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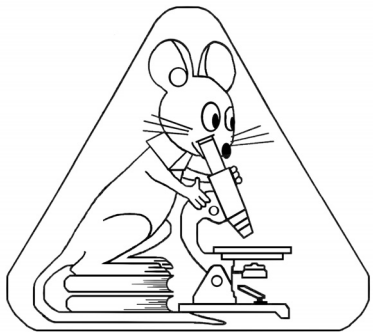

TUCUMAN BIOLOGY ASSOCIATION

(Asociación de Biología de Tucumán)

Abstracts from the

XXV ANNUAL SCIENTIFIC MEETING

In memoriam Dr. Julia Marina Oterino

October 8 – 10, 2008

Tafí del Valle, Tucumán, Argentina

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

OBITUARY

Julia Marina Oterino de Juárez

Shortly before the start of the 25th Scientific Meeting, Dr. Julia Oterino de Juárez, President of the Tucumán Biology Society, passed away in this city.
Dr. Juárez was born in San Miguel de Tucumán on January 19th 1944. She graduated from the local University on March 21st, 1969 and started teaching at the Facultad de Bioquímica, Química y Farmacia, where she held the Chair of Biology. She obtained her Doctor's Degree on March 15th, 2005. She was a model teacher, always ready to help and give advise to her students and colleagues, who will remember her fondly. From the beginning of the teaching carrer, she was an enthusiastic collaborator of the Tucumán Biology Society and participated in numerous meetings and activities promoted by the Society, of whose Board she was an almost permanent member. Her kind and friendly disposition and her dedication and love of her work as well as her commitment to the Biology Society will make her live lovingly and respectfully in the memory of those who had the privilege to know and treat her.

L1.
MIGUEL LILLO LECTURE 2008
"SOCIAL" DOMAIN ORGANIZATION AND DYNAMICS OF NICOTINIC ACETYLCHOLINE RECEPTOR AT THE CELL MEMBRANE

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We used a combination of experimental techniques (patch-clamp single-channel recording, high-resolution fluorescence microscopy, confocal fluorescence recovery after photobleaching (FRAP), particle statistical analysis) to analyze the supramolecular organization of the acetylcholine receptor (AChR), the dynamics of the receptor at the cell surface, and the kinetics of receptor internalization. In particular, the effect of changes in cholesterol (Chol) content on AChR organization and dynamics were studied in CHO-K1/A5 cells, a mammalian cell line stably expressing adult murine AChR. Exposure to methyl-beta-cyclodextrin (CDx), commonly used as a diagnostic tool of endocytic mechanisms, dramatically accelerated AChR internalization from the cell surface. This was accompanied by gain-of-function changes observed in single-channel patch-clamp recordings. Wide-field and confocal microscopy revealed AChR submicron-sized (240-280 nm) domains that remain stable over a period of hours at the cell membrane. Domains could be resolved into AChR "nano-clusters" with a peak size distribution of ~55 nm by STED (stimulated total emission depletion) microscopy, that is, nano-structures hitherto observable only by electron microscopy. CDx-mediated Chol depletion resulted in a smaller number of nanoclusters, but larger in size, and changes in the supramolecular "social" organization of the nanoclusters on larger scales (0.5-3.5 microns). FRAP experiments provided complementary information on the dynamics of these changes, disclosing the dependence of AChR mobility on Chol content and the integrity of the cortical actin cytoskeleton. Chol content at the plasmalemma may thus modulate cell-surface organization and dynamics of receptor nano-domains, and fine-tune receptor channel function to homeostatically compensate for temporary changes affecting the number of AChR at the cell surface, a parameter of vital importance for the normal function of this protein.

