng/ml, 4,46 ng/ml for the group 1, 2 and 3 respectively. The VR for men smokers were of 3,27 ng/ml and for those that were not doing was of 3,82 ng/ml. The VR for men were alcoholic drinkers and for those that were not doing it they were of 3,18 ng/ml and 3,73 ng/ml respectively. Our results demonstrating that the serum APE concentration is dependent upon patient age. The action of cigarette smoking and alcohol consumption do not influence.

**56. DETERMINATION OF THE LISOSOMAL ENZYMES LIKE A SCOREBOARD OF CANCER OF ORAL CAVITY**

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The oral cancer is a disease of the major people. The aim of this work was determined the sera activity of lisosomal enzymes and the carcinoembryonic antigen (CEA), in carrying patients of malignant injuries of the oral cavity before and after the treatment, with the intention of analyzing their correlation with the state of the patient. The patients with carcinoma of Scaly Cells in the moment of the diagnosis presented values of FA and Hex. four times superior to the value of reference (V. R.) and the sera levels of B-Gal. was ten times over the V.R. The carriers of Ackerman's Carcinoma before the treatment there presented levels FA and Hex. that duplicated the V.R. and the sera determination of B-Gal. was five times major that V.R. The enzymes sera of all the patients once restored the treatment descended notably, being obvious in all the cases levels that corresponded to normal levels. The sera determination of the CEA did not suffer modifications being normal values in all the cases. The results obtained, though preliminary they would allow us to suggest that the lisosomal enzymes might be used as complementary method for the diagnosis and clinical follow-up of the patients by cancer of the oral cavity.

57.

**A COMPARATIVE STUDY OF THE BIOLOGICAL MARKERS IN WOMEN WITH BREAST CANCER**

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The main goals of the clinical use of tumor markers are to evaluate the adequacy of the treatment, monitor recurrence and follow up response to the treatment applied in breast cancer patients (BC). The CA 15.3 and carcinoembryonic antigen (CEA) demonstrated to be useful for the early diagnosis of the metastatic process. The metalloproteinases, are a family of endopeptidases implicated in the degradation of extracellular matrix. In particular, MMP-9 play an important role in tumor growth, invasion and progression. In this work we evaluate the expression of CA 15.3, CEA and MMP-9 sera levels in patients with BC clinically diagnosed. A population of 22 women was studied and they were separated into two groups: A) 11 BC patients without treatment and B) 11 BC patients that showed a positive response to the treatment. The evaluation of the obtained results of CA15.3, CEA and MMP-9 for group A showed the existence of the increased concentrations in 45.5%, 27.3%, 100%, and for group B in 18.2%, 9.1% and 0%, respectively. Our data suggest that there is a correlation between MMP-9 sera levels and clinical stage of patients with BC.

58.

**EVALUATION OF THE ANTIBACTERIAL ACTIVITY OF Ca(OH)<sub>2</sub> PASTES IN ROOT DENTIN INFECTED WITH *E. FAECALIS***Pacios MG<sup>1</sup>, Cecilia M<sup>2</sup>, López ME<sup>1</sup>, Silva C<sup>2</sup>.<sup>1</sup>Cát. Quím. Biológica, Fac. Odontol. <sup>2</sup>Cát. Bacteriol., Fac. Bioq., Quím. Farm. UNT. Av. B. Aráoz 800. (4000) S.M. Tucumán. E-mail: gpechavarria@hotmail.com

Microorganisms play an essential role in the etiology of pulpar diseases. *E. faecalis* is resistant to Ca(OH)<sub>2</sub> because it survives pH 11.5. The aim of this work was to evaluate the action of Ca(OH)<sub>2</sub>+distilled water and Ca(OH)<sub>2</sub>+chlorhexidine (CLX) in root dentin infected with *E. faecalis*. Recently extracted human teeth were treated by triplicate, the coronary portion was eliminated and the staggered technique was applied. The dentin mud was eliminated with EDTA 17% and NaOCl 5.25%. The teeth were autoclaved at 121°C 15 min, placed in 2 ml of BHI, inoculated with 0.2 ml of *E. faecalis* ATCC 29212 (10<sup>8</sup> ufc/ml) and incubated overnight. This procedure was repeated 3 days. A positive (not treated infected tooth) and a negative control (not infected non treated tooth) were included. Teeth were sealed with plastic gutta-percha and disinfected by immersion in NaOCl 5.25% 10 min, placed with humidity and incubated. The incubation time, replacement of the paste and more incubation was: 24 and 24 h, 48 and 48 h, 4 and 4 d and 7 and 7 d. Pastes were eliminated and the teeth incubated 48 h. Ca(OH)<sub>2</sub>+water was not effective in the elimination of *E. faecalis* in none of the times. Ca(OH)<sub>2</sub>+CLX 2% was effective after 14 d. This paste would be recommended.

59.

**BIOCHEMICAL CHANGES IN TOTAL SALIVA OF HIV/AIDS PATIENTS UNDER TREATMENT**Salum MK<sup>1\*</sup>, Manlla AM<sup>2</sup>, Recupero G<sup>3</sup>, López ME<sup>1</sup>.<sup>1</sup>Cát. Quím. Biol., <sup>2</sup>Fac. Agronomía, <sup>3</sup>Serv. Infectología, Hosp. Zenón Santillán. Fac. Odontología, UNT. Av. B. Aráoz 800, 4000. S.M. Tucumán. \*E-mail: ksalum@fo.unt.edu.ar

The HIV is a retrovirus that causes immunodeficiency. The progression of the disease is monitored by recount of CD4 in blood and levels of viral RNA in plasm. The aim of this work was to analyze the biochemical variations in total saliva of HIV/AIDS patients under antiretroviral treatment. 15 individuals of both sexes were studied at month 0 and 4; 7 patients receive triple antiretroviral therapy with proteases inhibitor (PI)+ reverse transcriptase nucleosidic inhibitor (RTNI), the rest, a combination of RTNI+ non nucleosidic RTNI (NNRTI). Samples of saliva were picked up of the sublingual and vestibular region in 10 min, centrifuged and conserved at -15°C. In saliva, pH, buffer capacity, total proteins, calcium, phosphor, peroxidase, Ig A were determined. CD4 was determined by flow cytometry. The data were statistically analyzed using not parametric test for paired samples. Results showed significant differences (p<0.05) among values for buffer capacity, proteins, calcium, phosphor, peroxidase and Ig A of the samples of the month 0, in comparison with those of the month 4 of treatment. Significant differences were not observed for the immunologic values. No influence on saliva had the treatment type. HIV+ patients reflect certain changes in saliva during the antiretroviral treatment.

60.

**INTERLEUKINE-8 (IL-8) IN PIOGENIC GRANULOMES AND MAXILLARY CYSTS**Koss MA<sup>1</sup>, Carino S<sup>2</sup>, Aybar A<sup>2</sup>, López ME<sup>1</sup>.<sup>1</sup>Cát. Química Biológica <sup>2</sup>Cat. Anatomía Patológica, Fac. Odontol., UNT. Av. B. Aráoz 800, 4000. S.M. Tucumán.

The inflammatory maxillary epithelial cysts are frequent intraosseous pathologies that recruit immunocompetent cells with limphoplasmocytes prevalence. Inflammatory piogenic granulomes of extraosseous localization show infiltrated limphoplasmocytes and superficial necrosis, with polimorfphonuclear neutrophils (PMNN). Both processes produce cytokines. The aim of this study was to determine IL-8 in these processes and to find relation with the type of present cells. 11 cases of biopsies were selected. Biopsies were included in paraffin, cut and colored with H-E. Policlonal antibody anti IL-8 was used. In all granulomes, a positive reactivity in the ulcerated areas covered with fibrin-leucocytes in disposition intra and extracelular, and a positive reactivity in the epithelium with exocitosis of PMNN were observed. In epithelial cysts, the limphoplasmocyte infiltrate was not reactive for IL-8, being a positive reactivity in macrophages. In cysts with increase areas positivity in PMNN and epithelial positivity related to PMNN exocitosis was visualized, also, a focal reactivity in areas of fibrosis of the wall. The tissue localization of IL-8 is linked to intra and extracelular PMNN in the superficial areas of granulomes. In the cysts there would be a residual gradient of IL-8 in the connective tissue free of inflammation, positivity in macrophages and intra and extracelular in PMNN with exocitosis.

**61. SALIVARY PROTEIN PROFILE IN PATIENTS WITH XEROSTOMY**

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The Sjögren Syndrome (SS) is an autoimmune disease with lymphocyte infiltrate that affects the exocrine glandular tissue, with the loss of secretions. Salivary proteins play an important role in the protection of the buccal cavity. The aim of this work is to analyze salivary proteins in patients with SS. 20 SS patients and a control group of 15 were selected. Saliva was stimulated. Physical properties, pH, flow rate, proteins, secretory immunoglobulin (Ig) A, peroxidase, alkaline and acid fosfatase, hydroxyproline, collagenase and SDS PAGE were determined. Statistically significant differences were observed for salivary proteins which, as peroxidases and acid fosfatase were diminished, while secretory A, alkaline fosfatase, hydroxyproline and collagenases were increased. By SDS PAGE a high number of protein bands of low molecular weight was observed. In SS patients, the functional affection of salivary glands can be markedly evidenced besides the diminished salivary flow rate by means of alteration of the protein profiles which are associated with the protection and defense functions. Secretory Ig A would increase accompanying to the lymphocyte infiltrate. It would be important to analyze the influence of such parameters on buccal health of SS patients.

**62. ASSOCIATION OF BIOCHEMICAL VARIABLES IN SOLUTIONS OF ENDODONTIC USE**

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The chemical action of different irrigation solutions during the endodontic treatment of teeth with (V) and without (N) pulp vitality is studied. The used solutions are: NaClO, EDTA, Ca(OH)<sub>2</sub> and chlorhexidine (CLX). In a previous work total proteins (TP), hydroxyproline (Hyp), calcium, phosphor (P) and pH of samples extracted of root canals of V and N teeth irrigated with the solutions were determined. In this work the action of the solutions is statistically analyzed. The Exploratory Dates Analysis (EDA) to determine normality of variables and the Correlation of Pearson are applied. High significant ( $p < 0.005$ ) and direct ( $r = 0.619$ ) correlation is observed between TP and Hyp and between Hyp and P ( $p < 0.001$ ,  $r = 0.726$ ) in both teeth with NaClO. EDTA showed correlation among these variables for N teeth ( $p < 0.001$ ,  $r = 0.545$ ). With Ca(OH)<sub>2</sub> a high and direct correlation is observed ( $p < 0.001$ ,  $r = 0.883$ ) between TP and P in V teeth. CLX showed correlation of small and direct level between TP and Hyp ( $p < 0.01$ ,  $r = 0.478$ ) and between TP and P ( $p < 0.01$ ,  $r = 0.538$ ) in V teeth. Statistics denote an important effect of NaClO on the organic and inorganic tissue in V and N teeth. EDTA produces a smaller affection in both teeth, mainly on the inorganic content. Ca(OH)<sub>2</sub> has a higher action on the partially mineralized organic portion of V teeth and CLX mainly acts on N teeth.

**63. USE OF FITASA IN FOWL FEEDING**

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Most of the phosphor present in plant components exists as Fitic Acid, mixed with Potassium, Magnesium and Calcium salts. Primal components from plants provide 60-75% of P with Fitatoes, a component which endogenous enzymes of birds cannot degrade. Thus, diets are reinforced with mineral supplements (bicalcic phosphate), rich in absorbable calcium and phosphor. In order to improve the use of fitic phosphor in cereals, and to lower pollution by phosphor in water and soil, it was decided to add fitasas to reproductive birds diets. Low levels of absorbable phosphor increase dead animal percentage, reduce production, weight and eggshell quality, lowers incubability and increases broken egg percentage. Diet #1 had 0.5791% total P, 5.8717 Ca: P, 240g/TN (600 FTU) fitasas. Diet #2 had .7363% P, 4.6175 Ca: P, and no fitasas. Both had 3.4% Ca and 0.38% P. Tests included descriptive statistics and mean value matching with  $p < 0.05$ . Results proved that Fitasa treatments with 21.35% total P reduction increased 3.1% food consumption and 0.06% mortality, and reduced broken eggshells by 0.165%, added mineral P and feeding cost. Increased mortality might be due to more food ingesting.

**64. THERMAL REQUIREMENTS FOR *Solanum nigrum* L. (*Solanáceas*) GERMINATION**

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*Solanum nigrum* is a weed spread along the agricultural area of Tucumán, where it affects several crops of regional importance. It is an annual or biannual herb. Its reproduction is exclusively through seeds and it produces a large amount of them. One plant can generate up to 178.000 seeds.

This work's objective is to obtain data of thermal requirements for the germination of *Solanum nigrum*.

The experiences were carried out with fresh seeds and conserved seeds. Tests were performed outdoor, in greenhouse and in laboratory. Germination percentage, germination temperature range, and germination time was evaluated. Out of the total of seeds, it was observed that the germination percentages were 0,2% in plant pots filled with earth, and between 6% and 10% in Petri boxes. The best temperature of germination is 30°C. Temperatures below 25°C and above 35°C are inhibitory for the process. Germination velocity varies from a range of 10 days up to 18 months. The field germination percentage is very low but it is compensated with the great production of seeds per plant, this assures the emergency peaks. Optimum temperatures take place in the spring-summer cycle, assuring a continuous emergency flow from the soil bank of seeds during the cycle. During the emergency flow abundance peaks will be produced due to the specie's characteristics.

65.

**LLAMA (AUCHENIA LAMA) MEAT. A NUTRITIONAL ALTERNATIVE**

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**Introduction:** The man removes continuously the corporal structures at different rhythms in the distinct stages of the live.

It is necessary to eat nutrients such as proteins, lipids, carbohydrates, vitamins and minerals. The meat is considered a nutrient with a high biological value. The meat is the diet's base in Occident. In our country people consumes bovine, pig and chicken meat. The consumption of llama meat is generalized. in Jujuy.

**Objective:** The aim of this work was to evaluate the protein, amino acid, cholesterol and calcium composition of the llama meat.

**Materials and methods:** The llama meat was separated from the visible fat. It was diluted 1:10 (w/v) with distilled water, homogenized, and in it was analysed the cholesterol by an enzymatic method (Wiener), The homogenate was filtered and separated in three fractions to determine a) proteins (Lowry method), b) amino acids by TLC (Thin Layer Chromatography) c) calcium by the o-cresolphthalein method.

**Results:** The concentration of proteins was of 22,3 g/100g meat. Cholesterol 0.10 mmol/l. Calcium 13,9 mg/100g meat. All the essential amino acids, except tryptophan. were identified.

**Conclusions:** Llama meat could be an interesting nutritional alternative to include in the diet.

66.

**METABOLIC STRATEGIES IN POLYLEPIS AUSTRALIS, A PERENNIAL WOODY PLANT OF MOUNTAIN FOREST**

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Most stresses that plants support in the nature are cyclical because they are related to seasonal changes which affect important metabolic processes. Water deficiency is the most significant because it affects photosynthesis. The objective of this work was to determine the effects of seasonal changes on proteins, sucrose and proline levels in *Polylepis australis*. Leaves were collected during different seasons in Mountain Forest located at 2300 msnm. Metabolites levels were quantified by spectrophotometry. Turgor potential was determined from pressure-volume curves obtained by the Scholander pump. Results showed that sucrose **maintained its levels, meanwhile proline slightly increased in** autumn demonstrating this species does not use these metabolites as osmoregulators. This was confirmed by the turgor potential which did not vary significantly. Proteins did showed the highest values in summer. The results indicate that although this species does not use osmoregulation, it maintain turgor potentials constants in the foliage throughout the year.

This work was support by the IAI (Project RICH - CRN 040)

67.

**MEAT PRODUCTION OF AN EXPERIMENTAL BREEDING SYSTEM IN THE CER INTA (TUCUMÁN)**

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In the CER INTA (Tucumán), between 1994 and 2002, was evaluated an Experimental Breeding System (SEC) in order to get productive indicators. to quantify the productive and economic impact of different technological innovations. The breeding take placed in 77 ha with 100 Bradford cows, 4 bulls and 16 heifers fed with tropical perennial gramineous (60% rodhes grass, 30% bermuda grass and 10% grass horqueta) in green and as standing hay without supplement. The mating was between 1/12 to 28/02 during 90 days, with 4% of bulls.

The productive results were 1994 calving %: 80.0; mortality %: 4.4; wean %: 76.5; weight wean: 155,7 kg/wean/cow: 119,1; kg/wean/ha: 183,4 kg. Inthesameorder, 1995: 81,6%; 3,2% 79 kg; 168,7 kg; 133,3 kg; 205; 3 kg. 1996: 90.4%; 9,1%; 82.2%; 184.2 kg; 151.4 kg; 233.2 Kg. 1997: 85.8%; 11.6%; 75.8%; 154.6 kg; 117.2 kg; 80.5 kg. 1998: 67.1%; 7.4%; 62.1%; 158.4 kg; 98.4 kg; 151.5 kg. 1999: 86.2%; 2.9%; 83.7%; 134.2 kg; 112.3 kg; 172.9 kg. 2000: 82.3% 5.0%; 78.2% 150.0 kg; 117.3 kg, 180.6 kg. 2001: 89.4%; 7.2%; 83.0%; 156.3 kg; 129.7 kg; 199.7 kg. 2002: 88.3%; 9.2%; 80.2%; 164.4 kg; 131.8 kg; 203.0 kg. The means were 83.5%; 6.7%; 77.9%; 158.5 kg; 123.4 kg, 190.0 kg. The animals performance were due to the feeding and the genetics.

68.

**CHARACTERIZATION STUDIES OF MARGARINAS AND HYDROGENATED OILS OF FREQUENT CONSUMPTION IN TUCUMAN**

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In the province of Tucumán an important source of contribution of greasy matters is the margarinas. The intention of this work was to characterize margarinas and hydrogenated oils of habitual consumption from the determination of the fatty acid profiles, the total fatty acid content trans and physical properties. One worked with 7 samples that were selected in local supermarkets. The fatty acid composition was made by GLC direct method by methylic ester determination Los fatty acids trans were determined IR and they were compared with the obtained ones by GLC. Humidity by termovolumétrico method was analyzed and point of fusion by the method of the open capillary. The fatty acid determinations trans by both methods showed that the total of the content of trans mainly varies between 30% and compound 45% by isomers trans of oleic and the linoleico one. It is possible to be concluded that the fatty acid content is high trans in the studied samples whereas the other parameters respond to normal values for originating greasy oil matters partially hydrogenated.

**69. EFFECT OF *Bacillus sp.* AND *Azospirillum sp.* IN GROWING ROOTS OF MULBERRY (*Morus nigra* L.)**

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The activity PGPR of the rizosféricas bacteria, it has been demonstrated in different vegetable kinds inoculated with this type of microorganisms. In previous projects, was demonstrated that the capacity of producing auxines of *Pseudomonas sp.* increase the growing roots in mulberry stakes (*Morus nigra* L). The objective of this work is to determine if other bacteria with activity PGPR, are capable of increasing the growing roots of the mentioned vegetable kind. The production capacity of AIA (indole acetic acid) of *Bacillus sp.* and *Azospirillum sp.*, it was determined by the method of the oxálico acid. Finally of 60 days, was observed: percentage of growing roots (%) and number of roots by rooted stake (N0). The inoculated stakes, did not show differences between the treatments, though the increase in radical mass was sensibly greater than in the witness stakes. These results confirm that the production of AIA, on the part of any bacteria with activity PGPR, stimulates the roots production in mulberry stakes, though this effect could not be independent, but a joined action with other hormonal compounds produced by the inoculated bacteria.

**70. MYCORRHIC FUNGI V. A. ARE AFFECTED BY *Trichoderma sp.***

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The *Trichoderma* gender counts on kinds that are characterized by producing high quantities of chitonolitic enzymes. The objective is to analyze if the *Trichoderma sp.* mushroom, through its chitonolitic activity, affects the activity of the mycorrhic fungi. They were used explants of 3 varieties of sugar cane, disinfected with hipoclorito of sodium. After 15 growth days, were applied the following treatments with 5 repetitions of each one: 1) Inoculation of the roots with mycorrhic fungus spores and with chlamydoesporos of *Trichoderma sp.*, 2) Inoculation of the roots with mycorrhic fungus spores and to 15 days of this, inoculation with hclamydoesporos of *Trichoderma sp.*, 3) alone inoculated Witness with mycorrhic fungus spores. Before 60 days, were analyzed through the technique of Phillips and Hayman. when are inoculated jointly spores and gigásporas is observed a strong depression in the mycorrhization. When the inoculation is accomplished in different moments, the reduction is not meaningful. The chitonolitic activity of *Trichoderma sp.*, affects the walls of the mycorrhic fungi when both are found in the external rhizosfera, if the root already it has been colonized the chitonolitic effect it does not affect them.

**71. GREEN PEA (*Pisum sativum* L.) RADICAL SYSTEM CHARACTERIZATION AT THE BEGINNING OF THEIR GROWTH**

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Morphology and growth of radical system depend on plant genetic constitution and on ambient and soil conditions which is developed. Radical system typical morphology knowledge permits to evaluate the influence exercised by environmental conditions on their conformation and functionality. In the present work is characterized green pea (*Pisum sativum* L.) radical system during their first twenty growth days. In special handles, with a transparent flat face, on the one which was beed tracing day to day the roots, were sown green pea seeds, in a soil and sand mixture in equal part. Green pea forms a typical radical system, with a main axis and lateral ramifications. Principal root reaches 20 days a depth of 35 cm. Lateral ramifications born between 3 and 15 cm of depth, forming an angle of 50 to 60 degrees with vertical shaft. In the initial growth of green pea radical system can be distinguished three phases: First phase comprises seven days and is characterized by radicle stretching to form principal shaft; second phase comprises five days and is characterized by first order ramifications appearance; third phase comprises seven days and is characterized by ramifications and principal shaft stretching, though with a smaller growth rate.

**72. EARLY GROWTH OF BINDWEED (*Ipomoea sp.*) RADICAL SYSTEM UNDER WATER DEFICIENCY CONDITIONS**

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Water absorption function carried out by the roots depends on their development, ramifications and capacity of exploring the soil. These characteristics increase water deficiency tolerance. The aim of this paper is to study the water deficiency incidence upon the morphology of bindweed radical system. Bindweed plants have been cultivated in flowerpots which represent an experimental unit with three repetitions.

Some were cultivated with adequate water requirements for a given period of time whereas some others were deprived of watering until the end of the experience. The following parameters were recorded: length of principal root, number of first-order branching, height of steam and dry weight of root and aerial part. With water shortage, total radical system was longer among plants with water shortage than among ones properly watered. Length of the root allowed a better water extraction capacity. Height of steam and dry weight of the root did not differ between treatments. Length of principal root and number of first-order roots did not show meaningful differences despite the different treatments. These results illustrate that under water deficiency conditions, the bindweed plants modifies both the radical system as well as the steam. Absorption function is related more to the total length of roots rather than to their weight.

73.

**ANATOMICAL CHARACTERIZATION OF *Microgramma squamulosa* (Kaulf.) Sota "calaguala del mate"**Jaime GS<sup>1</sup>, Vattuone MA<sup>2</sup>.<sup>1</sup>Cátedra de Botánica and <sup>2</sup>Cátedra de Fitoquímica, Instituto de Estudios Vegetales. Fac. Bioq. Qca. y Farm. UNT. Ayacucho 471. 4000 Tucumán. E-mail: gsjaime@fbqf.unt.edu.ar

The aim of this work is to investigate leaf, petiole and stem anatomical characters of *Microgramma squamulosa* (Kaulf.) Sota, a fern belonging to Polypodiáceas (Pteridofitas), in order to find out those of diagnostic value for this species. *M. squamulosa* widely grows in Brasil, Paraguay, Uruguay and Argentina, where it is used as medicinal plant. This species is an epiphyte plant and is known as "calaguala del mate" in Argentina. It is sold in herb shops and is used within our folk medicine as antiulcer. In this work we describe the histological aspects that could help to identify the crude drug. The transverse section of leaves shows an epidermis of one cell layer with thick walls and a noticeable cuticle, hypodermis with two cell layers, midrib with a subepidermic sclerenchyma in both faces, abaxial and adaxial and mesophyll with chlorophyllic parenchyma. The midrib presents one to two vascular bundles, each one surrounded by an endodermis. They are within a fundamental parenchyma. The petiole has similar characters to the midrib. The stem has scales appressed and the transversal section shows a stele of dictyostele type, with concentric meristemes. We conclude that the anatomical studies are useful for their characterization and quality control.

74.

**BIOLOGIC ACTIVITY OF METHANOLIC EXTRACTS FROM TWO ASTERACEAE SPECIES IN THE GERMINATION OF *Lycopersicon esculentum*: A COMPARATIVE STUDY**

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The allelopathic activity of methanolic extracts from two Asteraceae species was studied in *Lycopersicon esculentum* germination and growth. The trials were carried out at three concentrations (300, 600 and 1000 mgL<sup>-1</sup>). The number of germinated seeds, root and hypocotyl length, cell efflux conductivity and dehydrogenase activity were determined. The results and means confrontation were analyzed with ANOVA and Tukey's test, respectively. *H. argentea* ME had no effect on the number of germinated seeds. Significant inhibition was noted with 600 and 1000 mgL<sup>-1</sup> *M. acuminata*. All the treatments caused significant decrease in root and hypocotyl length. None of the *H. argentea* treatments affected efflux cell conductivity. The conductivity increase was particularly marked for 1000 mgL<sup>-1</sup> ME concentrations. 600 mgL<sup>-1</sup> *H. argentea* ME and 1000 mgL<sup>-1</sup> *M. acuminata* ME are the only treatments causing a marked increase in dehydrogenase activity. *M. acuminata* ME has a marked allelopathic activity on the vegetable species studied.

75.

**BIOLOGICAL ACTIVITY OF *Hyalis argentea* Don ex Hook et Arn. AND *Mutisia acuminata* Ruiz & Pav ON TOMATO SEEDS GERMINATION**

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The influence of two sub-extracts -*Hyalis argentea* Don ex Hook et Arn and *Mutisia acuminata* Ruiz & Pav. var. *Paucijuga*- was studied in the *Lycopersicon esculentum* seeds germination. The chloroform (CSE) and the hexane sub-extracts (HSE) were prepared with the flowers and stalks. Four boxes were used in each treatment (Kato *et al*'s method). Three CSE and HSE concentrations (300, 600, and 1000 mgL<sup>-1</sup>) were used. Water was used as control. The results and means confrontation were analyzed with ANOVA and Tukey's test, respectively. The number of germinated seeds, root and hypocotyl length, cell efflux conductivity and dehydrogenase activity were determined. A decrease in the number of germinated seeds was noted only with *M. acuminata* CSE at all concentrations. None of the *Hyalis argentea* treatments influenced the number of germinated seeds. A decrease in root length was noted with 600 and 1000 mgL<sup>-1</sup> *H. argentea* CSE. 300, 600 and 1000 mgL<sup>-1</sup> *M. acuminata* CSE causes a marked reduction in root and hypocotyl length. None of the *H. argentea* treatments affected Efflux cell conductivity or dehydrogenase activity. Both parameters showed increases with 600 and 1000 mgL<sup>-1</sup> *M. acuminata* SEC. It can be stated that *M. acuminata* CSE inhibits root enlargement, decreasing its survival potential.

76.

**ACTIVITY OF *Hyalis argentea* Don ex Hook et Arn. y *Mutisia acuminata* Ruiz & Pav (ASTERACEAE) EXTRACTS AGAINST STRAWBERRY, ONION, AND BEAN PATHOGENS**

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The response of flower (FME) and stalk (SME) methanolic extracts from *Hyalis argentea* and the methanolic extract of aerial parts (APME) from *Mutisia acuminata* was assessed against *Corynebacterium fascians*, *Pseudomonas gladiolii* y *Xanthomonas axonopodis* pv phaseoli. Copper oxychloride, dithiocarbamate (Mancozeb A) and a 1:1 mixture of both were used as control. The extracts were dissolved in 5% ethylic alcohol and incorporated at 11.36 a 45.45 (g/mL. Minimal inhibitory (MIC) and minimal bactericidal concentrations (MBC) were determined. *H. argentea* FEM MIC and MBC for *Corynebacterium fascians* was ( 11.36 (g/mL and 11.36 (g/mL; 11.36 (g/mL and 22.73 (g/mL for *Pseudomonas gladiolii*; and 22.73 (g/mL for *Xanthomonas axonopodis* pv phaseoli. SME showed activity against *Ps. gladiolii* with MIC and MBC ( 22.73 (g/mL. *M. acuminata* APME MIC and MBC was ( 22.73 (g/mL for *C. fascians*; 22.73 (g/mL for *P. gladiolii*; and 22.73 (g/mL for *Xanthomonas axonopodis* pv phaseoli.

**77. SURVEY OF WEEDS OF DIFFICULT CONTROL IN GRAIN CROPS OF THE PROVINCE OF TUCUMÁN, ARGENTINA**

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The incorporation of agricultural practices as direct sowing in grain crops in the east of the province of Tucumán, brought along the fact that weed species which used to be easily controlled, became hard to manage for farmers. In the aim of determining hardly manageable weed species in grain crops, a survey consulting producers, was carried out. In this survey, the producer quoted the species that cause most of the problems on their crops, considering the severity of infection, according to three categories: severe, moderate and light; stating, moreover, whether they were often controlled by herbicides or not. 42% of the total grain-sowed surface was surveyed. 25 producers per department were consulted. 67% of the consulted say that: *Commelina erecta* L. is the hardest species to control. 58% state that *Ipomea purpurea*; 17% said it was *Solanum chacoense* L. and *Digitaria sanguinalis* L.; and 8% considered *Spharalecea bonariensis* Cav. and *Conyza bonariensis* L. We conclude that even if the direct sowing and other grain crops technologies make management easier, the lack of crop sequence brings up new problems in the present vegetal communities, making necessary to characterize them bioecologically.

**78. CHOOSING MEDICINE AND BEING ADMITTED AT UNIVERSITY: A QUALITATIVE APPROACH**

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The objective was to analyse the factors that might influence aspiring students of Medicine in their career choice, to consider the outstanding aspects in their vocational process and to detect frequent variables. Results were taken from interviews to high-school graduates who took the Medicine admission exam. From a qualitative approach, there was a preliminary stage in which elements such as relatives, schooling, hopes, fears and expectations were analysed, but it was mainly focused on the imagined preconceptions students had about the career. The data was obtained from semi-structured interviews that allowed interviewees to express themselves freely. It consisted in 9 students of Medicine; those that were: a) admitted in their 1<sup>st</sup> try in 2004, b) admitted in their 2<sup>nd</sup> try in 2004, c) admitted in their 3<sup>rd</sup> try in 2004, d) not admitted in their 1<sup>st</sup> try in 2004 and f) admitted in their 1<sup>st</sup> try in 2002 but dropped out on their 2<sup>nd</sup> year. The results showed that, in general, vocation does not seem to be the explanation for their success or failure in their admission exams. One of the most powerful influences was the family that burdens the youth with their hopes and wishes. It was also noticed that there was an overall feeling that evaluation results did not depend on knowledge but rather on chance or even "malignancy".

**79. SEROLOGICAL DETECTION AND KINETICS OF *Mal de Río Cuarto virus* (MRCV) IN ITS VECTOR *Delphacodes kuscheli***

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*Mal de Río Cuarto virus* (MRCV, *Fijivirus*), causal agent of the most important disease of maize in Argentina, is transmitted mainly in the nature by *Delphacodes kuscheli* (Insect: Hemiptera: Delphacidae) in a persistent spread. The existence of a long period of latency in its vector has been considered as indirect evidence that this multiplies by itself. The objective was to detect the MRCV and to determine the direct evidence of its propagation in *D. kuscheli* through DAS-ELISA. It was demonstrated that a gradual increasing of the viral concentration until the 19 days of the acquisition, moment in which the maximum value was registered. The increase in the absorbance from the acquisition might be explained because of the gradual rise in the viral concentration due to the replication of the MRCV in the insect, being this a direct evidence of its multiplication. These results are congruent with the hypothesis of the multiplication of the MRCV in its main vector. Knowing the kinetics of the viral concentration inside the vector insect is very important in epidemiological studies.

**80. DISCOVERY OF EGGS OF *TOXOCARA* IN IMPORTANT PUBLIC WALKS OF SAN MIGUEL DE TUCUMÁN CITY**

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The aim of this work was investigate the presence of eggs of *Toxocara spp.* in the main public walks of San Miguel de Tucumán city. Sample of earth of 6 squares and the Parks 9 de Julio, Avellaneda and Batalla de Tucumán, was gathered, especially near of the infantile games. 16 samples of each square were gathered, 25 samples of the park Avellaneda, 40 samples of the park Batalla de Tucumán and 50 samples of the park 9 de Julio. The samples were washed with a solution 0,5% of Tween 80 and were concentrated with a solution of MgSO<sub>4</sub> of density 1.200 (flotation method). Of the six studied squares, five had at least 1 sample with eggs of *Toxocara spp.* In the taken samples of the park Avellaneda were not eggs of *Toxocara spp.*, on the other hand they gave positive results 15 of the 50 samples of the park 9 de Julio and 10 of the 40 samples of the park Batalla de Tucumán. Most of the studied public walks are polluted with the etiologic agents' of the Toxocarosis eggs, with the risk that that bears for the population's health, The sanitary authorities of the municipality should take measures with the great quantity of vagabond dogs that they are in the city, which don't have any sanitary control.

**81. STRUCTURE-ACTIVITY RELATIONSHIP FOR ELAPHOSIDE-A RELATED COMPOUNDS AND THE OVIPOSITION OF *CERATITIS CAPITATA***

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Elaphoside-A (E-A) is a styrene glycoside isolated from the fern *Elaphoglossum spathulatum* that showed an important deterrent activity on the oviposition on *C. capitata*. In order to establish the structural features related to the observed biological activity we prepared a series of related compounds including an acetylated derivative of E-A and products from hydrolysis and methanolysis of E-A. Vinyl anisol was biotested for comparison. The mentioned compounds were evaluated for oviposition deterrent activity at doses of 6 and 15 µg/cm<sup>2</sup>. Our observations indicated that the activity was associated to the aromatic ring alcoxilated or glycosilated. The sugar part of the glycoside, separately, or its acetylated derivative are not active. Additionally, the acetylation of elaphoside-A eliminated its bioactivity completely. Vinyl anisol resulted active at the dose tested.

**82. PRESENCE OF INSECTS IN TWO SPECIES OF *SOLANUM* GENUS IN DIFFERENT LOCALITIES OF THE PROVINCE OF TUCUMÁN**

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Since the year 2000, aspects related to the dispersion of *Solanum nigrum* and *Solanum lorentzii* weeds found in different crops in the Province of Tucumán, are being studied.

This work's objective is to inform about the relationships between insects and *Solanum* genus weeds as alternative hosts, associated to soybean crops, sugar cane, wheat, citrus fruit and horticultural products.

Surveyed localities were: La Cruz (Dpto. Burruyacú), Lolita (Dpto. Cruz Alta), Campo Experimental Finca El Manantial (Dpto. Lules), La Rinconada (Dpto. Yerba Buena). Observations on insects feeding from weeds were made. Samples were taken randomly every 25 days since the 2000 campaign until the 2003 campaign.

Acarus, predators and phytophagus species were found. Insects found summed up to 6 species that belonged to three orders: 50% Hemiptera, 20% Coleoptera and 30% Arachnid. From this last group, the stink bug (Pentatomidae) stands out.

The conclusion is that *Solanum nigrum* and *Solanum lorentzii* may be considered as potential plague hosts of the main crops in the Province of Tucumán.

**83. PRELIMINARY STUDY OF THE TINCTORIAL PLANTS IN THE FLORA OF SANTIAGO DEL ESTERO, R. ARGENTINA**

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Tinctorial plants were used throughout history giving origin to the processes of natural dye elaboration, which in many places actually are in use. The purpose of this research is to elaborate a catalogue of the vegetal species of the flora of Santiago del Estero with dyeing properties used by the artisan as well as gathering the data quoted in the available bibliography. A semistructured survey to artisan of the Department San Martín was applied. Equivalent information was also withdraw from bibliography and both data were compared. There are 29 species mentioned in bibliography with dye properties from which 15 are mentioned in the surveys. All of them belong to 13 families of Dicotiledoneae. The parts more frequently used were the crusts and roots. Among the procedures of dyeing are mentioned the boiling of plants and the use of mordant. The species, the way of use, used part and the color obtained are listed in the picture. The bibliographical investigation indicates the existence a number of species in the Santiago del Estero flora with tinctorial properties. The application of the surveys reveals that the vegetal resources to dye spinning is still used, and that the procedures indicated in the bibliography are still effective.

**84. COSOLVENCY IN PHARMACEUTICAL LIQUID SYSTEMS**

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In this work the systems formed by acetaminophen, AAP, dissolved in mixtures of different compositions of water-PEG 400 at 25°C were characterized. PEG 400 was evaluated as a cosolvent.

A maximum solubility of 1.9608 M for  $f_{\text{PEG}}$  equal 0.80 was found. At this  $f_{\text{PEG}}$  the permittivity of the solvent mixture is 29.71, value that represents the dielectric requirement of AAP in the water-PEG 400 system.

The graphic of molar fraction,  $x_2$  vs.  $f_{\text{PEG}}$  obtained from refraction index data confirms that when  $f_{\text{PEG}}$  is 0.80 the highest quantity of AAP is dissolved. With the logarithmic lineal model and the Yalkowsky-Rubino equation the PEG 400 cosolvent strength, (=2.1825 was obtained. This value confirms the positive effect of PEG as cosolvent allowing to obtain therapeutic quantities of AAP with  $f_{\text{PEG}}$  not higher than 0.40.

Our search can contribute to a challenge to pharmaceutical industry which tries to find liquid vehicles for AAP to ensure the production of stable, reliable and low cost pharmaceutical forms.

**85. MPF AMPLIFICATION IN *Bufo arenarum* OOCYTES**

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The resumption of meiosis represents the transition from G2 to M phase of the cell cycle, and it is regulated by the maturation promoting factor (MPF), a complex of cyclin-dependent kinase, p34 and cyclin B. It has been reported the existence of different mechanisms for MPF activation among the species. In starfish oocytes it has been suggested that a nuclear factor present in the germinal vesicle (GV) is required for activation of pre-MPF.

In previous studies we demonstrated clearly that in immature oocytes of *Bufo arenarum* exist an inactive complex the pre-MPF, which is activated by the action of a phosphatase cdc25. In addition, the microinjection of cytoplasm contained active MPF is sufficient to induce an amplification loop of MPF in the oocyte receptor, in absence of protein synthesis. The aim of this work is assayed if the injection of only GV contents from immature oocyte is sufficient to activate the pre-MPF and cause GVBD in a recipient immature oocytes; and if the intracellular levels of cAMP, protein synthesis or the activity of cdc25 phosphatase are involved in this process. The results obtained indicate that the injection of GV contents may induce the GVBD and the MPF activation. In addition, inhibition of protein synthesis, the increase cAMP levels and the inhibition of phosphatase cdc25, showed that this process is dependent of protein synthesis, and independent of AMPc levels and cdc25 activity.

**86. QUALIFICATION OF STUDENT AUXILIARS: COMMUNICATION, CONFIDENCE AND LEADERSHIP**

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A workshop of learning experiences was made outdoors guided by expert tutors (Psychologists). An atmosphere of "Team Building" was created. Group works for the reflection of the contents displayed by means of the formulation of strengths, opportunities, weaknesses took place and threats (S.O.W.T) and administered to a survey of evaluation of the workshop (II). Between the strengths stood out the cooperation, the confidence and the dialogue. Between the opportunities stood out the learning and the continuous education. Between the weaknesses one stood out: difficulty of the work in group and fear to the critic and between the threats stood out: lack of hour availability, resistance to the change. Survey II sample that the 100% of the student assistants considered that these workshop are very important. One concludes that the playful methods promote integration, the confidence, the personal and group growth, and the correction of errors, qualities indispensable in the educational of young people for the performance of its functions.

**87. METABOLIC WEIGHT, INTENSIVE VARIABLES REGULATION, AND BIOLOGICAL CONTINGENCE**

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Allometry of metabolic weight (MW), and its exponent (Exp) value ((0,75), was interpreted through several hypotheses in the past fifty years. Among recent, fractal theory was an original, structure-oriented one. Mitochondria proton leaking and its relationship with basal metabolic rate (BMR) gave a cellular base to molecular explanations ("membrane pacemaker of BMR"). However data dispersion in different taxonomical levels are so notorious that additional factors need be rationally characterized. Data about animals weight, BMR, taxonomy, alimentation, temperature and other biological variables were re-analyzed on more than eight hundred mammals, others vertebrates, and invertebrates. PsiPlot 2 (PolySoftware) was used. Results showed that, concerning mammalian data, polynomial equation regressions account for better than lineal one. Likewise, no one equation explains pooled data rationally enough. In fact, each separate Mammalian Order gave a different Exp, and several Orders were statistically distinct among them. When weight influence were annulled through a MW formula based processes, similarity among Orders belonging species persisted and showed constituent groups that seems to have another related factors, being food the most important. Results also showed their agreement with recent information about differential mitochondria-proton leaking observations and DHA percentage contents. Even those experiments were carried out on a limited number of species, we think they, and other recent data, support an overview in which it is possible to asseverate that regulation of cellular intensive variables have a great influence on BMR, and in the other hand, regulation of systemic ones, have little effect, but a notorious role on data dispersion generated from adaptation functions.