L2.
OXIDATIVE STRESS IN BIOMEDICAL RESEARCH

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When concentration of reactive substances derivated from oxygen or nitrogen are excesive, they produce tissular injury called oxidative stress. In Mendoza, there are several groups of investigators studying the causes, effects and the way to prevent it, such as: 1- Experimental evidences on the beneficial effects of red wine, garlic and onion on the endothelial function, oxidative stress and vascular inflammation in rats. 2- Cardioprotective effect of antioxidant substances on reperfusion arrhythmias in isolated rat hearts. 3- Role of the oxidative stress at the cardiovascular level in a model of metabolic syndrome. 4- Effect of antioxidants from vegetables and wines from Mendoza on muscle cells. 5-Association of Caveolin 1 and HSP70. 6- Modulation of the NO upon the apoptotic mitocondrial pathway induced during neonatal obstructive nephropathy. 7- Inflammatory responses of the substantia nigra after acute hypoxia in neonatal rats. 8- Lisosomal enzimes and relative ROS compounds in the adrenogonadal axis. 9-Antioxidant effects of licopenes and selenium on the development of prostatic neoplasia. 10- HSP participation in the modulation of the oxidative stress produced by dexorrubicin in mammary neoplasia. 11- Gastro-protective and antioxidant effects of plantago major extracts. 12- Uric acid and oxidant stress in the apple snail (pomacea canaliculata). The results were presented in meetings and published in scientific journals.

L3.
METABOLISM OF LOW DENSITY LIPOPROTEIN-ASSOCIATED PHOSPHATIDYLCHOLINE IN PRIMARY HEPATOCYTES

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We studied the uptake and metabolism of phosphatidylcholine (PC), the major phospholipid of low density lipoproteins (LDL), by cultures of primary hepatocytes. Strikingly, in the absence of the LDL receptor, PC incorporation into hepatocytes was inhibited by only 30%, whereas cholesteryl ether uptake was inhibited by 60-70%. On the other hand, scavenger receptor class B, type I, the other important receptor for LDL in the liver, was found to be responsible for the uptake of the remaining 30-40% of LDL-cholesteryl ether. PC uptake was, however, only partially inhibited (30%) in scavenger receptor class B, type I, knock-out hepatocytes. Once LDL-PC was taken up by hepatocytes, 50% of LDL-[^{3}H]oleate-PC was converted to triacylglycerol rather than degraded in lysosomes as occurs for LDL-derived cholesteryl esters. The remainder of the LDL-derived PC was not significantly metabolized to other products. Triacylglycerol synthesis from LDL-PC requires a PC-phospholipase C activity as demonstrated by inhibition with the phospholipase C inhibitor D609 or activation with rattlesnake venom. Small interfering RNA-mediated suppression of acyl-CoA:diacylglycerol acyltransferase 2 (DGAT2), but not DGAT1, decreased the acylation of the LDL-derived diacylglycerol. These findings show that PC in LDL particles is taken up not only by the classical receptors but also by additional mechanism(s) followed by metabolism that is completely different from the cholesteryl esters or apoB100, the other main components of LDL.

L4.

PGPR BACTERIA INOCULATION AS A MODEL OF RELATIONSHIP BACTERIA-ENVIRONMENT STUDY

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PGPR bacteria (Plant Growth Promoting Rhizobacteria) contribute to increase nutrients availability and to control phytopathogenic proliferation or to decrease the environmental stress. The purpose of these bacteria is always the same, to reduce the chemical compounds input into the ecosystems.

The PGPR bacteria from the soil are multiplied and inoculated into the soil. That is why we studied the bacteria-environment interactions in the bilateral relationship between biotic and abiotic components based on a soil biotechnological approach. Therefore, the aim of our PGPR bacteria study is to deepen knowledgen of the agro ecosystem microbiology.

Most of results of the study, which will be shown, were obtained from researches carried out with arable soils inoculated with *Azospirillum* or *Pseudomonas fluorescens* from the Argentine Humid Pampa, and from a biosolid of urban origin investigation used to support the latter bacterium.

In addition, modifications of the indigenous microorganisms, at the level of number, functional community, of which the majority is from carbon and nitrogen cycles, and enzymatic activities were also studied.

L5.