**88. THE RELATIONSHIP  $[Ca^{2+}] + [Mg^{2+}] / [HCO_3^-]$  AS INDICATOR OF THE WATER QUALITY IN STREAM PAMPICHUELA**

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Previous works carried out in the stream Pampichuelas showed the water good quality evidenced by the low level in organic material, nitrogenous compounds and the presence of zoobenthonic organisms, such as Perlidae, Corydalidae, Pyralidae, Anisoptera, Baetidae, Elmidae, Simuliidae and Tricladida. The objective of the present work is to evaluate the relationship  $[Ca^{2+}] + [Mg^{2+}] / [HCO_3^-]$  as indicator of the water quality of water in the stream. In waters containing dissolved oxygen and having a normal biological activity the expected value for the relationship is 0,5. The relationship diminishes when the content in organic matter increases. Bimonthly samplings were carried out between December of 2001 and February of 2003. The samples were obtained with bottles of 1,5 litres, in the centre of the stream course and in crosscurrent. The analyses were carried out following the techniques of the Standard Methods (APHA; AWWA; WPCF). *In situ* the temperature, pH and  $HCO_3^-$  were determined. In the laboratory  $Ca^{2+}$ ,  $Mg^{2+}$  and organic matter were quantified. The maximum value of the relationship (1,01) was obtained in April of 2002 and the minimum (0,33) in August of the same year. The index, in three of the samplings, was below the expected value for waters with normal biological activity. Out of these analyses, it is concluded that in waters of stream Pampichuelas the relationship  $[Ca^{2+}] + [Mg^{2+}] / [HCO_3^-]$  is not applicable as quality indicator because it would accuse a nonexistent anthropic contamination in the sampling place.

**89. BIODIVERSITY OF A MOUNTAIN STREAM BENTHONIC INSECTS AND THEIR APPLICATION TO TEST THE BIOLOGICAL QUALITY OF THE WATER**

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This work's aims are to get to know the composition of the benthonic entomofauna of Los Pinos stream, to determine and list the organisms found up to Family taxon, and finally to test water quality, taking into account the presence of zoobenthonic insects. Sampling station was situated at 1200 meters above sea level, and at latitude 28° 37' 15" South and longitude 66° 02' 05" West. Samples and replicates were obtained from the stream bed, using a square parcel sampler with a 900 cm<sup>2</sup> surface and 300 µm net opening. Samples were fixed *in situ* with formal at 4%. They were separated and determined, and the organisms present in each sample counted at laboratory. Later on, everything was preserved in 70° alcohol. In order to test the biological quality of the water the BMWP index was used, adapted for North Western Argentina. Eight species of benthonic insects were observed: Collembola; Ephemeroptera; Odonata; Plecoptera; Megaloptera; Trichoptera; Diptera and Coleoptera. The most abundant and diverse order was Trichoptera, followed by Diptera. Twenty-five families were reported, among them Perlidae; Corydalidae; Psephenidae; Elmidae; Glossosomatidae; Hydrobiosidae; Hydroptilidae; Baetidae; Leptohiphidae; Leptophlebiidae; Simuliidae and Ceratopogonidae. Due to their score in the BMWP index adapted for NW Argentina, they classify Los Pinos stream's waters as Class I, "very clean waters".

**90. BEHAVIOUR OF THE MAIN PIGMENTS PRESENT IN PEPPER OLEORESIN IN DIFFERENT DRYING SYSTEMS**

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This work's aim is to determine the behaviour of the main pigments present in paprika oleoresin, in samples dried through solar radiation and lyophilized samples. Samples of the variety *Capsicum annuum* L. were collected at INTA-Catamarca. The drying systems used were macrotunnel drying, solar drying by direct exposition and dehydration by lyophilization. In the oleoresin extraction process a solvent was used, hexane in a relation 1:2 powder-solvent. In the separation and quantitative determination of the pigments the HPLC (High-Performance Liquid Chromatography) methodology was put in practice. Solvents used were acetone and de-ionized water. Within the HPCL-identified pigments in the samples from macrotunnel drying, β-carotene is found with a concentration of 3.10 x 10<sup>-3</sup> g µL<sup>-1</sup> and capsanthin with a concentration of 3.16 x 10<sup>-3</sup> g µL<sup>-1</sup>. In the material dried through direct solar exposition a concentration of 1.17 x 10<sup>-3</sup> g µL<sup>-1</sup> was observed for β-carotene and of 3.05 x 10<sup>-3</sup> g µL<sup>-1</sup> for capsanthin. Samples dehydrated through lyophilization, meanwhile, showed a concentration of 6.17 x 10<sup>-4</sup> and of 3.50 x 10<sup>-3</sup> g µL<sup>-1</sup> for β-carotene and capsanthin, respectively. From these results it can be concluded that pigment concentration levels vary according to the drying system used, and particularly observed results are those corresponding to β-carotene in lyophilization in relation to capsanthin.

**91. SOYMILK ASSOCIATED TO AN HIPOPROTEIC DIET. THEIR INFLUENCE IN THE DEVELOPMENT AND GROWING OF LONG BONES**

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We have studied the effect of the soymilk, like a complement of an hipoproteic diet on the development of the long bones during 10 days. The osteoblastic activity (OBA) and the osteoclastic activity (OCA) was determined in % of the total bone activity. In malnourished animals it was observed that the OBA arriving to 18 ± 4% with inverse values in the OCA (82 ± 4%, 10 d) (NV: OBA:81 ± 3%; OCA: 19 ± 3%). The bone density of the malnourished animals also diminishes, arriving to inferior values (0.58 + 0.1 gr/cm<sup>3</sup>); on relation to control (NV: 1,23 + 0,2 gr/cm<sup>3</sup>). The histology reveals quali and quantitative changes in the epiphysis and diaphysis cellular population, with predominance of osteoclasts. In the soymilk diet, as much the OBA as the OCA stay in values near to the controls (AOB: 67 ± 5% AOC: 21 ± 6%). The histology in this group also stays in structure very similar to the control, with a great osteoblastic activity. Supplementing the hypocaloric diet with soymilk would contribute to increase the osteoblastic activity, bony formation and density. Probably this would have due to the content of soy phitoestrogens that would allow a greater fixation of calcium contributed by the diet.

**92. ANTIBACTERIAL ACTIVITY OF EXTRACTS OBTAINED FROM *Fragaria ananassa* AGAINST *Xanthomonas axonopodis* pv. *citri***

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In this work we have evaluated the *in vitro* antibacterial activity against the *Xanthomonas axonopodis* pv. *citri* (*Xac*) of EtOH, MeOH, and aqueous extracts, prepared from: a) sprouts and b) expanded leaves from the cv. Camarosa. Leaves were dried following two processes: freeze-drying and oven at 30°C (with forced aeration). Dried material were then ground and extracted at room temperature during 48 hs with: i) EtOH (96%), ii) MeOH (80%) and iii) distilled water, filtered and dried again. Powder was resuspended in a EtOH/water solution (10%) and divided in two aliquots. One was kept at room temperature and the other conserved at 4°C until use. Antibacterial activity was evaluated over *Xac* by using the agar diffusion assay and by determining the minimum inhibitory concentration (MIC) in Camus medium. Both alcoholic extracts showed higher activity than the aqueous, being the ethanolic higher than the methanolic. Results also showed that extracts obtained from sprouts presented lower values of MIC (0.04%) and that the freeze-drying method yielded higher activity against the bacteria. We have not observed meaningful antibacterial differences between the extracts preserved at 4°C or at room temperature. The latter outcome provide a useful information for the conservation and in field manipulation of these natural products.

**93. EFFECT OF STRETCHING ON NITRIC OXIDE RELEASE IN AMPHIBIA VASCULAR TISSUE**

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**Introduction:** Nitric oxide (NO) regulates vascular tone. In our laboratory we demonstrated in mammalian arteries an increase in NO release induced by stretching (St). **Objectives:** To determine 1) Basal levels of NO in isolated aortae of the toad *Bufo arenarum* 2) A possible role of stretching. **Methods:** Abdominal aorta rings of toad (n=14) were mounted in an isolated organ system (pH 7.4, 24°C) and nitrite contents were measured by Griess method. St rings were placed in a bath of 6 ml of Ringer solution to a 1.5 g preload. Also non stretched rings (noSt) were used. **Results:** NO levels in noSt were 1320±549 and 375±55 pmol/mg of tissue, n=9 at 15 and 90 min respectively. a fall of values was observed at 30 min ( $\Delta=1003\pm524$ ,  $p<0.001$ ) remaining afterwards constant during all equilibration. St increased NO values to 5626±641 (15 min) and 4462±506 pmol/mg (90 min). **Conclusions:** Similarly to previous results, St in toad aorta produces NO release which is maintained along the time. Absence of differences in time curve indicates that St conditions an active basal release. At variance with mammalian a lack of action of vasoactive agonist them is observed here. This NO released by St may be the result of increased neuronal NO synthetase.

**94. MECHANISM OF VASCULAR SMOOTH MUSCLE TONE-INCREASE INDUCED BY ANGIOTENSIN II DURING NITRIC OXIDE SYNTHASE INHIBITION**

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In a previous work we found that Angiotensin II (Ang II) releases vasoconstrictor prostanoids in experimental conditions of endothelial dysfunction by blocking nitric oxide (NO) synthesis. The aim of this work was to study (in such conditions): A) the role of  $\text{PGH}_2/\text{TXA}_2$  receptor stimulation and the mechanism of action involved B) the effect of reactive oxygen species (ROS). **Method:** two cumulative dose-response curves (CDRC I and II) with 90 min washing intervals were performed. One group was treated with L-NAME (NO synthase inhibitor), SQ 29548 ( $\text{PGH}_2/\text{TXA}_2$  receptor blocker) or SQ plus L-NAME. Other group was treated with L-NAME plus Difeniliodinum (NADPH oxidase inhibitor) or Tempol (Superoxide dismutase mimetic). All drugs were added 30 min before the CDRC I and maintained during the whole experiment. The third group was treated with L-NAME plus SQ plus a  $\text{K}_{\text{ATP}}$  (glibenclamide) or  $\text{K}_{\text{Ca}}$  (TEA) blocker added during the 90 min washing interval. **Results:** SQ and DFI blocked Ang II-increase in the contractile response induced by L-NAME. TEA but not Glibenclamide was able to improve Ang II-intrinsic activity in presence of L-NAME plus SQ. Tempol showed per se effect. **Conclusions:** ROS generation by Ang II during the NO synthesis inhibition would increase  $\text{PGH}_2/\text{TXA}_2$  vasoconstrictor prostanoid release which mechanism of action involved  $\text{K}_{\text{Ca}}$  channels activation.

**95. HYPOGLYCEMIC ACTIVITY OF LEAVES AND STEM BARK EXTRACTS OF *Ailanthus excelsa* IN NORMAL AND DIABETIC RATS**

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*Ailanthus excelsa* Roxb. Is known as “tree of Heaven” in the Indian tradition. Different parts of this plant are widely used in traditional medicine for a variety of diseases. The present study was designed to investigate the oral hypoglycemic activity of leaves and stem bark extracts of *Ailanthus excelsa* in normoglycemic, transiently hyperglycemic and streptozotocin (STZ)-induced diabetic rats. The leaves (300g) and stem bark (150 g) were extracted with 70% methanol or hot distilled water, respectively, in a continuous extraction apparatus, with an extract yield of 32 g for leaves and 12.5 g for stem bark. To carry out the experiments, a 10% (w/v) dissolution was prepared for each extract. The main effects of oral administration of each extract in a dose of 8 ml/kg body weight were the following. No significant changes in blood glucose levels were found when normal glycemic rats received a single dose of each extract. In a glucose tolerance test, a single administration of leaves or stem bark extracts lowered the blood glucose in normal rats. The administration of each extract for 60 days produced a significant hypoglycemic effect on STZ-induced diabetic rats, with improved renal parameters. These results suggest a potential use in the diabetes treatment.

**96. TRANSFORMATION OF FOLLICULAR EPITHELIUM DURING THE PREVITELLOGENESIS IN THE *Ceratophrys cranwelli***

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In the follicles previtellogenic of *C. cranwelli* ovaries, the follicle cells-oocyte interactions are intense. The follicular epithelium shows two types of cells, one of them displays ultrastructural features indicative of synthetic activity, including large amounts of free ribosomes, glycogen, rough endoplasmic reticulum and particle-filled vesicles. Autoradiographic study with [<sup>3</sup>H]adenosine showed that they are involved in an intense synthesis of RNA. Ultrastructural observations, pulse-chase experiments and ultrastructural RNA localization with RNase-gold complexes showed that particles of ribonucleoprotein are transferred to the oocyte, which incorporates them into cortical vesicles. In the late previtellogenic follicles, these cells undergo regression showing the typical features of apoptosis: the shrinkage of the nucleus and cytoplasm, the condensation of chromatin, blebbings of the nuclear membrane and an extensive vacuolization of the cytoplasm. The nucleases are activated and consequently DNA fragmentation occurs, revealed by in situ nick translation technique (TUNEL). This nuclear material is engulfed by the oocyte and in the cortex appear apoptotic bodies among the cortical vesicles. The results indicated that during previtellogenesis, some follicular cells regress via apoptosis transferring to the oocyte RNA and DNA.

97.

**LIGHT CARBON FRACTION AS ECOLOGICAL INDICATOR IN SOYBEAN IN THE EAST OF TUCUMÁN, ARGENTINA**

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In Chacopampeana Plain, East of Tucumán, soybean culture is one of the main agricultural activities. The sustainable management of these productive systems requires the determination of indicators. The edaphological ones constitute an excellent set for evaluating agroecosystems. Within these, light carbon fraction LCF is a sensible variable to the processes of degradation of the soils. The objective of this paper is to determine the variation LCF in soybean under conservation system in relation to a value of reference constituted by the native forest. Two situations were selected: native forest and culture of soybean with direct sowing SD management in Burruyacu (26° 44' S and 64° 41' W). The LCF was determined by Walkley-Black method. The average values of LCF for both sites were: 2,48% in Native Forest and 1,68% for Soybean with a reduction of 32% in the latter. These values are lower than others founded in similar situation but under non conservation system. The results indicate that the studied variable can be included in the groups of recommendable Indicators of Sustainability for the analyzed situation. We suggest relate the obtained results to other edaphological variables in this situation of study, to conform a set of Indicators of reference.

98.

**BULK DENSITY AS SUSTAINABILITY INDICATOR IN CHAQUEÑA PLAIN**

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During the 70's, in Chacopampeana plain, monoculture systems were established causing degradation of soils. In order to change this situation conservation systems were adopted. The objective of this paper is to determine the variation of the bulk density (BD) in the soybean culture with direct sowing, in relation to an ecosystem of reference, the native forest. These experiences took place in Burruyacu (26° 44' S and 64° 41' W). The BD was determined by the method of the cylinder (depths: 0-10 cm and 10-20 cm). The average values of BD (gr/cm<sup>3</sup>) for both sites were: 1.08 (depth 0 - 10 cm) and of 0.97 (10-20 cm) in native forest whereas in soybean culture was 1.25 and 1.26 for the depths of 0-10 and 10-20 cm respectively. In soybean an increase of 15% in upper sample was founded related to the forest. To greater depth, the BD increased 30%, which suggest problems of compaction associated to the first years of culture with conventional management and at the present due to the direct sowing machinery. These results indicate that BD constitutes a sensible and practical edaphological indicator.

99.

**Lactobacillus casei INFLUENCES THE COAGULATION SYSTEM DURING AN INFLAMMATORY STATE IN MALNOURISHED MICE**Haro C<sup>1</sup>, Alvarez S<sup>1,2</sup>, Villena J<sup>1</sup>, Agüero G<sup>1\*</sup>.<sup>1</sup>Instituto de Bioquímica Aplicada. UNT. Balcarce 747. (4000) Tucumán. <sup>2</sup>CERELA. Chacabuco 145. (4000) Tucumán, Argentina. \*E-mail: gaguero@unt.edu.ar

This work studied the effect of *Lactobacillus casei* (Lc) on the coagulation system, during an inflammatory process, in a malnutrition model. Swiss-albino mice were malnourished (M) with protein free diet. Animals were re-nourished for 7d with balanced conventional diet, with (RN+Lc) or without (RN) Lc supplementation (10<sup>9</sup> UFC/day). Renourished groups, M controls and well-nourished mice (W) were infected intranasally with *Streptococcus pneumoniae* (10<sup>3</sup> UFC/mouse) in order to obtain an inflammatory state. During 10d post-infection (dpi) we performed: **a)** Platelets counts **b)** Activated partial thromboplastin time (APTT) **c)** Prothrombin time (PT) **d)** Fibrinogen **e)** Albumin (Ab) concentration and Lactate dehydrogenase activity (LDH) in bronchoalveolar lavages. Prolonged APTT was observed only in M. PT was markedly altered in M, while RN+Lc showed normal values all period studied. Levels of Ab and LDH were higher in M than in W, but were lower in RN+Lc group than W. **Conclusion:** re-nutrition supplemented with Lc allowed infected mice to maintain normal PT values, indicating an influence in the extrinsic mechanism of coagulation. Probably it is related with the lower damage observed in lungs.

100.

**THE QUALITY OF THE SOYBEAN: EFFECT OF THE PRESENCE OF GREEN SEEDS ON THE PHYSIOLOGICAL QUALITY**

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The quality of the soybean obtained in the north-west of Argentina, may be affected by different factors. The campaigns were characterized, in general, by the presence of higher temperatures than the normal ones, associated to a diminish or lack of raining. As a consequence, the presence of "green" seed. Different shades of greens were distinguished, from light green to dark green "green seed" and "green bottle".

In the 2003-04 campaign in the Seed Laboratory, experiences were done to establish the incidence of different levels of beans "green seed" in the physiological quality of the seed. That is why the variety A 6401 R6 was used. The "green seed" were selected and mixed with "normal yellow" seeds of the some variety in different proportions, 0, 10, 20, 30, 40, 50, 100 % of "green" seeds and cultivated in an experimental design totally randomized under controlled conditions with and without fungicide and tested by the standard test of germination. In this way, viability and vigor were determined by topographical tetrazolium test. For the cultivated area analyzed, the results indicated that the loss of germinative energy and germinative power, in sowing with fungicide as well as without fungicide was proportional to the increase of "green seeds". This loss is directly related to the determined value of dead seeds.

**101. CROSS REACTION AMONG ROTAVIRUS AND PICOBIRNAVIRUS IN FECAL SAMPLES OF INFANTILE DIARRHEA**

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Picobirnavirus is an RNA virus that is related with the production of diarrhea in immunocompromised patients. We detected in La Rioja a 3,2% of Picobirnavirus and a 19% of Rotavirus in ambulatory children with diarrhea. In none of the cases of Picobirnavirus, associated pathogens were found. The objective of this work is to study a possible cross reaction among Picobirnavirus and Rotavirus. Nine samples were assayed by polyacrylamide gel electrophoresis (PAGE) with phenol/ chloroform RNA extraction. Three samples were positive for Rotavirus, 3 were positive for Picobirnavirus and 3 were negative for both viruses. Positive samples for Picobirnavirus shown a characteristic migration pattern of 2 bands between 2,5 Kbp and 1,7 Kbp. Positive samples for Rotavirus evidenced a typical migration pattern of 11 segments. All of the samples were processed by Slidex Rota Kits 2, Biomerieux S.A. and sandwich Enzimoimmunoassay (ELISA IVD Inc. Rotavirus antigen detection). Both techniques detect group A Rotavirus using different monoclonal antibodies against VP6 protein. Reactivity of protein VP7 was studied by RT-PCR in 3 positive and 1 negative samples for Rotavirus and in 1 positive for Picobirnavirus. The results show that the 3 Rotavirus-positive samples by PAGE are positive by LATEX, ELISA and RT-PCR. From the 3 Picobirnavirus-positive samples by PAGE, 1 was positive by LATEX and the same sample, negative by ELISA and RT-PCR. This sample was retested. The 3 negative samples were negative by the three methods. These results suggest that Picobirnavirus could react with epitopes of Rotavirus VP6 although they belong to different families. It is important to continue these studies to elucidate the possible cross reaction among this two viruses.

**102. HIGH-SCHOOL LEARNING AND THE ADMISSION TO THE MEDICINE CAREER**

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The knowledge the aspiring student of Medicine might have in Biology will guide him to deeper notions about living organisms and will help as an articulating device in his future career as doctor. At another level of the analysis, we should give new meaning to the degree provided by the secondary school. The objective of this work is to analyze the relationship between high-school degree and performance in admission exams at university, particularly in the subject Biology, in incoming students of the Medicine career at UNT in 2004. The following variables were considered from 227 incomers: High-school degree, marks in the Biology admission test and the overall admission test score. The analysis was descriptive as well as of association. The majority of aspiring high-school graduates come from a "Natural Science" orientation and, as far as incomers are concerned, the percentage coming from this orientation is bigger. No relationship was established between their marks in Biology and in their final score in the admission test for Medicine and the different orientations students have had in high-school, which makes us think of the scarce efficiency of the "Natural Sciences" and the career choice related to them. Thus, we conclude there is not enough evidence to state that the scores achieved by applicants are significantly different according to their high-school degree.

**103. COMMERCIAL GELATIN USE FOR THE DEVELOPMENT OF A BIOSENSOR OF IMMOBILIZED UREASE**

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**Introduction:** Because enzymes are biological catalysts that promote the rate of reactions but themselves consumed, they may be used repeatedly for as long as they remain reactive. We developed an immobilized urease biosensor using commercial gelatin as entrapment media connected to a flow system.

**Methods:** Gelatin was dissolved in buffer solution (final concentration of 25 mg/ml). For immobilization process, a clear solution of gelatin was mixed with 0.400 mg/ml of urease and glutaraldehyde (1.2%, v/v) to lead a suitable polymerization. We compared the effects of different buffers solutions (phosphate, PBS, Tris-HCl, Tris-glycine) at different pH levels (6.8 to 7.9). In addition, the effects of other kinetic factors were studied (T° and flow injection velocity of substrate through the biosensor).

**Results:** For the construction of the biosensor, a cartridge of 1 ml of capacity (Mobicol) was used. Within the same one, 2 beads of immobilized urease (0.5 x 0.5 cm) were placed. Optimum pH was 7.2, T° 37°C, and the best flow velocity of substrate passage through the reactor was 0.035 ml/min. The enzyme retention degrees was of 46%.

**Conclusions:** The main attractive of using gelatin as mobilization media is that it is necessary only a few equipment and inexpensive reagents.

**104. PLAGUICIDE RESIDUES PROBLEMS IN VEGETAL PRODUCTS**

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Inadequate application of plaguicides for crop diseases and plague control, influences on the accumulation of toxic residues which surpass the maximum limits allowed. Excessive residues cause intoxication to the consumer, environmental problems, and the products are rejected in the local market and as export goods. In Tucumán, strawberry crop, as many others, is affected by these problems. The period between harvest and sale is short, the fruit is usually consumed without pre-washing, and in many cases graded harvest overlaps temporally with the application of plaguicides. Among the most usual diseases we find Botrytis cinerea, being necessary the application of fungicides. This work's objectives are: to elaborate a pattern of degradation of Pirimetanil; analyze the degradation of the fungicide in Tucumán's strawberry area. The experimental design consisted of complete aleatorized blocks, with 7 treatments and 4 repetitions. The fungicide was applied at minimum and maximum dosis recommended. Samples were taken 1, 3, 6, 11, 15 and 28 days from the application of the commercial product. Conclusions: we propose a pre-harvest period of 30 days from the application, regarding our weather conditions. Argentina's LMR is 0,05 mg/kg.

**105.**  
**EVALUATION OF *CANDIDA* SENSIBILITY AGAINST LEAVES FLUID EXTRACTS OF *SECHIUM EDULE* (JACQ.) SWARTZ**

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Previous reports have showed the increase of infection by *Candida parasilopsis*, *C. krusei*, *C. tropicalis* and *C. glabrata* in hospitalary pediatric patients. These infections are difficult to control because the isolated species show different resistance according to the country, institution or patient. In a previous work we reported the antibacterial and antifungal activity of *S. edule* ethanolic extracts. The purpose of this work was to evaluate the activity of these extracts against *Candida* strains isolated from patients of Hospital de Niños, Tucumán. The minimal fungal concentration (MFC) was determined using the serial agar macrodilution and broth microdilution methods. Then, the results were compared with the synthetic antifungal drug, clotrimazole. The MFC values obtained were 80 µg/ml for *C. parasilopsis* and *C. krusei* and 160 µg/ml for *C. glabrata*. However, the most resistant strain was *C. tropicalis* with MFC values of 880µg/ml.

Our results make *S. edule* ethanolic extracts, an ideal candidate for microbial control of *Candida* in the hospitalary sanitation.

**106.**  
**ANTIOXIDANT ACTIVITY OF A CHALCONE ISOLATED FROM AMAICHA DEL VALLE PROPOLIS, TUCUMAN**

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We have previously demonstrated that North Argentine propolis exhibit protective action against oxidative modification of lipid and reactive oxygen species scavenging activities (ROS). These results justify the use of propolis as a possible source of natural antioxidants. Recently, we isolated from Amaicha del Valle propolis an antibacterial compound that was identified as 2',4' dihydroxychalcone. The purpose of this work was to compare the antioxidant activities between propolis extract and the bioactive compound using the β-carotene-linoleic acid assay. The Amaicha del Valle propolis can hinder the extent of β-carotene-bleaching by neutralising the linoleate-free radical and other free radicals formed in the system. The IC50 (flavonoid concentration required for exerting the 50% of protective activity) was 0.4 µg/ml. The TLC chromatograms revealed with β-carotene-linoleate system, also confirm the antioxidant activity of the antibiotic compound. Its antioxidant activity is similar to quercetin, a powerful natural antioxidant (0.3 µg/ml).

Our results suggest a potential use of Amaicha del Valle propolis as phytopharmaceutical products and for food conservation.

**107.**  
**EVALUATION OF THE MUTAGENICITY OF AN ANTIMICROBIAL COMPOUND ISOLATED FROM *ZUCCAGNIA PUNCTATA* Cav. and AMAICHA DEL VALLE PROPOLIS**

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Propolis is a natural resinous hive product collected by honey bees from buds of different plants. Propolis was found to have many biological properties (antibacterial, antifungal, antioxidant, antiHIV, anti-inflammatory effects). In a previous work we demonstrated that the Amaicha del Valle propolis had similar chemical composition with *Zuccagnia punctata* Cav. From these extracts we isolated a bioactive compound which was identified as 2',4' dihydroxychalcone. The aim of this work was to evaluate mutagenicity of propolis and *Z. punctata* extracts and the antimicrobial compounds (2',4' dihydroxychalcone). The mutagenic effect was analyzed using *Salmonella typhimurium* TA98 and TA100 with and without S9 mixture. The toxicity towards *S. typhimurium* TA98 and TA100 was also assayed. The extracts and the antibiotic compound showed MR (mutagenicity relation) values below 2. These results indicate that the samples assayed not exhibit mutagenicity nor toxicity effects against *S. typhimurium* TA98 and TA100 with and without S9. Our results suggest that the extracts and the bioactive compound may be used in therapeutics formulations as antimicrobial.

**108.**  
**BIOACTIVITIES OF ACACIA SPECIES (*A. atramentaria*, *A. aroma* and *A. caven*) OF ARGENTINA**

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The genus *Acacia*, one of the important genera of the family *Fabaceae* includes approximately 1350 species and is abundant in Australia, Africa, India and America. The aim of the present work is to compare the antibacterial and antioxidant activity of alcoholics extracts of three species of the Subgenus *Acacia*, *A. aroma*, *A. atramentaria* and *A. caven*. The antimicrobial activity was tested against bacteria of clinical relevance as nosocomial pathogens (Hospital of Clinicas Nicolas Avellaneda) by diffusion in agar, broth microdilution and agar macrodilution methods. The antioxidant activity was evaluated with stable free radical (DPPH) and the β carotene-linoleate system. La toxicity was analyzed by *Artemia salina* test (LD50).

*Acacia aroma* exhibited the strongest inhibitory effect on growth of Gram negative and positive bacteria with CIM values of 125 to 250 µg/ml. All extracts showed antioxidant activity. The more active was *A. atramentaria* extract (0,38µg/ml). No toxicity was found (LD50 > 1000 ppm). Our results indicate the presence of compounds possessing high antioxidant and antibacterial activity in Argentine *Acacia* species. The marked activity of the extracts is partially attributed to its higher content of polyphenolic-compounds.

**109.****EFFECT OF ISOLATED COMPOUNDS FROM SUGAR-CANE LEAVES ON SEEDLING GROWTH OF *L. SATIVA***

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Allelopathy is the direct action (negative or positive) of a compound released from a plant on the growth and/or development of other plant. Recently in a bioassay-guided isolation we isolated vanillic (VA), syringic (SA) and ferulic acids (FA). The aim of this work was to evaluate the phytotoxic effect of these acids alone and in mixtures. Seeds of *L. sativa* were placed on plates of 24 wells, on Whatman N°1 paper discs. The phenolic acids alone, in binary mixtures and in a ternary mixture were assayed between 0.1 and 2.5 mM. Plates were placed on a growth chamber (25 ± 1°C with a 12 h photoperiod at 400 µmol/m<sup>2</sup>.s, PAR). FA, SA and VA inhibited the radicle elongation at concentrations beyond 0.1 mM. The concentrations needed to reduce 50% the radicle elongation (IC<sub>50</sub>) were 0.75±0.04 mM (VA), 2.25±0.08 mM (FA) and 2.50±0.07 mM (SA). The IC<sub>50</sub> of the mixtures were 0.90±0.12 mM (SA + VA), 1.20±0.10 mM (FA + VA), 2.50±0.20 mM (SA + FA) and 1.40±0.17 mM (FA + VA + SA). VA was the most inhibitory on radicle elongation of *L. sativa*. The phenolic acids were less phytotoxic assayed in mixtures than alone, suggesting an antagonistic interaction among them. More studies about the impact of this compounds on the agroecosystem are in progress.

**110.****METABOLISM OF *Leuconostoc mesenteroides* subsp. *mesenteroides* IN TOMATO PURÉE. ITS RELATION WITH THE INHIBITORY EFFECT ON NATURAL MICROFLORA EVOLUTION**

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In a previous work we demonstrated that when *Leuconostoc mesenteroides* subsp. *mesenteroides*, dominant specie isolated from surface of tomatoes, was inoculated in tomato purée inhibited the natural bacterial development during the first 48 h storage at 30°C. We investigated the metabolism of *Leuconostoc mesenteroides* subsp. *mesenteroides* Tsc in sterile tomato purée and its relation with the inhibitory effect. In sterile natural medium with yeast extract the growth response of Tsc strain was similar to that obtained in the non-sterile medium. The microorganism grew 2 logarithmic cycles and reached the maximum cell concentration at 48 h of incubation. At this time, 36 mmol/l of glucose and 12 mmol/l of fructose were utilized. Initial L-malic acid concentration decreased 45,5% and citric acid was not consumed. 24 and 44 mmol/l of D-lactic and acetic acids were produced, respectively, coinciding with the rapid pH decrease of the medium and 20 mmol/l of ethanol were detected. Similar results were determined in the non-sterile tomato purée inoculated with the Tsc strain. By contrasts the D-lactic and acetic acids and ethanol production was insignificant in the uninoculated medium. So, considering the metabolism of inoculated bacterium, its inhibitory effect on natural microflora growth is related to the high acids production within the first 48 h of storage at 30°C.

**111.****ANTIMUTAGENIC ACTIVITY OF *ZUCCAGNIA PUNCTATA* EXTRACTS**

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*Zuccagnia punctata* Cav. (Fabaceae) is a South American plant which are known under the common name of jarilla pispito, pus-pus and jarilla macho. In a previous work we reported that tincture of *Z. punctata* aerial parts had inhibitory effect against Gram (-) human pathogen bacteria and antioxidant activity. The present study was conducted to investigate antimutagenicity of *Z. punctata* leaves and stem extracts through Ames Test using *Salmonella typhimurium* TA98 y TA100 with and without metabolic activation. The antimutagenic activity was evaluated using different concentration of *Z. punctata* extract (0.25, 0.5, 2.5, 5, 10, 20, 40, 80 µg of phenolic compounds/plate). The mutagen used was 4-nitro-o-phenyldiamine (NPD). The alcoholic extracts showed inhibition of mutagenicity of NPD either in TA98 or in TA100 systems in the presence or in absence of S9 mix. The ID50 was 10 µg/plate. Our results demonstrated that *Z. punctata* leaves and stem extracts had compounds with antimutagenic activity. These findings are important for pharmacological applications in degenerative disease prevention such as cancer.

**112.****POISONING WITH THALLIUM: A PATHOLOGY IN EXTINCTION?**

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**Introduction:** Thallium is a heavy metal that is used in the manufacture of glass, alloys and electronics. Although prohibited since 1979 for pesticide use in our country, this substance is still producing several toxic syndromes. The aim of this study was to summarize the clinical features, differential diagnosis and treatment of patients intoxicated with thallium who consulted to our service between 1980 and 2004.

**Methods:** Eighty and nine patients whose main reason for consultation was alopecia were evaluated. For it, a clinical examination and dosage of thallium in urine was made. Once diagnosed, the patients poisoning with thallium were treated with potassium chloride and chelating agents.

**Results:** In addition to the alopecia, we found the following clinical manifestations: gastrointestinal symptoms (92%), polyneuropathy (88%), nail dystrophy (76%), headaches (34%) and renal damage (22%). Urine thallium median level was 0.91 mg/l.

**Conclusions:** A high index of suspicion is required to diagnose thallium poisoning at a early stage. Alopecia develops around two weeks after onset of symptoms. Wherefore, public health efforts should focus on greater restrictions on access to this toxic.

113.

**TRANSFERENCE OF KNOWLEDGE OF MINERAL NUTRITION IN POTATO (*Solanum tuberosum* L.), STRAWBERRY (*Fragaria x ananassa* Duch.) AND ONION (*Allium cepa* L.) BY MEANS OF THE USE OF COMPUTER SCIENCE WEB SITES**

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The reestablishment, maintenance and increase of the fertility of grounds are high-priority in agriculture (FAO). The objective of the work was to make the transference of advances of the mineral knowledge of nutrition and handling of nutrients in Potato, Strawberry and Onion, by means of the use, search and generation of computer science Web sites. It was articulated the scientific profits of the Project "Increase of the strawberry, potato and onion productivity through the study of its physiology and nutrition" of the chair of Horticulture of F.A.Z, U.N.T. with the search oriented towards interest Web sites related to this area of the knowledge. The use and creation of Web sites in FAZ, UNIVERSITY of TUCUMÁN, related to scientific advances in the mineral handling of this crops offer a valuable tool for the transference of knowledge to students, educational investigators and agriculturists, that they will reinforce its capacity in the decision making, promotion and sustainable intensification of the agriculture and in the quality food obtaining, you render high sharps in the time and healthful for the consumer.

114.

**ANTIBACTERIAL AND ANTIFUNGAL ACTIVITIES OF GOCHNATIA POLYMORPHA, G. HAUMANIANA AND G. GLUTINOSA**

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The *Gochnatia* species (tribe Mutisieae, family Asteraceae) described in the title were chemically investigated in our laboratory. Alkanols, oleanolic acid, coumarins and a kaurane - type diterpene were isolated from *G. polymorpha* while  $\alpha$  - amyryn together with oleanolic and ursolic acids were the major constituents of *G. haumaniana*. In turn, *G. glutinosa* yielded significant amounts of flavonoids and lactones derived from fornesane and homofornesane. Hexane, chloroform, butanol and methanol extracts from aerial parts of all the three *Gochnatia* species were prepared and assayed for antibacterial and antifungal activity using Diffusion (filter paper discs) and Dilution Methods.

**Results** a) *G. polymorpha*: the chloroform and butanol extracts were active against Gram (-) bacteria (bactericide activity). The butanol extract also showed antifungal activity. The hexane and methanol extracts were inactive; b) *G. haumaniana*: the chloroform extract displayed antibacterial activity against *Salmonella typhimurium* and *Klebsiella pneumoniae*; c) *G. glutinosa*: the methanol extract was active against *E. coli* and *Candida albicans*; the remaining extracts showed little or no activity.

115.

**DENSITY OF FREE FIXATIVES OF NITROGEN AND ITS VARIATION WITH THE TIME OF YEAR, IN PASTURAS OF THE CENTRAL PLAIN OF TUCUMÁN**

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The objective was to determine the density population of microorganisms fixatives free of atmospheric Nitrogen, in the system radicular of *Cynodon dactylon* (L.) Pers., *Panicum maximum* Jacquin and *Cenchrus ciliaris* (L.) Link., in pastures for feedings of the Plain Subhúmeda - Humid Central of Tucumán and to establish the magnitude of the annual variations between the spring-summer and autumn-winter epochs. The sampling of the material evaluated was made in June, in three places of the El Manantial, Dept. Lules, Tucumán, Argentina. The samples of root obtained, were washed for 20 minutes with running water and distilled water. By each gram of root macerated in fresh, dilutions-suspensions were performed 1/10; these were sown in specific cultivation for *Azotobacter sp.*, *Beijerinckia sp.* and *Azospirillum sp.* and put in stove to 29 °C. Decided to continuation the type and quantity of bacteria fixatives free of associated Nitrogen al system radicular of these grasses. The results, showed a significant reduction of the density poblational of these microorganisms evaluated, when was compared them with them obtained in a similar investigation, but for the spring-summer period. Great variation in the density is verified population of the fixatives free of N along the year, in response to the unlike conditions of temperature and humidity of the floor.

116.

**DETERMINATION OF NDF VALUES , IN WHOLE PLANT AND COBS OF TWO MAÍZE TYPES**

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Due to its energetic content and to its palatability the corn is widely used as food to the domestic animals. The determination of the Neutral Detergent Fiber (NDF) is particularly useful in the nutritional estimation of the forage. The aim of the present work was evaluate the content of NDF of a variety of Leales 25 Plus corn against a Tropical Hybrid Morgan 8480, in two sowing densities 57143 and 79.365 plants/ha to determine its behavior and potential use for silaje. The maize were cultivated 19/12/03 in The Manantial, Tucumán. The tasks carried out on the cultivation were application of atrazina, cipermetrina, cipermetrina + clorpirifos, fertilization with phosphate monoamonic, and urea. It was collected whole plant and cob samples in March 2004, in a stadium of " of milk line". The material was dried in stove at 65-70°C and grounded in laboratory windmill. and determined NDF with equipment ANKOM standardized for the Van Soest method. The results were Sample N° 1: Leales 25 Plus Density 79365 plants/ha whole plants % NDF: 67,02 cob % NDF cob: 34,48 Sample N°2 Morgan hybrid density 79365 plants/ha: whole plants % NDF: 69,27 cob % NDF: 35,93 Sample N°3 Morgan hybrid density 57192 plants/ha whole plants % NDF: 67,36 cob % NDF: 41,29 Sample N°4 Leales 25 Plus density 57142 plants/ha whole plants % NDF: : 63,13 cob % NDF: 34,29. According to the results we can conclude that the values obtained from whole plants NDF are high.

**117. PREDICTABILITY OF ACADEMIC PERFORMANCE FROM THE CHEMISTRY EXAM IN THE MEDICINE ADMISSION TEST**

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**Introduction:** The challenge of every admission system is to be able to choose students who are most likely to succeed during the course of their career. One of the parameters for this is the academic performance of applicants in their admission exams. This study was centered in one of the subjects -Chemistry- by comparing the exam results of the admission Chemistry test and the corresponding performance in their 1<sup>st</sup> Biochemistry quarterly test. **Objectives:** To determine any possible connection between: the Chemistry mark in their admission test and the 1<sup>st</sup> Biochemistry quarterly test of students admitted to the Medicine career at UNT in the years 2003 and 2004. We studied applicants from 2003 (n=317) and 2004 (n=229). The analysis was descriptive and of association. **Results:** The average mark at admission in 2003 was 16.7 with an  $IC_{95\%}=(16.4;16.9)$ , and in 2004 it was 15.6 with an  $IC_{95\%}=(15.2;15.9)$ , with significant differences between the tests. We found that for 2003 as well as 2004, there is a lineal positive correlation between the mark of their 1<sup>st</sup> Biochemistry quarterly test and their admission mark. So, in general terms, the Chemistry admission mark can be seen as a parameter for future success in the Biochemistry course.

**118. WHAT THIRD COURSE MEDICAL STUDENTS FEEL IN THE PRESENCE OF PATIENT?**

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The medical practice is direct or indirectly connected to patients. Considering the great importance of an adequate medical-patient communication, it results convenient to contribute to the development of a good vinculum during medical student formation. In this context it is important to analyse carefully the student feelings when they take the first contact with patients.

The aim of the present study is to know the feelings that appears in third year Medical School students, at the National University of Tucumán, when they take the first contact with patients and if reiterated contacts modifies these sentiments. Anonymous surveys, designed for this purpose with structured and opened questions, were distributed within 79 students.

The results showed that "fear" appears in 41% of the students, "responsibility" in 28% of them, and "insecurity" in 24%. On the other hand the 19% expressed "happiness", while 11% "compassion for the patient".

Within student responders, 57% expressed that reiterated contacts with patients modified what they felt in the first approach. After reiterated contacts they no longer express "fear", 26% consigns "security" and 44% "responsibility". All students valued the importance of patient contact for their medical formation.

**119. BIOCHEMISTRY UTILITY FOR MEDICAL PRACTICE: MEDICAL STUDENTS OPINION**

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Frequently, students have difficulty to find the utility of basic subjects contents for the professional practice. In the specific case of medical career, the professional practice is near the patient, where the Biochemical knowledge with its abstract study object, does not seem to be related to the specific proposal of professional education. The purpose of this work is to analyze the correlation between the student opinions about Biochemical utility for the practice and the course they are in.

First, third and fifth course students of the Medical School at the National University of Tucumán, were asked for their opinion about the utility grade attributed to Biochemistry for their future professional practice. The surveys, designed for this purpose, included structured questions about the Biochemistry utility for general and specialist physicians. The "very useful" option for general medical was chosen by 34%, 23% and 15% of the first, third and fifth course students respectively. As for the same opinion for specialist, was chosen by 29%, 21% and 20% of the first, third and fifth course students respectively. It would expect that the advance in the career would bring opportunities to find the Biochemical usefulness for the medical practice, however the results showed the contrary. It may be opportune to reflect about their causes.