MODULATION OF CHEMOTACTICALLY ORIENTED NEURAL CELL MOTILITY

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Chemotaxis modulates the precise cell motility and distribution in response to concentration gradient of molecules released by target fields. This cell behavior is well-known in bacteria, leukocytes, amoebas, sperms and axon growth cone, but it is less known in embryo cells. In our laboratory, on cephalic neural crest cells (NCC), we evaluated the chemotactic behavior induced by diffusible factors segregated from the optic vesicle region. Using a real-time computerized system, we showed a chemoattraction response of *in vitro* NCC induced by the growth factors Stem Cell Factor (SCF) and Neurotrophin-3 (NT-3), and the chemokine Stromal cell-Derived Factor-1 (SDF-1). These observations were supported by the demonstration of specific receptors expression on NCC, as well as some elements of the intracellular signal chain. After ethanol exposure at a concentration sufficient to induce the *Fetal Alcohol Syndrome*, we observed a perturbation of the chemotactically oriented migration of NCC, without changes on morphometry, viability or dynamic parameters not associated with directionality. Moreover, on a whole embryo mounting, we showed the expression of mRNA for SDF-1 and NT-3 by applying *in situ* hybridization, as well as immunolabeling of the corresponding proteins; all of them localized in a target field compatible with the proposed function as chemoattractant molecules. Current experiments on whole embryos are now intended to induce the functional blocking of bioactives extracellular molecules and/or their receptors, with the simultaneous determination of the NCC distribution, in normal as well as in ethanol-exposed embryos. The capacity to trigger chemotactic responses of neural crest cells exposed to molecules segregated by target regions open important perspectives for the knowledge of oriented migration of embryonic cells, supporting additional guide activities for trophic factors and chemokines, besides their already known canonic functions.

L6.

METHANE GAS PRODUCTION AND FORAGE DEGRADABILITY IN RUMEN

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Methane is one of the gases responsible for the climate change and for producing important modifications in the photochemistry of the atmosphere. Hydrolysis and fermentation of carbon sources present in feed take place in the digestive system of herbivore animals. The final products of the process are fatty acids of short chain and gases composed mainly of carbon dioxide and methane. The former are used as source of energy by the animals and the latter are eliminated. Results of experiences carried out at Facultad de Cs. Veterinarias de la UNR will be presented, in which a variety of pastures and preserved forages used in ruminant feed in the region (Pampa Humeda) were studied. The methodology employed showed the link between variables associated with ruminal methane production, its relationship with feed compositions and ruminal environment. The results encourage further studies tending to explain the mechanisms involved and provide alternatives to rationally manage the function of the rumen with the aim of reducing ruminant methane production and increasing efficiency in forage use.

L7.

ESSENTIAL OILS AS POTENTIAL BIOACTIVE COMPOUNDS AGAINST MOSQUITOES

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Mosquitoes are insects of medical, veterinary and economical importance. The current global strategy for the control of vector-borne diseases is based on vector control, with chemical control as a main component of integrated vector management. The important mosquito genera *Aedes, Anopheles* and *Culex* are all susceptible to a greater or lesser extent to some essential oils (EO) or their components. However, variations in toxicity of the EO against different mosquito species are common. Also, it has been demonstrated that the biological activity and chemical composition of EO can vary considerably depending on geographic location, growth conditions, plant parts from which they are extracted, developmental stage of the plant or the solvent used for extraction. Cinnamaldehyde and eugenol (24 and 44 µg/ml respectively) were shown to have strong larvicidal activity. The most widely marketed chemical-based insect repellent is N,N-diethyl-m-methylbenzamide (DEET), which has been used worldwide since 1957. Although this compound is effective against mosquitoes and is generally accepted as safe when used following product recommendations, it may exert toxic reactions in some circumstances and age groups. Most plant-based insect repellents currently on the market contain EO from one or more of the following plants: citronella (*Cymbopogon nardus*) or lemon eucalyptus (*Eucalyptus maculata citriodon*) where p-menthane diol is the active ingredient. Relationship structure/bioactivity was discussed. Repellent activity of carvacrol was RC_{50} = 24x10-5 mg cm-2, while its isomers the thymol was RC_{50} = 187.2x10-5 mg cm-2. Similar results were observed with 2- and 3-carene where the isomers obtained different repellent values.

L8.

THE OLIGONUCLEOTIDE IMT504 INDUCES PANCREATIC ISLET RECOVERY AND NORMALIZES HYPERGLYCEMIA IN STREPTOZOTOCIN-INDUCED DIABETES IN RATS

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IMT504, the prototype of the PyNTTTTGT class of oligodeoxynucleotides, stimulates mesenchymal stem cell (MSC) expansion *in vitro* and *in vivo*. Here we evaluated the effect of IMT504 on the diabetic condition in streptozotocin (STZ)-induced diabetes. Male Sprague-Dawley rats (200g BW) were ip injected with STZ (60 mg/kg, day 1). Animals with blood glucose from 200 to 360 mg/dl on day 3 were sc injected with IMT504 (4 mg/dose) or with saline for 10 days. Glycemia, water and food intake and BW were recorded for 30 days. IP glucose tolerance tests (IPGTT) were performed. Fasted animals were sacrificed, blood and pancreata were collected. IMT504 normalized blood glucose by day 8 [mg/dl: STZ-Saline=392±27, STZ-IMT504=116±11, $p<0.01$]. STZ-induced food and water intake increases were significantly lowered by IMT504. IPGTTs were nearly normalized by IMT504. A marked improvement in islet structure and beta cell content in STZ-IMT504 animals was observed. HOMA-IR and HOMA-beta cell were normalized in STZ-IMT504 animals. These data suggest that IMT504 is a candidate for therapeutics in diabetes.

CONICET, UBA, ANCYPT.

S1-1.
DIDACTIC RESEARCH IN THE BIOLOGICAL SCIENCES: REFLECTIONS FROM UNIVERSITY TEACHING

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An analysis of the trajectory of the teaching of science as inclusive of contributions from other fields of knowledge underscores the importance of the educational research done by teachers, since the problems posed by the teaching and learning of science within the framework of curricular projects of training and professional discipline. In this perspective, it is expected to provide analysis criteria to discuss the importance of research in the didactics of biological sciences in the knowledge of professional construction by the university teacher. To do so, it is essential to recognize the research lines that in the field of the idactics of the biological sciences have been prioritized from the analysis of publications in specialized journals and activities carried out by the scientific communities. These include those about the relationship between science teaching and society, science teaching and curriculum and the relationship between research, innovation and practice (VII and VIII International Congress on Research in Science Didactic). In this sense, it is necessary to question the theoretical perspectives, methodologies, and how to improve the impact of research on didactics, generating curriculum alternatives in training teachers of biological sciences, producing changes in institutions, teachers and students and incorporating innovations in teaching.

S1-2.
MEANINGFUL LEARNING OF THE BIOLOGICAL SCIENCES

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"*In the field of knowledge, shortcuts are usually the quickest way to avoid sense*" (Ortega, 2000). "Shortcuts" lead us to nonsense learning, however; ¿Can we talk about any nonsense learning? ¿Rote Learning can be referred to as true learning? Ausubel, the author of Meaningful Learning, states "*If I had to sum up the whole educative psychology into just one principle, I would say: the most meaningful influencing learning factor is what the student already knows"* (Ausubel, 1976). The previous knowledge composing the cognitive framework serves as an anchorage for the new construction of knowledge. The cognitive paradigm epistemologically based on constructivism considers learning as a reframing with an holistic view. For a meaningful learning some conditions related to the content and inner disposition of the student should be considered: *a) Affective meaning* b) *Cognitive Meaning* and c) *Logical Meaning* (Ausubel, 1976). Very often and from a critical perspective it is necessary "*to unlearn*" (Medina *et al.*, 2007) meaningfully, that is to say deconstruct the learning seeking for new senses in order to learn meaningfully. The area of knowledge of the Biological Sciences is complex, each of the levels of organizations is inclusive and represents more than the sum of the previous ones. Living beings constitute a very complex hierarchical organization (Curtis *et al.*, 2008) and this should be considered when they are being studied. The Complexity Theory (Morin, 1995) may be the appropriate one to interpret this object of study whose interactions and uncertainties are relevant and demands several viewpoints.

S1-3.
FROM SCIENTIFIC MODELS TO DIDACTICAL MODELS: THE DIDACTICAL TRANSPOSITION

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During the development of scientific knowledge, scientists are generally led to resort to mental representations or models as tools of reasoning. The main objective of models is to make explicit representations of the world produced by the human mind, embedded in a determined social context. Didactical models, independently of the analyzed level, are different from scientific models in that they are referred to in the epistemological environment as well as in the significance and the scope of the key concepts they use. Thus, scientific models or concepts are submitted to mechanisms that take them out from the science domain and put them into a didactical narrative. Many factors operate in this process, known as didactical transposition. Among them, the choice of the knowledge that has been made public, the choice of the structural framework, the sequence of the ideas, the adequacy of the language to the academic level of the advised target and the integration of multiple communication channels are of critical importance. In this work we analyze in first place different type of models and their scope, and then we focus on the factors and processes involved in the didactical transposition.