**120. PARCIAL RELIEF OF THE ARGENTINIAN NORTHWEST PLANTS USED IN FOLK MEDICINE**

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Argentinian northwest has different phytogeographic regions with an abundant flora. People use plants from these areas as medicinal. They prepare infusions, decoctions or tinctures from the whole plants or from their parts, according to popular uses, sometimes as pill or capsules for internal use, sometimes as poultices or unguents for external application.

The aim of this work is the compilation, botanical classification, ethnobotanical uses and pharmacologic applications of plants from the northwest of Argentina.

We show the results of 47 vegetal studied species. Among these, there are 44 native and 3 cosmopolitan species. Some of them are used individually and another ones are used as plant mix. This relief contributes to the knowledge of the species used as medicinal in the argentinian northwest.

**121. ANTIINFLAMMATORY, ANTYPIRETTIC AND ANALGESIC PROPERTIES OF PHRYGILANTHUS ACUTIFOLIUS FLOWERS**

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The purpose of this paper was to evaluate the antiinflammatory, antipyretic and analgesic properties of the aqueous extract of *Phrygilanthus acutiloios* flowers, administered orally. The aqueous extract (100 mg/kg) produced inhibition of edema of 100% and generated a drop in the temperature, beginning at 1.5h of its administration. The tail immersion test revealed that the aqueous extract increased significantly the time of reaction to heat. The assays with acetic acid showed the drop of the number of abdominal contractions and the formalin injected in the leg have lowered the sensitivity of this area to pain. These results would point out that the extract has both central and peripheral analgesic properties. The formalin test made possible to distinguish two phases in the nociceptive response: a) the early one, at central nervous system level and b) the late one, due to the release of serotonin, histamine, bradykinin, prostaglandins, etc. The mentioned extract suppress both phases of the pain. This dual hypothesis is also suggested for the results obtained with the acid acetic and thermal stimulus tests.

**122. RENUTRITION WITH HUMAN MILK: EFFECTS ON HEMOPOIESIS AND PHAGOCYTTIC CELLS**

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We demonstrated that goat milk improved bactericide activity in malnourished mice. The aim was to study the effects of human milk (HM) on hemopoiesis and innate immune response in malnourished mice, in a comparative way with goat and cow milk (GM and CM). Different groups of malnourished mice were fed with HM, GM and CM for 7 and 14d. We determined: 1) Percentage of body weight (BW) increase, thymus weight (TW), haematological parameters and transferrin 2) Cytomorphological and T maturation marker by cytochemical studies ( $\beta$ -Glucuronidase and  $\alpha$ -naphthyl butyrate esterase positive cells) in bone marrow (BM) 3) Peroxidase reaction (Px) in blood leucocytes neutrophils and Nitro Blue of Tetrazolium test (NBT) in peritoneal macrophages to study phagocytic activity. **Results** HM normalized the thymus weight at 7d, and CM and GM at 14d. HM was the best supplement to increase the blood leucocytes number and percentage of cells from mitotic pool in BM. The Px activity and NBT test showed improvement with the different kind of milks. **Conclusion.** The HM was more efficient to improve the immune system. At 7d thymus reach the normal weight, whereas this effect, was obtained at 14d with GM and CM. Px activity in peripheral blood leucocytes neutrophils, showed a tendency to be higher when the mice received HM than CM or GM.

**123. RESPONSE OF NEW ALFALFA (*MEDICAGO SATIVA*) POPULATIONS TO INOCULATION WITH *RHIZOBIUM***

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In the agroecosystems the plant-soil relation goes through either favorable or unfavorable conditions. Either situation will determine the levels of soil carbon, minerals, and oxygen which will have an effect on the microflora especially on nitrogen fixers, the latter being biological indicators of fertility.

The response of 24 new alfalfa populations to inoculation with *Rhizobium* was determined in this work.

Only 4 populations showed highly significant differences for number of nodules per plant when comparing between inoculated and non inoculated control ( $P < 0.0001$ ). The Duncan test revealed significant differences for number of nodules ranging between 50 and 30 nodules. Values for root and aerial part of the plant fresh weights ranged between 70% and 19% and 90% and 60%, respectively.

The differences in the number of nodules among the treatments should be interpreted as a genetic interaction with the inoculant. This effect should be studied thoroughly in order to improve the plant-soil relation with the subsequent increase in productivity.

**124. HISTOLOGY OF TESTICLE AND EPIDIDIMO DE *TROPIDURUS ETHERIDGEI* (SQUAMATA: TROPIDURIDAE) IN RELATION TO THE RECURRENT REPRODUCTIVE ACTIVITY**

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To weigh that in the saurian ones the basic reproductive pattern and the time of reproductive activity of a species with high range of geographical distribution spread to be preservative and constant, reports exist on geographical variation in the reproductive cycles of males and females of the same species. The objective of the present work is to compare if the variations in the cycle observed in the field coincide or not with the changes observed in the testicles and epididimos of *Tropidurus etheridgei*. Is carried out it a study histológico of the structure of the gónada and of the epididimo of this species in connection with the reproductive cycle.

The results show that the structure histológica of the gónadas varies through its seasonal reproductive cycle, using stops its identification the classification in stadiums according to Lich (1967). During the period of maximum reproductive activity, the height of the spermatoc epithelium of the gónada is increased progressively during the espermatogénesis and it declines abruptly when it happens the regression testicular among the months of January-March. In the region epididimal an atrophy-hypertrophy cycle exists, related with the activity secretora and the presence or absence of sperms in its ducts, indicating the moment of the espermiación.

**125. DETERMINATION OF THE NEUROSECRETORIES CENTERS IN *PONTOSCOLEX CORETHRURUS* (OLIGOCHAETA; GLOSSOSCOLECIDAE)**

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In the terrestrial Oligochaeta they are manifested a series of processes among those that are included the sexual maturity, regeneration, diapausa, etc., whose functionality depends direct and parallelly of the activity of neurosecretories centers located in cerebral and subesophagic ganglion. (Lattaud and Marcel, 1983, 1985; Salzet, 2001). The objective of the present work is to determine in *Pontoscolex corethrurus* the localization and conformation of the neurosecretories centers in the cerebral and subesophagic ganglion. The material was prepared for the application of histology techniques for optic microscopy and processed with technical of special tint to detect neurosecretion, as Aldehyde Fucsina (Gabe, 1953). In the system nervous of *Pontoscolex corethrurus* the neurosecretories cells are characterized to occupy areas defined in these cerebral and the subesophagic ganglion. In the first ones it was determined that this area is located in the region dorso-medial and lateral extending toward the postero-ventral region of the ganglion and in the subesopagic with a latero-ventral location to half-ventral in antero-later sense. The disposition of these areas coincides with that reported by other authors (Roldán *et al.*, 1992) for species of Megascolecoid and Lumbricid in the carried out comparative analyses.

**126. DIABETES IN ALVEOLAR BONE MODELING AND REMODELING. A HISTOMORPHOMETRIC PRELIMINARY STUDY**

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The aim of this work was to study the effect of the diabetes in bone formation and reabsorption in the modeling and remodeling walls of alveolar bone. Twelve Wistar rats weighing 250g were used. Eight animals were rendered diabetic by an intraperitoneal injection of 50mg/Kg of streptozotocin. Diabetes was confirmed by a blood glucose concentration greater than 300mg/dl. Four remaining animals were injected with buffer citrate and served as controls. All rats were sacrificed at 15 days of the injection, the lower jaws were dissected, and processed for embedded in paraffin. Mesiodistals sections of the first lower molar were made and stained with HE. The following histomorphometrics parameters were studied: bone reabsorption and bone formation, considering as a percentages of the total area of the walls of remodeling and modeling respectively of the interradicular bone. Bone formation in the remodeling wall of the diabetic rats were 14±1% while in the modeling wall was 20±7% respect 23±10% and 39±11% respectively observed in the controls. Conclusions: the results indicated that in this experimental time alterations were not observed in the mechanisms of bone remodeling in the alveolar bone.

*Subsidized by CIUNT.*

**127. BONE LOSS AND BONE VOLUME IN ALVEOLAR BONE IN DIABETIC RATS. A PRELIMINARY HISTOMORPHOMETRIC EVALUATION**

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The aim of this work was to examine the effect of diabetes on bone loss and bone volume of alveolar bone of Wistar rats. Twelve Wistar rats weighing 250g were used. Eight animals were rendered diabetic by an intraperitoneal injection of 50mg/Kg of streptozotocin. Diabetes was confirmed by a blood glucose concentration greater than 300mg/dl. Four remaining animals were injected with buffer citrate and served as controls. All rats were sacrificed at 15 days of the injection. The lower jaws were dissected, and processed for embedded in paraffin. Mesiodistals sections of the first lower molar were made and stained with H-E. The following histomorphometric parameters were studied: 1) Bone loss: considered as the percentage that occupies the periodontal space between the roots furcación and the alveolar crest of the interradicular bone. 2). Bone volume in the cervical third of the interradicular bone estimated from  $Vt/VOT$  ( $Vt$ : trabecular volume and  $VOT$ : Total Bone Volume). Bone loss was 5.95% and 10.5% in experimental and control respectively. Bone volume was of 0.43 in diabetic and control rats. The results indicated that, in this experimental time alterations were not observed in the parameters studied between the experimental and controls.

**128. STUDY OF PHYSICAL PROPERTIES OF RANITIDINA AND METRONIDAZOL TABLETS**

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It's been achieved intensive studies with several drugs about the time storage effect and stress caused by the temperature on physical properties of tablets. This work is to study the Ranitidina and Metronidazol physical changes when they are stored at different temperatures during six months. Physical changes in Ranitidina and Metronidazol tablets were studied when they are put into 60°C and 10% relative moisture and 40°C and 14% relative moisture. The effect of temperature on the tablets kept into stress conditions were tasted within the three first months: Changes were found in some organoleptic characters of the pharmaceutical forms as colour and smell. The change of colour in Ranitidina was more evident. This effect must be due to the photolability of the drug. Metronidazol showed a loss of 10% by friability during the second week of storage in both temperatures and reduced resistance to breaking up. Hardness reduced from 9,6 Kg strength to 7,7 Kg strength to 60°C and 6,4 Kg strength to 40°C. These changes were not seen in Ranitidina. Dissolution tests for both drugs showed a rise in solubility. The stress conditions for the both tablets were put show changes in their physical properties, mainly in friability, hardness, and dissolution. Changes were also seen into the organoleptic point of view.

**129.**  
**NON-SURGICAL IMMEDIATE LENGTHENING.**  
**PRELIMINARY CLINICAL STUDY**

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The clinical utilization of the dental root when having lost the crown due to caries or traumatism generates, nowadays a resolved inconvenient by the conventional resective surgery and orthodontia. The goal of this communication was to carry out a non invasive technique that allowed us the preservation of the roots supporting tissue for their subsequent utilization as an anchor element of a final restoration. Two patients with a radicular rest were chosen. The technique consisted on the displacement by roots luxation and its subsequent ferulization with wirw in the neighbour teeth in their new position, avoiding the loss of the proximal bone, the deterioration of the periodontal ligament filers and the occlusal interferences. After 1, 3 and 6 years, the clinical and radiographical situation showed us that the roots remains in situ, without mobility and with radiographical images that indicate a biological restoration. Conclusions: The obtained results with this unconventional technique highlight the importance of the supporting tissue's preservation of the dental pieces treated since they allow the biological regeneration of the periodontal tissue, avoid the loos of osseum supporting tissue and also endorse their application with preventive and aesthetic criterion.

*Key word: Clinical lenghtenind.*

**130.**  
**SUMMARY EFFECT OF THE WORM HUMUS IN SOIL**  
**MICROBIAL ACTIVITY**

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The purpose of the present paper is to determine how the microbial activity is disturbed for the aggregate of worm humus and its effect throughout time.

Different treatment soil samples were taken from el manantial, tucumán argentina, and were added with worm humus at different proportions and at different times of the year.

Biological activity was measurement using fda technical and organic matter (mo) using walkey- black modified.

No significant differences were found in microbial activity between test and treatments at the short time. However, the contents of organic matter (mo) were very significant.

It is important to declare that the precipitations during the assay were too lower, in order of 1.5 mm, and this fact is an adverse factor in the microbial development.

**131.**  
**POSITIVE EFFECTS OF ALUMINUM PHOSPHIDE FUMIGATION (PHOSTOXIN DEGESCH) OVER GERMINATION PROCESS IN ALUBIA BEAN (*PHASEOLUS VULGARIS* (L)**

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The purpose of the present paper is to show the favorable effects of an aluminum phosphide fumigation over the germination process in alubia bean

Samples were taken from a commercial growth of salta argentina, and fumigated with phostoxin degesch in a 4 tablets/tons dosage during 10 days of time exposure.

High significant difference were found in the germination process, and the hipocotile extend between test and treatments.

Therefore a treatment fumigation with 4 tablets (3gr each one) per tons of aluminum phosphide (phostoxin degesch) over alubia seed beans, determines a rapid establishment of the shoot in a shorter time

**132.**  
**THE BIRD COMMUNITIES OF LAS YUNGAS COUNTRY,**  
**TUCUMÁN**

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The Las Yungas Country is characterized by: its proximity to a Reserve, its mainly native forest and because it includes a variety of environments: a Golf field, a wetland, gardens with undergrowth and edges with secondary forest and abandoned crops. Our goals were to study the birds in relation to this type of urbanization and to determine the richness of species and its abundance. The Las Yungas Country is located in Yerba Buena, Tucumán. Samples were conducted using the line transect method (of 1 km by 40 m). The Relative Importance and Abundance Indexes were calculated. Since 2003 until 2004, 76 censuses were made, 82 species and 5067 individuals were identified. Among this species we detected: resident species that breed in this place such as *Vanellus chilensis*, *Annumbius annumbi*, *Athene cunicularia*, *Pitangus sulphuratus* and *Furnarius rufus*. Migratory species were identified, too. These results would indicate the importance of this type of urbanization with native trees. It could be used as a referent for the future planning of urbanizations and the reconstruction of those which already exist. Further, these places have a significant value for the richness of species of birds and the "life quality".

133.

**THE BIRD COMMUNITIES OF LA ANGOSTURA RESERVOIR, TAFÍ DEL VALLE, TUCUMÁN**

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The construction of reservoirs modifies in many different ways the preexisting ecosystems. We studied the bird community for a year (2000-2001), and we detected the resident and migratory species. La Angostura reservoir is located at 26°55'S 65°41'W. We used the embarked transect method. During each sample (with a total of 28 hours sampled), we recorded the identity and abundance of each species observed, noting the activity and the kind of used habitat. For data analysis we calculated the Relative Importance and Abundance Indexes. 22 species and 4399 individuals were registered. A group of common and abundant species were identified: *Anas georgica*, *Fulica leucoptera*, *Phalacrocorax olivaceus*, *Himantopus melanurus*, *Anas flavirostris*, *Larus serranus*, *Chloephaga melanoptera*, *Vanellus chilensis*. Among this species, *Anas georgica*, *Fulica leucoptera*, and *Anas flavirostris* breed in the reservoir and *Chloephaga melanoptera* and *Larus serranus* breed in greater height wetlands. Also, we detect hemispheric migratory species such as *Tringa flavipes* and *Calidris bairdii*. These characteristics make this reservoir a significant place for birdwatching and educational activities.

134.

**NOTES ON THE BEHAVIOR AND ABUNDANCE OF TWO TORRENT BIRDS: MORGANETTA ARMATA AND CINCLUS SCHULZI IN LOS SOSA RIVER, TUCUMÁN, ARGENTINA**

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The mountain rivers dynamic and their inaccessibility have made difficult to carry out greater studies on their fauna. We studied *Merganetta armata* and *Cinclus schulzi*, considered vulnerable species. Our goals were to: describe general aspects of their behaviour, contribute about vocalizations data and analyze their abundance and frequency. The study was carried out between 1100-1200 m elevation levels at Los Sosa River. We used the line transect method (2 ha), since April until August of 2004. *Merganetta armata*'s behaviour; and the family group, the territorial behaviour and a new vocalization of *Cinclus schulzi*, were registered. *M. armata*'s abundance was 7.5 individuals, with a frequency of 57.5%, whereas *C. schulzi*'s abundance was 7.4 individuals with a frequency of 61.3%. This work extends the information about the biology of these species and reform new hypothesis about their behaviour, that could be related to territorial defence and agonistic behaviour between males and between females. These results are the baseline information for further studies and for conservation management plans.

135.

**EXTRACTION OF PHENOLIC COMPOUNDS FROM APPLE SKIN**

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Phenolic compounds possess several biological properties. Theirs antiinflammatory, antimicrobial and antioxidant activities are well known. Apples are one of the fruits most consumed; their beneficial properties for the human health are related to the high content of phenolic compounds. In this work we analyze different methods of extraction of phenolic compounds present in apple skin of two varieties: *Royal Gala* and *Granny Smith* from Tafí del Valle, Argentina. Extraction Methods: A, acetone: water: acetic acid (90:9.5:0.5); B, ethyl acetate: methanol: water (60:30:10) and C, ethanol: water (95:5). In the different skin apples extracts we determined total phenolics, flavonoids and nonflavonoids compounds. The variety *Granny Smith* contains 49, 61 and 14% more total polyphenols than the variety *Royal Gala* in the extracts A, B and C, respectively. With respect to flavonoids the variety *Granny Smith* contains 51, 64 and 20% more than the variety *Royal Gala* in the extracts A, B and C, respectively. In all extracts, the content of nonflavonoids was small. In the variety *Granny Smith* 2 to 4% and in the *Royal Gala* 6 to 11% of the total phenolic content was determined. From the results we propose as the most effective method for phenolic compounds extraction from apple skin: acetone: water: acetic acid.

136.

**VARYING DEGREES OF ORGÁNIC FERTILIZACIÓN: LETTUCE CROP RESPONSE**

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A trial was carried out on two-year tilled soil in order to assess the response of lettuce crops to organic fertilization. Thus, 0.40cm-wide rows were plowed 1.20m away from each other. Black Plastic was used as mulching over the soil. Each plot had fifteen plants and the following treatments were applied: Control ( $T_0$ ), 100cc worm humus ( $T_1$ ), and 200cc worm humus ( $T_2$ ). Once the rows were ready, the Four Seasons Wonder variety was planted. The plantlets were obtained in trays with 72 cells and a mixture of three parts of black earth and one part of worm humus was used as substrate. In addition, the parameters assessed were as follows: g/m<sup>2</sup>, individual plant weight, number of plants/m, dry matter for each treatment, and aboveground part/root ratio. The ANOVA analysis found significant differences between the control treatment and the fertilization treatments. However, no differences were noted between the fertilization doses applied nor among plants in the different treatments used. Aboveground part/root ratio and percentage of dry matter are both independent of fertilization levels. Therefore, fertilization determines yield increase related to plant size increase in lettuce organic cropping.

**137.**  
**IMPACT OF FERTILIZATION AND TYPES OF SOIL MULCHING ON LETTUCE ORGANIC CROPPING**

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A trial was carried out to assess the impact of organic fertilization and different kinds of soil coverage on two varieties of organic lettuce. Thus, 0.40cm-wide rows were plowed 1.20m away from each other. The rows were covered with: T1 (Control with no coverage), T2 (straw and newspaper), and T3 (Black Plastic). Every plot unit had 24 plants 0.30cm away. The varieties planted were Batavia Blanca (V1) and Maravilla de Las Cuatro Estaciones (V2). The control rows T1 were cleared twice whereas T2 (straw and newspaper), and T3 (Black Plastic) were left untouched. The parameters assessed were: g/plot, number of plants and average plant weight. All the treatments in the trial were harvested simultaneously. The ANOVA analysis found highly significant differences for the g/plot and average plant weight variables. The best results were noted for T3. However, no differences were noted between the varieties. No significant plant losses were noted. At the end of the cycle, *Bremia lactucae* was identified in V1 T3 lower leaves. Yield differences were also significant for the fertilized. Organic fertilization influences average plant weight. However, the impact of fertilization is associated with the type of coverage that limits the presence of weeds.

**138.**  
**DETERMINATION OF BIOLOGICAL DIVERSITY INDEXES OF THE PRESENT WEEDS IN A SUGARCANE CROP MANAGED WITH HARVEST RESIDUES**

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Plant residues have a negative effect on the weed development owing to the light absence. The objective of this work was to determine the biological diversity indexes of the present weeds in a sugarcane crop managed with harvest residues. The treatments were: T<sub>0</sub>: with burnt harvest residues; T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>: with 10, 20 and 30 t. ha<sup>-1</sup> of harvest residues respectively and T<sub>4</sub>: dirty control completely weedy. The following indexes were determined: Shannon 's richness; Pielou 's Equity; Simpson and Bulla 's one. A principal coordinate analysis was realized. The result of the richness ' index was of 41 for T<sub>4</sub>; 28 for T<sub>0</sub>; 24 for T<sub>1</sub>; 11 for T<sub>2</sub> and 10 for T<sub>3</sub>. Shannon ' s; Pielou 's; Simpson Bulla 's Indexes indicated that there is a great diversity in all treatments. From principal coordinate analysis resulted that the treatments T<sub>2</sub> and T<sub>3</sub> were those of the most similarity following them the T<sub>1</sub> and T<sub>0</sub> ones, being T<sub>4</sub> that of the major dissimilarity. The knowledge of the modifications of the flora composition acquires special importance in relation to the control measure application and the prediction of the apparition of potential weeds.