S2-1.
CONTRIBUTION TO THE METABOLISM OF THE AUTOCHTHONOUS MICROBIOTA AND TO THE INTEGRITY OF THE INTESTINAL EPITHELIUM BY DAIRY PROPIONIBACTERIA

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Dairy propionibacteria are part of the starter culture of some cheeses, so that their transit through the bowel is normal in human populations. Over the past 15 years, the volume of information available about their potential as probiotics, not only for humans but also for animals, has gradually increased. Their main attribute is to be natural producers of acetic and propionic acid by fermentation of carbohydrates. These acids are involved in the proliferation, differentiation and apoptosis of aged or damaged cells and transport of electrolytes and water through the epithelium. They modify the lipid metabolism in the liver and provide energy to various tissues. Many of these effects have already been demonstrated in our laboratory by feeding mice with propionibacteria. Some other important effects, which were recently demonstrated, are the removal of toxins and antinutritional factors and changes in the amount and type of mucus produced by goblet cells, which contributes indirectly to strengthen the intestinal wall. This knowledge encourages the study of their technological properties with the goal of designing new functional foods.

S2-2.
RECOMBINANT LACTIC ACID BACTERIA FOR THE PREVENTION OF RESPIRATORY INFECTIONS

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Our lab demonstrated that *Lactococcus lactis* NZ9000, orally or nasally administered, has intrinsic immunostimulating properties because it is able to improve immunity against *Streptococcus pneumoniae* (Sp) infection. We used the NICE system to develop a recombinant strain of *L. lactis* that is able to express the pneumococcal protective protein A (PppA) on its surface (LPA). It was observed that LPA is able to induce the production of mucosal and systemic specific antibodies in adult mice after a classic nasal immunization procedure. Moreover, challenge survival experiments demonstrated that immunization with LPA was able to increase resistance to systemic and respiratory infection with Sp serotype 14. Finally, we studied the effect of the oral or nasal immunization with LPA, using the optimal dose with intrinsic adjuvant activity. Adult and infant mice were nasally or orally immunized with LPA for 5 consecutive d (10^8cells/mouse/day). Vaccination was performed one or two times with a 2-week interval between each immunization. Treatments induced the production of systemic and respiratory specific antibodies and improved the resistance to respiratory challenges with Sp serotypes 3, 6B, 14 and 23F. Nasal immunization was more effective than oral vaccination. A recombinant *L. lactis* strain was developed, which is able to induce protective immunity against different Sp serotypes in both adult and infant mice.

S2-3.
FUNCTIONAL STARTER CULTURES FOR NEW WHEY-DERIVED FOODS

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Whey is source of high nutritional proteins, usually employed as food ingredients. β-Lactoglobulin (BLG) is the main whey protein (58%) and the principal cause of milk allergy. To reduce this risk, proteolytic lactic acid bacteria (LAB) were assayed to potentially degrade the BLG allergenic epitopes, to further design hypoallergenic whey-derived fermented beverages. *L. acidophilus* CRL636, *L. delbrueckii* subsp. *bulgaricus* CRL656 and 454 were capable of hydrolysing BLG, specifically its main epitopes 49-60, 102-124 and 149-162. *In vitro* assays demonstrated that these hydrolysates were less reactive against IgE of BLG allergic patients.

1.

HOME RANGES OF VICUNA FEMALES (*VICUGNA VICUGNA)* IN A LARGE ENCLOSURE, ABRA PAMPA, PROVINCE OF JUJUY

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The vicuna, a wild South American camelid of great economic importance for its fine wool, is raised on government ranches in 100 ha corrals. Previous radiotelemetric studies showed that males in these corrals have a strong site fidelity but are not territorial. The objective of this study was to collect similar data for females and to determine whether they stayed in the same families with the same male. Radiocollars were monitored on 3 females from 11/03 to 5/05 and on 2 more in 5/05 with 2-3 fixed stations and peak-null Yagi antennas. Home range areas were slightly smaller in females than in males (mean of 15.9 ha, compared with 21.4 ha) using 100% areas for convex polygons. One old female changed her home range together with a male in one case where both were radiocollared. Another female showed general stability in her home range, but occupied different parts in the different captures. A young female changed her home range completely from 2 to 3 years old and then remained stable. These data are consistent with the ones previously obtained from wild vicunas in supporting the assumption of stable families in the same general area for long periods and with a lack of stability in the home ranges of vicunas of less than 3 years.

2.