**139.**  
***Eupatorium laevigatum* Lam. (Asteraceae) WEED SURVIVAL IN FRONT OF DIFFERENT SUGARCANE MANAGEMENT CONDITIONS**

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*E. laevigatum* is a perennial weed affecting several year sugarcane ratoons or with little management. The objective of this work was to study demographic survival characteristics in front of 3 sugarcane management situations. It was worked in 3 Tucumán, (Argentina) localities and 3 different culture systems. Areas had 30 furrows of 200 m long in each locality. Plots had 20 m long for 6 furrows of wide and 5 replications in each area. It was worked with an only treatment, the cultivar TUC 77-42 and subtreatments were Los Bulacios (1), El Bracho (2), Santa Rosa de Leales (3) localities. Management systems were: In 1, Conventional; 3 mechanical cultures; 1 chemical without watering with fertilization. In 2, with mulching without watering with manual fertilization. In 3, mechanical without fertilization without watering. Results: In 1 there was a population of 330,84 pl.ha<sup>-1</sup> and losses of 4,80 tn.ha<sup>-1</sup> (6,27% on control); sugar losses were of 7,78%. In 2, population was of 2602,57 pl.ha<sup>-1</sup>, cane losses of 6,52 tn.ha<sup>-1</sup> (10,05% on control); sugar losses of 12,44%. In 3 survival plants were 3561,78 pl.ha<sup>-1</sup> which cause cane losses of 8,61 tn.ha<sup>-1</sup> (14,10% on control), sugar losses of 17,40%. Some management situations disadjusted population weed equilibrium leading to a major survival and causing serious losses of cane as well as sugar.

**140.**  
***Flaveria bidentis* (L.) O.Kuntze (Asteraceae) ASSOCIATIONS WITH OTHER WEEDS IN INTERFERENCE WITH SUGARCANE CROP**

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*F. bidentis* is a Class II sugarcane crop weed; it has not great aggressiveness and its apparition is part of a stepped invasion. The objective of this work was to determine the associated weed group in interference with sugarcane crop. Essays were made in 5 localities of Tucumán, (Argentina), from September 2002 to September 2004. A weed methodology of Chaila (1986) was used. Three sugarcane fields by locality were analyzed with 5 determinations into the infested crop and 5 outside it. Results: *F. bidentis* has Direct (1) and Indirect (2) association types with different orders from first to fifth. 1,a) Of 1<sup>st</sup> order with *Wedelia glauca*, *Senna occidentalis*, *Tithonia tubaeformis*, *Tagetes minuta*. 1,b) Of 2<sup>nd</sup> with *Solanum americanum*, *Amaranthus spinosus*, *Sphaeralcea bonariensis* 1,c) Of 3<sup>rd</sup> with *Eupatorium laevigatum*, *Cestrum parqui*, *Talinum paniculatum*, *Cissus palmata* *Verbesina encelioides*. 2,a) Of 1<sup>st</sup> with *Clematis montevidensis*, *Cayaponia podantha*, *Cucurbitella asperatta*, *Mikania micrantha*. 2,b) Of 2<sup>nd</sup> with *Bidens subalternans*, *Parthenium hysteroporus*, *Sida rombifolia*. 2,c) Of 3<sup>rd</sup> with *Acanthospermum hispidum*, *Malvastrum coromandelianum*, *Ambrosia tenuifolia*. 2,d) Of 4<sup>th</sup> with *Ipomoea nil*, *Muehlenbeckia sagittifolia*. 2,e) Of 5<sup>th</sup> with *Canna coccinea*, *Salpichroa organifolia*, *Solanum granulolum-leprosum*.

**141. DOMINANCE STRUCTURAL INDEX FOR CLIMBING WEED SPECIES IN THE SUGARCANE CROP MANAGED WITH HARVEST RESIDUES**

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Climbing species that are in the «mulching» in competence with sugarcane crop have a structural index of predominance which is very variable according to the density, to the length reached by their guides and the biomass got at the end of each cycle.

This work has as objective to determine the Dominance structural index of *Mikania micrantha* Kunth; *Ipomoea purpurea* (L.) Roth; *Sicyos polyacanthus* Cogn.; *Cucurbitella asperata* (Hook. et Arn.) Walp. and *Cissampelos pareira* Linn.

For the determination of the Structural index of predominance the number of plants, length and dry phytomass were used. Density was also taking into account.

The major values respect to the number (ISn) and the biomass (ISbs) corresponded to *S. polyacanthus*, following *M. micrantha*, *C. asperata*, *I. purpurea* and at the last *C. pareira* because of its minor size and its scarce presence inside of the community. It is hoped to interpret the behavior of these species for designing the adequate control strategies.

**142. *Flaveria bidentis* (L.) O.Kuntze (Asteraceae) INVASION CAPACITY MEASUREMENT IN SUGARCANE Cv LCP 85-384 FOR EL BRACHO, EL NARANJITO AND LA TALA LOCALITIES (TUCUMAN, ARGENTINA)**

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*F. bidentis* invades sugarcane crops because of other weed absence or favorable environmental factors. The objective of this work was to determine invasion possibilities in El Bracho (1), El Naranjito (2), La Tala (3) Tucumán localities on cultivar LCP 85-384. Twenty meter long plots and 7 replications were made. Seeds per plot, density, viability and germinative power were measured. In 1: There were 53.317,14 s.pl<sup>-1</sup>, density of 1,86 pl.m<sup>-2</sup>, viability of 86,57% and germinative power of 79,71%; real reproductive capacity of 14854,37 plants; infestation potential of 8478,29 m<sup>2</sup>.pl<sup>-1</sup>. In 2: There were 103455,14 s.pl<sup>-1</sup>; density of 0,46 pl.m<sup>-2</sup>, viability of 88,28%, germinative power of 82,14%; real reproductive capacity of 29958,58. In 3) There were 74111,00 s.pl<sup>-1</sup>, density of 0,86 pl.m<sup>-2</sup>, viability of 86,14%, germinative power of 87,28%; real reproductive capacity of 22414,14, infestation potential of 25907,36 m<sup>2</sup>.pl<sup>-1</sup>. There are 2 invasion levels: 1°) great initial seed production, low density, high viability, germinative power and infestation potential. 2°) minor seed production, intermediate or high density, viabilidad, high germinative power, low or intermediate infestation potential.

**143. *Flaveria bidentis* (L.) O. Kuntze (Asteraceae) DEMOGRAPHIC STRATEGIES IN SUGARCANE FOR THREE EASTERN LOCALITIES OF TUCUMAN PROVINCE (ARGENTINA)**

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There are not antecedents of *Flaveria bidentis* (L.) O. Kuntze (Asteraceae) demographic studies. The objective of this work was to determine demographic rates in three Eastern localities of Tucumán province (Argentina). The essay was in randomized blocks with three replications; only one treatment, the cultivar LCP 85-384 and three subtreatments, the localities including a control. Plots had 160 m<sup>2</sup>. Localities were: La Tala (1), El Naranjito (2), and Ranchillos Viejo (3). For the demographic analysis total plants were counted at December 20<sup>th</sup> and March 20<sup>th</sup>, differencing alive of dead plants. Survivor plants were counted at May 20<sup>th</sup>. TBM (mortality brute rate); TBN (natality brute rate) and Sv (survival) were determined. Results: For 1) There were 12124,62 pl.ha<sup>-1</sup> with TBM of 319,99 %; TBN of 680,01% and Sv of 360%. For 2) There were 8452,80 pl.ha<sup>-1</sup>, TBM of 359,99 %; TBN of 640,00%, Sv of 280,00%. For 3) There were 5699,13 pl.ha<sup>-1</sup>, TBM of 289,99 %; TBN of 710,01% and Sv of 420,00%. Births are high and mortalities are low with a high survival so they invade new areas. Survival rate has significant differences among localities. This can be explained for the different crop management characteristics.

**144. PERMANENT COMPETENCE OF *Flaveria bidentis* (L.) O. Kuntze (Asteraceae) IN SUGARCANE CV LCP 85-384**

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*F. bidentis* is not a serious sugarcane weed, its invasion is because of the other weed elimination for chemical products. There are not bibliographical antecedents of this weed sugarcane competence. The objective of this work was to determine the losses by permanent and specific competence in sugarcane crop of Tucumán (Argentina). It was worked with the cultivar LCP 85-384, two year ratoon in El Naranjito, Eastern locality of Tucumán province. Essay was randomized blocks with three replications for 4 treatments including a control. Plots were of 80 m<sup>2</sup> and the controls were realized from October 2003 to June 2004. Other weed species were periodically controlled. Permanent competence measurements of number of plants, height and dry weight were realized at the sugarcane crop harvest. It was obtained that the losses for competence are of 47,54% to 84,52% of cane and of 47,04% to 83,57% of sugar and they are produced for 4823 to 7827 weeds per hectare. For the different competence levels the height of plants oscillated between 2,80 to 3,10 m and the dry weight of 1205,75 to 4148,31. It is concluded that *F. bidentis* can cause serious damages in the sugarcane production in the studied zone.

**145. DISTRIBUTION OF BDNF (BRAIN-DERIVED NEUROTROPHIC FACTOR) ALONG THE CENTRAL NERVOUS SYSTEM OF THE CICHLID FISH *Cichlasoma dimerus*: EFFECT OF DIFFERENT COLORED BACKGROUNDS ON ITS EXPRESSION**

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BDNF is a neurotrophic factor involved in color changes of amphibians. In teleosts it is expressed in photoreception related structures, although a detailed distribution study along the CNS is necessary to make. We analyzed BDNF distribution along CNS areas related with photoreception and adaptation to different colored backgrounds in *C. dimerus*. For distribution analysis, animals were processed for immunohistochemistry. Other two groups were exposed to different colored backgrounds (white and black). After 15 days, brains were processed for Western blot to study BDNF levels in both experimental conditions. BDNF expression was found along the optic nerve, retina, intermediate lobe, optic tectum, hypothalamus and neurohypophysis. Three immunoreactive (ir-) bands were detected by Western blots and the estimated molecular weights were 38.7, 43.5 and 46.7 kDa. It was also shown that white background animals showed a significant higher optical density for the three ir-BDNF bands. All these results suggest that BDNF may be involved in physiological processes leading to background adaptation.

**146. CALORIMETRIC STUDIES OF p-HYDROXYACETOPHENONE DERIVATIVE**

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The 6-hydroxytremetone, crystalline solid, is an isolated bioactive metabolite of *Xenophyllum poposum* (Phil.) V.A. Funk.

The aim of the present study is to know physicochemical properties of 6-hydroxytremetone isolated such as melting point, termic stability, using thermogravimetric analysis: TGA, DTA and DSC. The thermogravimetric analysis (TGA) and differential analysis of calorimetric (DTA) were made with Shimadzu ATG-50 and ATD-50 equipment, in a current of N<sub>2</sub>, from room temperature to 220°C. The TGA thermograms showed that the sample remains stable until 126°C.

The calorimetric sweeping differential (DSC) was made with a Perkin Elmer equipment, from 20°C to 250°C.

The acute and very narrow peak obtained by DSC shows a high purity of the sample. The melting point was 67.2°C and the enthalpy was DHf = 665 J/mol. The centered endothermic near 66°C obtained by DTA corresponding have good agreement with the obtained by DSC.

With these studies it is possible concluded that the sample was isolated in a high degree of purity, that will allow to study using X-ray diffraction methods to determine its structure.

**147. CHROMOSOMAL ORGANIZATION ANALYSIS OF GENES SURROUNDING *Pseudomonas aeruginosa pchP***

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The *pchP* gene, which encodes the enzyme Phosphorylcholine phosphatase (PChP), is located at region 5858257 to 5957208 of *P. aeruginosa* PAO1 genome. Upstream and downstream of *pchP* a putative LysR regulator (PA5293) and a probable choline transporter (PA5291) are located, respectively. Northern blot analysis suggested that *pchP* is transcribed monocistronically, then no operon would relate these genes. Then, we studied if a mutation on PA5291 or PA5293 would affect PChP activity. We measured PChP activity in mutants 42488 (PA5293::ISphoA/hah) and 55818 (PA5291::ISphoA/hah) from UWGC mutant collection. Both strains showed around 70% depletion activity. Introduction of PA5293 and PA5291 wild type genes in pBBR1MCS-5 vector partially restored PChP activity. This suggested that these genes would be related physiologically to *pchP*, but not included in the same operon. In the other hand, and since *pchP* is highly conserved in other *Pseudomonas* species, the organization of this chromosomal region was compared with the equivalent region of these species. We observed that *P. putida*, *P. syringae*, and *P. fluorescens* regions are similar but completely different from *P. aeruginosa* equivalent region.

**148. HOMOLOGOUS EXPRESSION OF *Pseudomonas aeruginosa* PHOSPHORYLCHOLINE PHOSPHATASE**

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*Pseudomonas aeruginosa* phosphorylcholine phosphatase (PChP) is a periplasmic enzyme produced when the bacteria are grown in the presence of choline or its derivatives. In previous reports, we found that *pchP* heterologous expression resulted in a totally functional protein but with some kinetics differences respect the native enzyme. Therefore, the present study describes an expressing-cloning strategy employed to achieve the expression of PChP in an homologous host. This was carried out in *P. aeruginosa* PAO1-LAC transformed with the vector pUCP-Nde-*pchP* (rPChP-Pa). rPChP-Pa exhibited a molecular mass of approximately 40 kDa, as expected for the size of the gene and catalyzes the hydrolysis of phosphorylcholine (PC), phosphoryl-ethanolamine and *p*-NPP. Like the purified native PChP, rPChP-Pa shown a high and low affinity sites for PC and its activity was inhibited by high substrate concentration. rPChP-Pa was much more similar to native PChP that recombinant PChP expressed in *E. coli* (rPChP-Ec). The reason for this differences may be the presence of signal peptide in rPChP-Ec which apparently *E. coli* is not capable of process as can be seen in western blot by the slight higher molecular mass observed in rPChP-Ec respect to the native PChP or rPCh-Pa enzymes.

149.

**STUDENTS VALUATION ON THE ADMITTANCE SYSTEM AT THE VETERINARY MEDICINE CAREER: PRELIMINARY RESULTS**

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The aims of this work are: to find out the students valuation about the Initiation Activities for University Life (I.A.U.L.) and to compare it with the aims proposed by F.A.V. for this stage. During the final evaluation of the University Problematic Module the entering students were asked to give their opinion about the aspects they considered positive and negative. From the qualitative study of a sample, 17 non-excluding categories were elaborated. These categories were used to analyze the total of them. Within the positive valuations the three most remarked were: a) the adaptation to the university institution, b) the connection with other students and the articulation with high school. The principal aspect observed as negative was the time-schedule organization. The correspondence of positive valuation made by the students respecting some aims proposed by F.A.V. evidences the consolidation of this 8 years institutional stage. However, in some categories related to others aims proposed by F.A.V. there were not high percentages. It is necessary to evaluate the I.A.U.L. contents and activities proposed to the beginner students and their relationship respecting those aims.

150.

**MORPHOLOGICAL ANALYSIS OF THE FEMALE REPRODUCTIVE SYSTEM IN *BAEACRIS PUNCTULATUS* (THUNBERG) (ORTHOPTERA, ACRIDIDAE, MELANOPLINAE)**

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Orthoptera present a wide range of morphological characteristics, with a great variation among species. An anatomic-histologic study of the internal reproductive organs, in wild females and obtained in captivity, has been carried out. They have been fixed in Bouin and conserved in n-Butilic alcohol. The section were stained with H-E and M.A. The gonad contains ten panoistic ovarioles, a constant number in both ovaries and in wild and captive reared animals. The accessory glands and lateral and middle oviducts have been analyzed, histomorphological characteristics which facilitates the transference of gametes and ovoposition are determined. The spermatheca is characterized by its external morphology and histology of its regions. It was compared with its relative species. This spermatheca was not included in former classifications for Orthoptera. It was the first description for this genus. The morphology of the genital chamber has been described. The anatomic and histologic characteristics from regions dedicated to the copulation and ovoposition and the fecundation of the oocyte have been also defined. Data for the best understanding reproductive biological system and for the systematic analysis of Acrididae are given.

151.

**NUTRITIONAL DIAGNOSIS OF *BOTHRIOCLOA SP.* DIFFERED USING CNCPS SYSTEM FOR COW CALF PRODUCTION IN SEMIARID ENVIROMENT**

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*Bothriocloa sp.* is a tropical perennial forage grass recently introduced in the semiarid region of province of San Luis. The aim of this study was to evaluate the nutritional potential of two *Bothriocloa sp.* cultivars differed to winter through CNCPS (Cornell Net Carbohydrate and Protein System). A simulated grazing was carried out with a breeding Hereford cow in the last three months of pregnancy (462 Kg live weight) and winter differing roughage from **Spar** and **Dahl** cultivars as whole plant and (WP) and leaf (L). Both cultivars presented average daily metabolic protein (MP) values which oscillated between 496g and 576 g for WP and L respectively and, metabolic energy values (ME) between daily 17 and 18 Mcal in the same order. Nutritional balance of these cultivars, WP as well as H, showed that during the three winter months, the daily maintenance requirements were met in ME (16 Mcal) and MP (500 g) though the whole plant of both cultivars showed a mild protein deficit. In both cultivars, L met ME total requirements (19 Mcal / animal / day) and MP (600 g / animal / day) during the first winter month, but not in the following months where energy and protein deficits were observed. WP showed a similar behavior but with protein deficits from July. This deficiency can be overcome if the cow gets a good corporal reserve in spring-summer.

152.

**FORAGE QUALITY OF FIVE SUMMER SPECIES FROM A PSAMOFILO GRASSLAND OF SAN LUIS PROVINCE**

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Grasslands of Argentina semiarid central region integrate forage chain of cow-calf systems. The aim of this paper is to evaluate the protein and fiber content of five estival species from a psamofilo grassland in San Luis province.

The evaluated species *Digitaria californica*, *Sporobolus criptandrus*, *Eustachys retusa* y *Bothriocloa sprinfieldii* were cut in February in elongation-bloom stage and *Sorghastrum pellitum* in vegetative stage. Crude Protein (CP), Neutral Fiber Detergent (NFD), Acid Fiber Detergent (AFD) and Lignin were determined. CP values varied between 8% and 12% in all species. These values would exceed a breeding cow requirements in lactation-service for this time of the year. NFD oscillated between 68,4% and 69,4%, values which could mean a restriction in dry matter consumption. Lignin content showed high values in all analyzed species (5,1% to 6,9%). *Sorghastrum pellitum* showed the lowest Lignin content (3,9%).

**153. PRELIMINARY STUDIES OF FLAVONOIDS IN TWO VARIETIES OF *THUIDIUM PERUVIANUM* MITT. (THUIDIACEAE, MUSCI)**

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*Thuidium* is a pleurocarpous moss genera of wide distribution in the Neotropic. In the northwest of Argentina it is represented by 3 species. Recently it has been recognized two varieties of *Thuidium peruvianum* in the province of Tucumán, Argentina: *T. peruvianum* var. *peruvianum* and *T. peruvianum* var. *frondosorum*.

The aim of this work is to analyze the presence of flavonoids in these two varieties in order to contribute to the chemical knowledge of the briological flora of subtropical Argentina.

The preliminary analysis carried out by bidimensional chromatography, shows that the two varieties of *Thuidium peruvianum* have compounds of low values of Rf in AcOH 15% and high in TBA, yellow coloration to the ultraviolet light in presence and absence of ammonia fumes and reactive NA (Naturstoffereagenz).

According to these results, and the spectral ultraviolet/visible data, it is inferred that the isolated compounds belong to the structural type of the biflavonoids.

**154. PREVIOUS KNOWLEDGE OF THE OCCUPATIONAL FIELD OF THE ODONTOLOGIST AND VOCATIONAL ELECTION OF THE INGRESANT**

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To know the previous information that possesses the ingresant to the Career of Dentistry on the Occupational Field of the odontologist and the motivations of the Vocational Election of the same group. 694 surveys were applied for the Ingresant to the FOUNT in 2000, 2001 and 2002. The obtained results showed that 84,26% chooses the career for relative questions to the vocation. Only the 8,78% mentions to economic reasons and of labor future, 5% to cultural rules and 1% of the elections makes reference to the uncertainty in the election. As for the work environments, 97,06% is visualized working in a clinic, mentioning the dentistry specialties like different work fields; 32% mentions the teaching; 18% the work in Health System; 13,3% mentions the Investigation; 5,86% to Audit; 5,86% to the Administration; and 1,6% points out to the Legal Dentistry as another work field. Although the elections are clearly vocational a overvaluation of the clinic is observed like field labor future. The rest of the related categories to the election is evidently relegated in relation to the first of them (For vocation), what suggests a low incidence of the same ones when choosing a professional future. In regard to the environments of work of the odontologist you can conclude that in general the applicants have like goal the professional activity in a clinic, and in much smaller grade the teaching and the activity in systems of public health and they have little knowledge about other functions that they can carry out in the future.