FIRST NESTING RECORD OF COSCOROBA SWAN (*COSCOROBA COSCOROBA*) AT LA ANGOSTURA RESERVOIR, TAFÍ DEL VALLE, TUCUMÁN, ARGENTINA

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The Coscoroba Swan nests in latitudes higher than 33º S from Buenos Aires (Argentina) and Chiloé (Chile) to the Isla Grande in Tierra del Fuego and, occasionally, in the Malvinas Islands. This is the first nesting record at a lower latitude, at 26º55'06" S 65º41'36" W, and at a high altitude, 2000 masl. We carried out our study from August 2004 to November 2005 in the La Angostura Reservoir, Argentina. We recorded twenty-six individuals and identified eight nests, four out of which exhibited activity, with a total of five egg-layings. Our objective is to study *Coscoroba coscoroba* nesting so as to contribute with reproductive information about this species. The presence of aquatic vegetation all year long demonstrates that this artificial wetland represents is a source of feeding and breeding resources and provides new habitats for colonizing species.

3.

WINTER BIRD COMMUNITY OF THE RESERVOIR LAS MADERAS, EL CARMEN, JUJUY, ARGENTINA

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The objective of this work was to determine the bird community structure and richness of the Las Maderas Reservoir and its surroundings during the winter period. The reservoir is located 12 Km from El Carmen, Jujuy. We recorded the species present and the habitats they occupied along the reservoir perimeter, on the Nº 9 national route and in the forest located nearby from May to August, 2008. Eighteen bird orders were observed, eight of them corresponding to the group of aquatic birds. A total of 100 species were identified. The most represented family was Tyrannidae, with 13 species. The most represented trophic assemblages were Insectivorous (38 species) and Omnivorous (25 species). Sixty percent of the registered species belong to both Chaco and Yungas ecoregions, and 21% to Chaco and 19% to Yungas only. Ten of these species are parcial austral migrants and one is a total austral migrant. These results offer basic information on birds and demonstrate that the reservoir serves as a refuge during the winter period. Future investigations are vital to determine the importance of this reservoir in the region.

4.

PHYTOTOXICITY IN AQUEOUS AND CHLOROFORM EXTRACTS OF *FUNASTRUM GRACILE* DECNE. ON *TRITICUM AESTIVUM* L. AND *LACTUCA SATIVA*

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In this work, the effect of aqueous (EA) and chloroform (EC) extracts of *F. gracile* on seeds of *T. aestivum* (monocotyledon) and *Lactuca sativa* (dicotyledon) was evaluated. The extracts were prepared with aerial parts from both species. Methods: Concentrations of 100, 500 and 1000 $\mu g.mg^{-1}$ for both extracts were used. Thirty seeds of each species were placed in Petri dishes with sterilized soft agar, with three replications per treatment. As a control treatment water and ethanol were used. Incubation at 25°C for 96 h was carried out. Germination percentage (PG), length of radicle (LR) and hypocotyl (LH), activity dehydrogenase (ADH) and conductivity efflux of cell (CEC) was determined. Single- factor ANOVA and rate of relative variation (TVR) were applied in order to evaluate the results. Results: the SEC, in the three concentrations, decreased 92% PG of *L. sativa*. The PG *T. aestivum* was less affected, but LR showed a reduction of 99.9%. The EA *L. sativa* produced a decrease of 58% in PG and an increase of 41% (100 $\mu g.mg^{-1}$) in ADH and 22.6% of CEC in three treatments. The EA *T. aestivum* caused a reduction of 70% in PG and 30% in LR and increased 73% in CEC to 500 and 1000 $\mu g.mg^{-1}$. ADH increased 90% to 100 $\mu g.mg^{-1}$. Conclusions: The EA presented moderate phytotoxic properties. The SEC inhibited PG in *L. sativa.* The PG in *T. aestivum* was less affected, but the absence of root growth reduced the number of seedlings to be developed. The SEC of *F. gracile* has a strong herbicide action.

5.