**155. INFLUENCE OF GLUTAMIC ACID, ASPARTIC ACID AND LEUCINE ON THE PRODUCTION OF METABOLITES WITH ANTIFUNGAL ACTIVITY RECOVERED FROM *BACILLUS* SP.**

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It was studied the antagonistic effect between metabolites from *Bacillus* sp. and several pathogenic lemon fungi. The metabolites were obtained from Landy medium that was supplemented with glutamic acid (LM g), aspartic acid (LM a), leucine (LM l) and a LM control (without amino acids). The metabolites were concentrated and autoclaved. The direct effect of the culture concentrates (CC) against fungi was studied in liquid media test. This assay consisted in: the fungi were cultivated in DP medium pH 5 with a fraction of CC. After incubation for 5 days and 28°C the mycelia was determined using dry weight method. The results demonstrated that the growth of *Penicillium expansum* and *Aspergillus niger* decreased in presence of CC recovered from LM a, *Aspergillus clavatus* and *Fusarium moniliforme* decreased in presence of CC recovered from LM g and *Aspergillus flavus* decreased in presence of CC recovered from LM control, by the way the CC recovered from LM l had no effect on any fungi growth. We can conclude that the production of metabolites with antifungal action depends on the nature of amino acids in the culture medium.

**156. LEAF ANATOMY OF *SOLANUM GROSSUM* AND *SOLANUM RIPARIUM* (SOLANACEAE) IN TUCUMAN PROVINCE**

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The family Solanaceae has 33 genera and 328 species in Argentina. *Solanum grossum* C.V. Morton and *Solanum riparium* Pers. are subarborescent and arboreal species that are found in the northwest of Argentina (Barboza *et al.*, 1999). *S. grossum* grow between 600-2300 m. and *S. riparium* between 400-1300 m. (Figuroa Romero, 2000). There are not anatomical reports for these species. The aim of this work was analyze the leaf anatomy of *S. riparium* and *S. grossum*. The samples were taken at 500-1800 m., 5 individuals were randomly selected per specie and 10 leaves per individual were collected. The material was fixed in FAA and used in conventional anatomical techniques. The results show that both species have dorsiventral leaf, unistratified epidermis with thick striated cuticle, anomocytic stomata being amphystomatic in *S. riparium* and hypostomatic in *S. grossum*, both species presents simple and glandular trichomes. In cross section, they have bicollateral main vascular bundle, the mesophyll presents 1 layer of palisade and 3 of spongy tissue and the secondary vascular bundle is bicollateral with a complete parenchymatic sheath. In conclusion, the leaf anatomy of *S. riparium* and *S. grossum* is described for the first time. The anatomical leaf characteristics have diagnostic value.

**157.**  
**CHARACTERIZATION OF THE TARGET POPULATION IN EDUCATIONAL PROGRAMMING: ANALYSIS OF ITS KNOWLEDGE AND PRACTICE IN ORAL HEALTH**

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Our objective was to characterize the population of children from 9 to 16 years old who attend School N° 12 from Ohuanta (Lules) through an analysis of their knowledge, attitudes and practice in oral health.

The design was analytical, observational and transversal. A survey was applied with questions about knowledge, attitudes and practice in oral health. The analysis was descriptive and associative through exact Fisher Test.

78% of the female students and 74% of the male ones, have an acceptable level of knowledge and there were no significant differences between both groups ( $p=0.7938$ ). Out of the total of children, 96% acknowledges the importance of teeth in the mouth, from these, just 53% knows what caries is. 95% of the students know the consequences of introducing elements in the mouth, yet from these, 68% usually does. There is not enough evidence to admit that boys know more about cariogenic food than girls ( $p=0.2878$ ). Their practices distributed among boys and girls homogeneously give evidence of the need to prioritize school children as a vulnerable group. We would like to thank Gustavo Andrade and Jorge Zelaya for their kind help to collect these data.

*This work was subsidized by Vicente Lucci Foundation.*

**158.**  
**BIOLOGY EXAM OF THE ADMISSION SYSTEM AND ENTERING INSTANCE AS PREDICTIVE ELEMENTS OF STUDENT PERFORMANCE IN THE BASIC CYCLE OF MEDICINE CARRIER**

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Medicine Faculty of UNT (Tucumán, Argentina) has an Admission system that permit the entering in function to the best available criteria. The objective of this work was to analyze in G1, G2 and G3 groups, the correlation between entering instance and Biology marks obtained in the Admission, and performance in Biology and Physiology evaluations of the Medicine carrier Basic cycle. In entering number,  $n=315$ , a correlation analysis was realized between Biology mark and performance in Biology and Physiology in three groups by means of a simple lineal and association regression (Kruscall-Wallis and Chi Square Tests; ANOVA). The average marks of the Biology were: 17.4; 14.8; and 15.4 (Total=25 points), in G1; G2 and G3, respectively. (ANOVA  $p<0.0001$ ). With respect to the Biology evaluations, 1° year, the four partial exam average significantly decreased from 7.9 in G1 to 5.6 in G3 (ANOVA  $p<0.0001$ ) and final exam mark showed a lineal association with entering biology mark only in G3, 82% of G2 and 67% of G3. G1 students approve 2 partials with 6.9; of G2 with 5.4 and of G3 with 5.0. There were significant differences among G1 and the other groups. Biology tests and different instances to the entering could be considered very good predictors for the student performance during the Basic cycle of Medicine carrier.

**159.**  
**LEVELS OF IRON, TRANSFERRIN IRON BINDING CAPACITY AND PERCENTAGE SATURATION OF TRANSFERRIN IN VICUÑAS (VICUGNA VICUGNA)**

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The capacity of vicuñas to live at high altitudes with low O<sub>2</sub> pressures and poor pastures requires adaptations in haematological parameters, which are still not well understood. The objective of this paper was to evaluate the state of iron in the blood by determining serum Iron (Fe), Transferrin Iron Binding Capacity (T-IBC) and the Saturation of Transferrin (ST). Blood samples were taken from 30 vicuñas from the CEA, from 1-16 years old, living at 3500m above sea level, and the serum obtained processed by spectrophotometric techniques using Fer color and Transferrina Wiener lab. The highest levels were in the subadults: 161 ug/dl Fe, 520 ug/dl IBC-T, 33 ug/dl ST. Juveniles followed with values of 102, 336 and 29 respectively. Values in adults were 99.8, 342.5 and 28.2. Females showed higher values than males, with 108.6 ug/dl, 367.8 ug/dl and 29.9 ug/dl, compared to 83.9, 282.5, and 28.6 for the males. These values are less than those obtained for llamas and alpacas in Peru but with a similar age distribution. The differences are probably due to diet.

**160.**  
**THE TRADITIONAL USE OF MEDICINAL PLANTS: AN UNQUESTIONABLE RURAL REALITY**

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The use of medicinal plants is an ancestral resource in many cultures, very commonly present yet today in the countryside of the underdeveloped countries. The objective of this work was to survey this traditional use. A cross-sectional descriptive study was carried out with data collected from personal interviews. They included: 100 families, 6 healers and 16 health professionals from the rural locality of El Bracho, Tucumán. The results showed that 97% of the population interviewed uses medicinal plants for preventive and healing health care. 12 species of plants are used most frequently, including eucalipto, cedrón, guayaba and Aloe vera. The users demonstrated very good knowledge of the therapeutic effects, but only 5% had any information on toxicity. This leads to the frequent intake of the extracts by pregnant women (68%) and young children (89%). 81% of the respondents indicated that family members were their source of information. The data provided by the traditional healers agreed significantly with those of the population. The health professionals acknowledged the frequent use of fitoextracts by their patients and 75% indicated they take it into account during clinical interrogation. However, they demonstrated a total ignorance of the effects of the plants, both therapeutic and toxic. Many of them still recommend their consumption, but limit the indiscriminate use in pregnant women and young children. The ethnomedicine is an unquestionable and very common rural practice that should not be ignored by health professionals.

**161.**  
**POACEAE WEEDS FROM GENUS *LEPTOCHLOA*,  
*TRICHLORIS* AND *SETARIA* IN PRESENT PRODUCTION  
 SYSTEMS**

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The implementation of new cultivation techniques gave rise to changes in the weeds flora especially on narrow leaf weeds.

The objective of this work is to differentiate the group of narrow leaf weeds from genus *Leptochloa*, *Trichloris* and *Setaria* on the base of exomorphologic characters. The research was carried out in several farms in NW Argentina during the last ten years. The selected fields were completely surveyed every thirty days during the cultivation cycle. The determination of specimens was made by means of taxonomic keys. In order to describe the species several easy-to-observe vegetative and reproductive features were selected. Taxonomic keys were made to differentiate genus and species. Six species, belonging to the family *Poaceae*, were determined and characterized: *Leptochloa mucronata* and *L. virgata*; *Trichloris pluriflora* and *T. crinita*; *Setaria parviflora* and *S. viridis*. Four taxonomic keys are included. The correct identification of these weeds will contribute to planning of control strategies tending to reduce the impact on agricultural fields.

**162.**  
**AN EXPERIENCE OF LEARNING AND SERVICE, WITH  
 AN INTERDISCIPLINARY FOCUS ON THE RURAL  
 COMMUNITIES IN TUCUMÁN – ARGENTINA**

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The aim of This work is evaluate the experience of learning and service, whit an interdisciplinary focus in the **Seminary** of Pre-Initiation in the Investigation and Rural Extension – FAU – UNIR – UNT.

The methodologic proposal takes part of an strategy that involves the comunitary in knowlegement and the solving of the problems. It inscribe into the action campus witch look for describing the problems and also generate transformation with the comunitary, trying to obtain the necessary knowledgement to define the adequate actions which are supposed to be in the changing line and transformation.

The criteria to evaluate the experience are of a qualitative and quantitative kind, using the observation and the interview to key informers like measuring instruments getting the following results.

**163.**  
**A BOTANICAL KEY TO DETERMINATE FOUR SPECIES  
 FROM GENUS *AMARANTHUS* L. THAT BEHAVE AS  
 WEEDS IN GRAIN PLANTATIONS IN NW ARGENTINA**

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The genus *Amaranthus* in Argentina includes 22 species, some of them behaving as weeds. Their identification is not always straightforward, because coloration and growth habits may differ in different environments. An incorrect determination may give rise to negative consequences in plantations.

The objective of this work is to contribute, with a simple but precise key to identify four species from genus *Amaranthus* that behave as weeds in NW Argentina: *A. quitensis*, *A. spinosus*, *A. viridis*, *A. standleyanus*. The selection of these species comes forth from the research carried out in several farms in NW Argentina, between 1993 and 2003. The selected morphologic characters are: presence of thorns, characteristics of protection verticil (shape and number of tepals). A specific simplify key to the four species of genus *Amaranthus*, based on botanicals characters, is presented in this work. The importance of a correct identification, particularly in the case of the genus *Amaranthus*, is essential to execute effective control measures of these four species.

**164.**  
**ENDOPLASMIC RETICULUM LIPID ANALYSIS IN *Bufo  
 arenarum* OOCYTES V DURING MEIOTIC MATURATION**

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Progesterone induces maturation of amphibian ovarian oocytes through a nongenomic mechanism. Evidence indicates that lipids are involved in this process. The maturation effect on endoplasmic reticulum lipids was analyzed. Preliminary studies were performed in yolk platelet polyphosphoinositides (PPI). Maturation was induced with progesterone. Subcellular fractions were isolated, lipids were extracted, separated by thin-layer chromatography and derivatized by methanolysis for compositional studies. PPI were obtained and isolated by monodimensional thin-layer chromatography. Phosphatidylcholine and phosphatidylethanolamine were the main phospholipids. Maturation induced significant changes in phosphatidylethanolamine, sphingomyelin and phosphatidic acid. Triacylglycerols, diacylglycerols and free fatty acids were also analyzed. Triacylglycerols showed the highest unsaturation index. In all cases, palmitic, oleic, linoleic and palmitoleic acids were the major fatty acids. No significant maturation effect on neutral lipids was found in contrast with the data obtained in yolk platelets and mitochondria. The presence of PPI was evidenced in yolk platelets and the levels of phosphatidylinositol 4-phosphate was higher than phosphatidylinositol 4,5-bisphosphate. Maturation affects not only lipids from plasmatic membrane but also from subcellular fractions.

165.

**REPRODUCTIVE REASSURANCE IN THE COLONIZER *OENOTHERA AFFINIS* (ONAGRACEAE)**

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Seed production per fruit of *Oenothera affinis* was studied in one population of Salta, Argentina, under the following treatments (results between brackets). a) free pollination (FP), ( $239 \pm 16$ ); b) hand-selfing in both outer and inner stigmatic surfaces (SOI), ( $220 \pm 16$ ); c) hand-selfing in the outer stigmatic surface (SO), ( $204 \pm 18$ ); d) autonomous self-pollination (ASP), ( $165 \pm 20$ ); and e) hand-selfing in the inner stigmatic surface (SI), ( $153 \pm 20$ ). The differences between FP and ASP, ASP and SOI, and SE and SI were statistically different while differences between FP and SOI were not significant. The number of seeds obtained by ASP represents 74 % with respect to SOI (the maximum potential seed production). We suggest that ASP gives reproductive assurance to this colonizing species in adverse conditions for allogamous pollination.

166.

**OPTIMIZATION OF CHEMICAL CONTROL OF PHYLLONISTIS CITRELLA STANTON IN LEMON PLANTATIONS**Esper LB<sup>1</sup>, Juárez MG<sup>1</sup>, Benítez SB<sup>1</sup>, Salas H<sup>2</sup>, Goane L<sup>2</sup>.<sup>1</sup>Facultad de Ciencias Naturales e Inst. M.Lillo, UNT. <sup>2</sup>Estación Experimental Agro-industrial Obispo Colombres (Obispo Colombres Experimental Agro-industrial Station). S.M. de Tucumán. E-mail: liesper@yahoo.com.ar

*Phyllocnistis citrella* Stainton is a miner that attacks every citrus, particularly lemons. Injuries are caused by the larva of the pest which tunnels into the new leaves feeding on mesophyll cell juices. The aim of this paper was to assess different treatments for the control of citrus leaf miner. The assay was conducted in a citrus farmland of Tucumán, sprouts being marked with new leaves (less than 3 cm long and purple-colored). After 30 days, on the originally marked sprouts, the percentage of leaves infested by the miner, the number of tunnels per leaf and the percentage of leaf injury per leaf and per sprout were estimated. The behavior of 8 different treatments (Ta, Tb, Tc, Td, Te, Tf, Tg, Th), at the end of the assay in which 5 applications were carried out through air sprayings was studied by analysing the average values of the variable percentage of leaf injury per leaf. The result of this analysis clearly showed that the best control of the pest was obtained with the Tb, Te and Td treatments which also showed minor standard errors in the average values of these treatments, which suggested an acceptable control throughout the campaign cycle. It was also observed that the Tg treatment did not duly control the cycle of the pest since its behavior was similar to that of the control lot with no treatment.

167.

**MOLECULAR ANALYSIS OF THE COMPONENTS OF *banded hedgehog* CELL SIGNALING PATHWAY DURING *Xenopus laevis* DEVELOPMENT**Agüero TH<sup>1</sup>, Aybar MJ<sup>1,2</sup>, Sánchez SS<sup>1</sup>.<sup>1</sup>Depto. Biol. Desarrollo, INSIBIO (Conicet-UNT), Chacabuco 461, T4000ILI – S.M.Tucumán. <sup>2</sup>MNDB, Fac. Cs., Univ. Chile, Chile. E-mail: mjaybar@unt.edu.ar

The vertebrate homologs of *Drosophila hedgehog* are *sonic hedgehog*, *cephalic hedgehog* and *banded hedgehog*. They encode a family of secreted cell signaling proteins involved in the embryonic patterning. In the present work we analyzed the expression of *banded hedgehog* (*bhh*) and the components of the intracellular signaling cascade during early development of *Xenopus laevis*. Our results showed that *bhh* is expressed during neurulation stages at the lateral border of neural plate in territories partially correlated with the expression of *Gli* transcription factors, that are expressed in overlapping ectodermal domains. We carried out a gain-of function approach by the microinjection of *in vitro* transcribed *bhh* mRNA in one blastomere of 4-8 cells developing embryos. At stages 14-17 embryos were fixed and processed for whole mount *in situ* hybridization. Results showed that an experimental increase in *bhh* signaling leads to an increased expression of neural crest markers (*Slug*, *Snail*, *FoxD3*) and *Gli* transcription factors. Additionally, the overexpression of *Gli3*, mimics the effect produced by *bhh* gain of function. Our results showed that *bhh* signaling and *Gli* transcription factors are involved in the early neural crest development.

168.

**EXPRESSION AND PARTICIPATION OF *Edn1/Ednra* CELL SIGNALING PATHWAY DURING THE EMBRYONIC DEVELOPMENT OF *Xenopus laevis***Bonano M<sup>1</sup>, Tribulo C<sup>1</sup>, Aybar M<sup>1,2</sup>, Sánchez S<sup>1</sup>.<sup>1</sup>Depto. Biol. Desarrollo, INSIBIO (Conicet-UNT), Chacabuco 461, T4000ILI – S.M.Tucumán, Argentina. <sup>2</sup>MNDB, Fac. Cs, Univ. Chile, Chile. E-mail: mjaybar@unt.edu.ar

The neural crest cells (NCC) are induced at the border between neural plate and the prospective epidermis. This cell population is highly migratory and is able to generate a variety of cells, including neurons, pigment cells, smooth muscle, craniofacial cartilage and bone, etc. It has been demonstrated that the signals BMP4, Wnt, FGF and retinoic acid participate in the initial induction of this tissue. At the present, the expression of components of the Endothelin cell signaling pathway during the embryonic development of the amphibian *Xenopus* is unknown. In the present work we report the isolation of a 2.8 kb-length transcript corresponding to the cDNA of Endothelin Receptor A (*Ednra*) and a detailed analysis by wholemount *in situ* hybridization of its expression during early embryonic development. Results showed that *Ednra* is expressed at the neural plate border starting in stage 13 (early neurula). During NCC migration *Ednra* expression is located in the cephalic migratory streams and in the postmigratory NCC *Ednra* labels branchial arches and the otic vesicle. The participation of *Edn1/Ednra* cell signal during development was analyzed using the specific inhibitor of *Ednra* BQ123. Results suggest the participation of *Edn1/Ednra* cell signaling pathway in the induction and migration of neural crest cells.

169.

**BMP4/*msx1* y *Slug* IN THE CONTROL OF NEURAL CREST INDUCTION AND APOPTOSIS OF *Xenopus laevis***Tribulo C<sup>1</sup>, Aybar MJ<sup>1,2</sup>, Mayor R<sup>2,3</sup>, Sánchez SS<sup>1</sup>.<sup>1</sup>Depto. Biol. Desarrollo, INSIBIO (Conicet-UNT), Chacabuco 461, T4000ILI – S.M. Tucumán, Argentina. <sup>2</sup>MNDB, Fac. Cs., Univ. Chile, Chile. <sup>3</sup>Dept. Anatomy and Dev. Biology, UCL, UK. E-mail: ssanch@unt.edu.ar

The neural crest (NC) is a population of cells present exclusively in vertebrates. At the present, little is known about the signals and genes involved in NC formation. It has been proposed that once the NC is established, other mechanisms like apoptosis, are required to control the exact size of NC derivatives. In the present work, the participation of BMP4 signaling and *msx1* gene during NC specification was established. Additionally, the role of apoptosis in NC tissue and its regulation was analyzed. Results showed that *msx1* gene is expressed in the neural fold and increased its expression at intermediate levels of BMP4 activity, concomitant with the expression of neural crest markers. Additional experimental evidence showed that *msx1* is required for the development of neural crest. The analysis of the apoptosis spatio-temporal pattern by TUNEL showed that apoptotic nuclei are colocalized with the expression of *msx1*. An experimental gain- and loss- of function approach showed that *msx1* acts as a proapoptotic gene while the neural crest gene *slug* is an antiapoptotic factor. Our results demonstrate that *msx1* is required for proper neural crest development and that participates with *slug* in the regulation of NC apoptosis.

170.

**COMPARATIVE ANALYSIS OF THE *Hairy* GENE FAMILY EXPRESSION DURING EARLY DEVELOPMENT OF *Xenopus laevis*. DESIGN OF CHIMERIC PROTEINS FOR THEIR STUDY**Vega López G<sup>1</sup>, Zamorano C<sup>1</sup>, Aybar MJ<sup>1,2</sup>, Sánchez SS<sup>1</sup>.<sup>1</sup>Depto. Biol. Desarrollo, INSIBIO (Conicet-UNT), Chacabuco 461, T4000ILI – S.M. Tucumán, Argentina. <sup>2</sup>MNDB, Fac. Cs., Univ. Chile, Chile. E-mail: mjaybar@unt.edu.ar

Recently, the juxtacrine signaling pathway *Notch/Delta* has been involved in the induction of neural crest cells in different experimental vertebrate animal models. The genes of the *Hairy* family have been described as direct targets of *Notch/Delta* signaling in vertebrates and invertebrates. *Hairy* genes are transcription factors containing a bHLH domain of union to the DNA molecule. In the present work, a comparative analysis by wholemount in situ hybridization of spatio-temporal expression of the three *Xenopus Hairy* genes (*Hairy1*, *Hairy2a* and *Hairy2b*) has been performed. The whole mount in situ hybridization study demonstrated that *Hairy1* is expressed in narrow lines at the border of neural plate from late gastrula stage. *Hairy2a* and *Hairy2b* are both expressed in the prospective neural crest territory. *Hairy2b* showed only a reduced expression in the anterior neural fold. In order to prepare chimeric inducible proteins and their dominant-negatives for functional analyses, the sequences of *Hairy* genes were analyzed bioinformatically for the identification of functional domains. The analysis revealed different domains (bHLH, orange and Groucho-binding region). The expression of *Hairy* genes strongly suggest their participation in the definition of the borders of neural crest territories and in the induction of neural crest tissue.

171.

**ROLE OF THE PHOSPHOINOSITIDE PATHWAY IN THE ACTIVATION OF *Bufo arenarum* OOCYTES**

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Sperm-induced egg activation stimulates signal pathways that lead the resumption of meiosis and entry into the first mitotic cycle. Although calcium release from intracellular stores plays a central role in this process, the triggering mechanism for this release remains unknown. In mammals, the phosphoinositide pathway has been proposed, by means of which activation of PLC hydrolyzes phosphatidylinositol-4,5-bisphosphate (PIP<sub>2</sub>), producing inositol-1,4,5-trisphosphate (IP<sub>3</sub>), a second messenger that mediates calcium release by interacting with IP<sub>3</sub> receptors (IP<sub>3</sub>R) localized in the endoplasmic reticulum. In this study we analyze the role of the phosphoinositide pathway in the activation of *Bufo arenarum* oocytes. Denuded ovarian oocytes matured *in vitro* with progesterone were preincubated using inhibitors known to interfere the phosphoinositide metabolism, prior to insemination with homologous spermatozoa. Data show that both neomycin and lithium chloride, known to inhibit PIP<sub>2</sub> hydrolysis and heparin that interacts with the IP<sub>3</sub>R, produced a dose-dependent inhibitory effect on oocyte activation. Our results suggest that in amphibians egg activation matured *in vitro* involves the phosphoinositide pathway probably by means of the PLC activation and that the IP<sub>3</sub> would be responsible for calcium increase necessary for this process.

172.

**ANTIOXIDANT ACTIVITY OF EEP AND PRINCIPALS FLAVONOIDS IN PROPOLIS**

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Propolis is a natural resinous product collected by bees. It is effective against a variety of bacteria, viruses, fungi and has been shown to be antioxidant too.

The objective of this work was to compare the antioxidant capacity of propolis with some of present flavonoids compounds in such. The sampling was carried out in Amaicha del Valle, Tucumán. To the ethanolic extracts of propolis (EEP), the composition by HPLC was determined, being that between majority flavonoids compounds are: chrysin, galangin and apigenin. The samples were put under different temperatures during 2, 5, 24 and 48 hours, from 40°C to 90°C with intervals of 10°C. In EEP prepared with heated propolis, the antioxidant capacity by Pratt & Watt technique was determined. This biological activity was examined in solutions of chrysin (C), galangin (G) and apigenin (A) and in mixtures of these compounds (A+C, A+G, C+G, A+C+G), in the samples concentrations, too. The results are expressed in relative absorbance %. The solutions of flavonoids threw values of absorbance more near to the control, than the EEP. The propolis extracts, demonstrated antioxidant activity superior in a 20% to the one of the pure flavonoids or in anyone of their combinations.

173.

**MORPHOLOGIC STUDY OF OOCYTES COMPETENT AND INCOMPETENT TO MATURE SPONTANEOUSLY***Zelarayan LJ, Oterino J, Sánchez Toranzo G, Bonilla F, Ajmat MT, Bühler MI.**Inst. de Biología, Fac. de Bqca., Qca y Farmacia. UNT. Chacabuco 461. Tucumán. E-mail: lzelarayan@fbqf.unt.edu.ar*

In this work we analyzed the ultrastructural morphology of oocytes competent and incompetent to mature spontaneously, by means of electronic microscopy transmission. Two different types of follicular cells endings were identified, one penetrating the oocyte cortex, another non penetrating the oocyte cortex. In the first one, the prolongations are small, with ends little expanded. The other type, shows the prolongations of follicular cells with expanded ends that adhere to oolema. These process endings frequently made gap junctions with the oolemma. The competent oocytes present a greater number of non penetrating contacts whereas in the incompetent ones, the type of contact is predominantly penetrating. In the competent oocytes, the Golgi complex shows numerous and greater vesicles than the incompetent ones, and the endoplasmic reticulum is more developed.

The results obtained show ultrastructural differences in the oocyte - follicular cell relation, and in the structure and disposition of the Golgi complex and the endoplasmic reticulum between the competent and incompetent oocytes to mature spontaneously. Nevertheless the existing morphologic evidence does not provide sufficient information of their functional aspects, at least within the reach of these studies.

174.

**SEMINAL RECEPTACLE OF *Pomacea canaliculata*: ULTRASTRUCTURE OF THE GLANDULAR REGION***Catalán NMY, Winik BC, Fernández SN.**Fac. Cs. Naturales e IML y Fac. Bioq., Qca. y Farmacia. UNT.*

*P. canaliculata* is an amphibian dioecious gastropod with internal fertilization. The seminal receptacle, constituted by a bulb and a spermathecal duct, is involved in sperm storage and oocyte fertilization. Their ability to preserve gamete viability for long periods, enables female fertilization with no previous immediate coupling, thus allowing species reproduction under adverse conditions. Previous histochemical studies showed that the seminal receptacle secretes strongly acidic and neutral mucosubstances. The purpose of this work is to analyze the ultrastructure of the glandular region in relation to its function. Samples were processed according the routine technique for transmission electron microscopy. The spermathecal bulb presents different micromorphological regions. The anterior glandular region has pouches lined by an epithelium with ciliated and secretory cells. The former shows a typical ultrastructural organization related to their kinetic function. The secretory cells have a neck and a voluminous body with electron-lucid nuclei, well developed biosynthetic organelles and heterogenous secretory granules. The ultrastructure of the secretory cells reveal a marked biosynthetic activity oriented towards the production of glycoprotein macromolecules. The heterogeneity of the secretory granules would be related to the diverse nature of their contents. The secretions would provide an adequate medium for gamete survival and oocyte fertilization. The muscle fibers and the ciliated cells would facilitate the circulation of secretions and gametes.

175.

**HISTOLOGICAL ASPECTS OF ESOPHAGUS IN THE APPLE SNAIL *POMACEA CANALICULATA****Bertrand ML, Catalán M.**Fac. Cs. Naturales e IML. Miguel Lillo 205. 4000 San Miguel de Tucumán. UNT.*

*P. canaliculata* is a gastropod mainly phytophagous. Its survival through seasonal droughts, the prolonged viability of its sperm and its prolificity have all contributed to the success of the species. The aim of the present work is to analyze the histological characteristics of the esophagus in relation to its function. Samples were processed following the routine technique for photonic microscopy and stained with PAS-Hematoxylin (PAS-H), PAS-Alcian Blue pH2.5 (PAS-AB) and Toluidin Blue pH5.6 (TB). The esophagus exhibits three segments: anterior, medial and posterior. Its wall presents an internal epithelial lining with ciliated and secretory cells. The former, cylindrical to wedge-shaped, have long cilia, basal nuclei and acidophilous cytoplasm. The secretory cells are voluminous, with basal nuclei and a cytoplasm filled with secretory products. In the anterior segment, the number of secretory cells is larger than in the medial and posterior ones. The cellular contents are strongly positive with PAS-H, Ómetachromatic with TB and mosaic-shaped with PAS-AB. In the medial and posterior segments, the secretory cells are slightly positive with PAS-H and  $\beta$ -Y metachromatic with TB. The thin internal muscular layer presents longitudinal smooth fibers. The more developed vascular-connective layer has wide blood sinuses. The circular external muscular layer is surrounded by connective tissue with thick nerve fascicles. The cilia and the muscle fibers would favor the movilization of the luminal contents. The secretory cells would provide mucoproteins and mainly acidic muco-polysaccharides. The complex mucous secretion would protect the epithelial layer, thus facilitating food transit.

176.

**“GLUCOSA RATES IN VENOUS BLOOD BY HEMOGLUCOTEST COMPARED WITH THOSE OF EMERGENCY LABORATORIES AT ANGEL C. PADILLA HOSPITAL”***Calletti Vergara F, De Rosa R, Herrera H, Montivero M, Romero A, D'Urso M.**Hospital Angel C. Padilla, Calle La Rioja y Lavalle. San Miguel de Tucumán, Tucumán (4000). E-mail: sp\_ferchu@hotmail.com*

Descriptive study, transversal cohort over 42 samples from February to June 2004. Objective: compare the levels of glucemy in venus blood by Hemoglucotest (HGT) with those of the laboratory. The glucemy by laboratory was made using the Trinder method. The HGT using the Haemo-glukotest 20-800. Both using the same venous blood. Both concordance analysis and descriptive study of variables was made, as well as that of the association between them by means the Pearson correlation. It was found poor concordance  $k=0,35$  ( $p=0,002$ ), a difference of 49% (CI: 36%, 62%) and  $r$ -value of 0,80. This difference (49%) is greater than  $\pm 20\%$  accepted by the American Diabetes Association. The  $r$ -value of 0,80 is in disagreement with the values internationally accepted ( $r$ -value greater than 0,97). The difference found, the absence of correlation and the poor concordance indicate that the conditions how to use the HGT in this hospital milieu, should be restated.

177.

**STOLONS AND CROWN RESPONSE FERTILIZED WITH N-P-K IN STRAWBERRY (*Fragaria x ananassa* Duch., Selva) MOTHER PLANTS TO FRIGO PLANTS DESTINATION***Brandán de Antoni EZ, Ortiz de Arana N del V, Villagra EL, Guglielmo F.**Fac. de Agronom. y Zoot. UNT. Avda Roca 1900 (4000) Tucumán, Argentina. E-mail: brandan47@hotmail.com*

The objective of the trial was to determine the stolons and crown response fertilized with NPK in strawberry mother plants cv. Selva to frigo destination, in Tafí del Valle, Tucumán, between 2003-04. The treatments were: T<sub>1</sub>. Control. T<sub>2</sub>. 100 kg. N/ha. T<sub>3</sub>. 100 kg. N/ha and 90 kg. P/ha. T<sub>4</sub>. 100 kg. N/ha and 150 kg. K/ha. T<sub>5</sub>. 100 kg. N/ha, 90 kg. P/ha, 150 kg. K/ha. T<sub>6</sub>. 54 kg. N/ha and 190 kg. P/ha. T<sub>7</sub>. 50 kg. N/ha. The primary stolons and crowns per mother plants and the correlation between both parameters were determined. The experimental design was parcels completely randomized with 7 treatments and 5 replications. It was made the ANOVA and Test of Tukey. The main stolons differs significantly in T<sub>1</sub> (2,4) of T<sub>2</sub> (4,7), T<sub>3</sub> (4,65) and T<sub>6</sub> (3,85); T<sub>2</sub> (4,7) differs of T<sub>4</sub> (2,85), T<sub>5</sub> (3,15) and T<sub>7</sub> (3,36) and T<sub>3</sub> (4,65) differs of T<sub>4</sub> (2,85), T<sub>5</sub> (3,15) and T<sub>7</sub> (3,36). The number of crown per mother plants differs in T<sub>1</sub> (3,25) of T<sub>2</sub> (4,75), T<sub>3</sub> (4,7), T<sub>6</sub> (4,4) and T<sub>7</sub> (4,1); T<sub>4</sub> (3,6) differs in T<sub>2</sub> (4,75) and T<sub>3</sub> (4,7). The correlation between both parameters was coger ( $r=0,2021$ ). The nutrients balance, mainly P and N increases the vigour stolons and crowns production, in strawberry cv. Selva destined to frigo plants production.

178.

**PRODUCTION OF  $\alpha$ -GALACTOSIDASE IN THE SMALL INTESTINE BY *Lb. fermentum* CRL 722***LeBlanc JG<sup>1</sup>, Sesma F<sup>1</sup>, Savoy de Giori G<sup>1,2</sup>.**<sup>1</sup>CERELA-CONICET. Chacabuco 145. Tucumán (Argentina) (T4000ILC). E-mail: leblanc@cerela.org.ar. <sup>2</sup>UNT. Cat. Micro. Superior. Tucumán (Argentina).*

The use of microbial  $\alpha$ -galactosidase ( $\alpha$ -Gal), which hydrolyzes  $\alpha$ -1,6 galactoside links is a promising alternative to eliminate  $\alpha$ -galactooligosaccharides ( $\alpha$ -GOS) in soy derived products. These often pass through the small intestine (SI) and reach the large intestine where they are fermented, producing gases that can cause physiological problems in sensitive individuals.

The goal of this study was the evaluate de capacity of *Lb. fermentum* CRL722 to produce  $\alpha$ -Gal in the SI.

Rats were fed cell free extracts or live cells of CRL722 and the  $\alpha$ -Gal activity was determined in different compartments of the SI (duodenum, jejunum, and ileum).

A short lived  $\alpha$ -Gal activity was detected in the small intestine. The short duration and variability in the detected  $\alpha$ -Gal was determined to be the result of hostile components found in these intestinal compartments.

This short lived  $\alpha$ -Gal activity might be able to prevent certain gastrointestinal disorders associated to soy product consumption. The evaluation of the gas reduction capacity of *Lb. fermentum* CRL722 in rats fed soymilk is currently underway.

179.

**MODIFICATION IN THE TEACHING STRATEGY OF THEMATIC UNITS IN BIOLOGY***Sánchez Toranzo G, Oterino J, Bonilla F, Medina M, Llanos R, Pasteris S, Bühler MI.**Cátedra de Biología. Facultad de Bioquímica, Química y Farmacia, UNT. Chacabuco 461. 4000 Tucumán. E-mail: mbuhler@unt.edu.ar*

According to Biggs (1994), learning results from the interaction of three elements: the intention (motivation) of the learner, the process used (strategy), and the achievements obtained (yield). Thus, the results of learning depend on the way in which information is presented and transferred and on how the student acquires, processes, codifies and recovers it. As regard the way of transferring knowledge, Sánchez Iniesta (1999) proposes an organization of the contents agreed upon by the members of the teaching team for each of the thematic areas, which she calls "sequences". In her opinion, the most important thing is to determine the order in which such contents should be approached and, at the same time, to induce the largest possible number of relationships that the students can establish between the various contents proposed and between these and their previous knowledge, so that they will be able to build up learning with the greatest possible degree of significance.

On the basis of observations carried out during our teaching practice, we found out an alarming degree of difficulty in the learning of certain subjectas during the teaching Biology, a subject belonging to 2<sup>nd</sup> year of the cycle common to all careers in the Facultad de Bioquímica, Química y Farmacia. The analysis affected during 2001 and 2002 revealed that the thematic units with the highest degree of the difficulty were Mitosis and Meiosis, with only 40% of the students passing the practical work tests.

180.

**KNOWLEDGE INTEGRATION TESTS AS INSTRUMENT OF EVALUATION IN PHYSIOLOGY***Fernández SN, Zelarayan L, Ramos I, Peralta L, Crespo CA, Cisint S. Instituto de Biología. Cátedra de Fisiología. Fac. de Bioq., Qca y Farmacia. UNT. Chacabuco 461. 4000 Tucumán. E-mail: lzelarayan@fbqf.unt.edu.ar*

In University academic activity, the evaluation is a mechanism that permits to know, to feed back and to improve the function of teaching and learning processes. With the purpose to find alternatives and to readjust the pedagogical strategies, it was come to apply, during the Physiology course, three Knowledge integration test (KIT). With these KIT students of Biochemistry and Pharmacy careers were evaluated by using different modality of questions that permit to score the knowledge acquired in **a**- Laboratory works; **b**-Seminaries and **c**-Theoretical classes. To approve, the students must answer correctly a 50% of the KIT questions.

The results show that: **1**- 95 - 97% of students answer acceptably the multiple choice questions. **2**- This percentage strongly decrease (62 %) in the type of correspondence questions that need the association of concepts or those in which the students must define a clear idea **3**- Approximately 63% of students are able to develop a subject in the way of schemes or conceptual pictures. **4**- With respect to the questions whose resolution implies to complete an idea partially enunciated, only 51% of the students respond suitably. The interpretation of the results allowed us to detect problematic nuclei in the acquisition and fundamentally in the expression of knowledge and led us to raise the best evaluation strategies.

**181.****THE PCA AS METHODOLOGICAL "TOOL" FOR THE ANALYSIS OF RIPENESS OF CITRIC FRUITS**

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Two varieties of citric plants were compared with PCA: Hamlin orange and Valencia late. The data arise from 184 analyses performed along 20 successive years. Ten variables were compared: fruit weight, equatorial diameter, number of seeds and branch, color rind, juice percentage, acidity, ratio, soluble solid and Vitamin C content. The results obtained exhibited correlation values from  $r = -0.87$  between Ratio and Acidity variables, to  $r = 0.68$  between the variables Color Rind and soluble solid. The contribution of the first axis over the total Variance was 36.10%. The first Principal Component was denominated "Size, Ripeness and Fruit Flavour" and includes variables related to fruit characteristics. The contribution on the second axis belongs to Ratio and Juice acidity. The second Principal Component was called "Juice Taste". In the third axis the correlation between Branch Number and Vitamin C Content is high, so the third Principal Component was called "Branches and Vitamin". The fourth axis, with a (9.43%) of variability was called Number of Seeds. The PCA was effective for the analysis of quantitative variables in citric in that factorial axes explained 75% of the total variability

**182.****MOLECULAR MECHANISMS IN *Bufo arenarum* OOCYTES MATURATION BY ACTIVATION OF GABA<sub>A</sub>-R**

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The GABA<sub>A</sub> receptor (GABA<sub>A</sub>-R), which is coupled to chloride ion channels, is an oligomeric complex with binding sites for direct GABA<sub>A</sub>-R agonist as muscimol and antagonists as picrotoxin. GABA<sub>A</sub>-R have been found in some neuronal and somatic cells. It has been suggested that this receptor was also involved in the progesterone induction of the acrosome reaction of human sperm *in vitro*. This agrees with the results, obtained in mouse spermatozoa which underwent acrosomal exocytosis when stimulated with progesterone, and the picrotoxin, the GABA<sub>A</sub>-R antagonist, inhibited this effect. These indicate that the action of progesterone is mediated by a GABA<sub>A</sub>-R and apparently linked to Ca<sup>++</sup> channels. In *Xenopus* oocytes the GABA<sub>A</sub>-R were expressed by injecting cRNAs of the bovine. In *Bufo arenarum*, we demonstrated the involvement of GABA<sub>A</sub>-R in the oocytes maturation. The purpose of this work is to evaluate the participation of purines and the phospholipids in the maturation process induced by an agonist of GABA<sub>A</sub>-R as muscimol in denuded oocytes of *Bufo arenarum*. The results indicate that high intracellular levels of purines as db-AMPC and theophylline, or the inhibition of the PIP<sub>2</sub> hydrolysis by neomycin and LiCl respectively inhibited the maturation induced by muscimol. However, the treatment with H7, indicated that the activation of PKC is not necessary for the GVBD induced by GABA<sub>A</sub>-R agonist.

**183.****EFFECT OF SPERM EXTRACT ON *BUFO ARENARUM* OOCYTE ACTIVATION**

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At fertilization, the fusion of the sperm with the oocyte, initiates a series of modifications, known like activation of the oocyte. The activation process includes changes in the surface, ions mobilization, metabolism reactivation, finalization of the meiosis, formation of pronuclei, singamia and anfimixis. Three hypothesis have been proposed to explain the mechanism by which the sperm triggers the activation process in the oocyte. First, it proposes a model where the calcium, provided by the sperm, induced the liberation of more calcium. The second hypothesis assumes that the sperm introduces into the egg, after gamete fusion, a soluble factor that interacts with the endoplasmic reticulum inducing an elevation in the intracellular free Ca<sup>++</sup>. The third hypothesis suggests the presence of a sperm receptor in the egg's plasma which would activate a G protein generating inositol triphosphate (IP<sub>3</sub>), a common Ca<sup>++</sup>-releasing compound.

In this work we investigate the effect of the extracts of sperm, and his soluble fractions on the activation of oocytes of *Bufo arenarum* matured *in vitro*. Oocytes of *B. arenarum*, matured *in vitro*, were treated with the crude extracts of sperm in different dilutions, and with different fractions from the extract obtained by means of chromatography in liquid phase. In addition, we assaged the effect of extracts obtained of sperm that underwent the acrosomic reaction by treatment with the ionóforo A 23187. In all case we score the external signs of the activation process.

Our results indicated that the sperm of *B. arenarum* have a soluble factor that in contact with the oocyte is able to trigger the activation process. This soluble factor is present in extracts of sperm that underwent the acrosomic reaction.

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