IDENTIFICATION OF THE INTESTINAL MICROBIAL COMMUNITY OF *ENANTIODRILUS BORELLI* (ANNELIDA: GLOSSOSCOLECIDAE)

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Earthworms play an important role in soil ecology. Their actions are favored by the activity of the microbial communities that inhabit the alimentary canal of these organisms. The main objective of this work was the identification of the microbial flora of the alimentary canal of *Enantiodrilus borelli*, an endemic species of the Neotropical region. The animals were collected in the Chicligasta Department, province of Tucumán. The alimentary canal was removed for dissection and later maceration in physiologic solution. The stumps were isolated for their later identification by means of biochemical tests following Bergey´s Manual.
Results: Twelve samples were isolated and 10 identified, among them *Marinococcus* sp., *Caryophanon* sp., *Planococcus* sp., two stumps of *Oscillospira* sp., *Bacillus* sp., two stumps of *Pseudomonas* sp., *Acidiphilium* sp., *Azomonas* sp. *Enantiodrilus borelli* was found to have a wide and diverse microbial flora in the alimentary canal, with both endogenous communities and some that entered the worm by ingestion.

6.

SURVEY OF THE NATIVE AND EXOTIC SPECIES IN THE ARGENTINA´S HOUSE OF INDEPENDENCE (CASA HISTÓRICA DE LA INDEPENDENCIA)

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The "House of Independence" Museum is a national monument and one of the symbols of Argentines identity. The House is the place where delegates met on July 9, 1816 at the General Congress to proclaim independence from Spain and to originate the United Provinces of South America. The aim of this work was to conduct a survey of the plant species within the Museum to determine native and exotic ones. Specimen samples were collected in the courtyards. Species were identified by means of taxonomic keys. The following species were identified: ***Pyrostegia venusta*** (Kerk-Grawl.) Miers., ***Brunfelsia australis*** Benth., ***Eugenia uniflora*** L., ***Rhododendron*** sp., ***Jasminum azoricum*** L., ***Prosopis nigra*** (Gris.) Hieron., ***Erythrina crista-galli*** L., ***Tabebuia avellanedae*** (Lorentz) Grises., ***Prunus persica*** (L.) Batssch., ***Citrus limón*** (L.) Burn., ***Citrus auriantium*** L., ***Citrus sinensis*** (L.) Osbeck, ***Hedera helix*** L., ***Euphorbia pulcherrima*** Will., ***Gardenia jasminoides*** Ellis., ***Bouganvillea spectabilis*** Willd. The Museum aims at a new design of the courtyards based on the list of present species, taking into account historical and aesthetic criteria with the participation of the whole community of the city of Tucumán.

7.

CYPERACEAE FROM LERMA VALLEY. SALTA. ARGENTINA

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Cyperaceae is a cosmopolitan family with greatest diversity in humid and semihumid tropics, but also often dominant in temperate and cold temperate regions of the world, comprising 104 genera and over 5000 species. In Argentina, there are 28 genera and 372 taxa.
The aim of this research is to determine genera and species from *Cyperaceae* family from the Lerma Valley and to contribute to the knowledge of vegetal diversity in that valley.
According to the specimens in the Salta Natural Science Museum (MCNS) Herbarium collected by me, there are 11 genera and 33 species.
The genera and their species are: 1-*Albidgaardia*: 1 species; 2-*Bulbostylis:* 3 species; 3-*Carex*: 2 species; 4-*Cyperus*: 11 species; 5-*Eleocharis*: 5 species; 6-*Fimbristylis*: 1 species; 7-*Kyllinga*: 2 species; 8-*Pycreus*: 1 species; 9-*Rhynchospora: 4 species;* 10-*Schoenoplectus*: 2 species and 11-*Scirpus*: 1 species.

8.

WILD PLANTS USED BY INHABITANTS OF ABRITA GRANDE AND NEARBY LOCALITIES (SANTIAGO DEL ESTERO, ARGENTINA)

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The aim of this work was to identify and explore alternative uses for the plant species of the region that the inhabitants of Abrita Grande, Santiago del Estero, and nearby localities use for various purposes. Semistructured interviews to the inhabitants as well as workshops and ethnobotanic rambles were carried out in the area under study to collect information. Out of the 44 species mentioned, *Prosopis alba, Geoffroea decorticans, Acacia aroma, Aspidosperma quebracho-blanco, Shinopsis lorentzii* and *Larrea divaricata* were among the most frequently mentioned. Plants are used for medicinal and forage purposes, for food, housing and for the manufacture of household goods; fewer species are recognized due to their dyeing and toxic properties. Out of all the species, 11 show medicinal use only; four, in turn, are used in four of the different categories of use. The inhabitants use a number of plants from their environment, some of which are totally exploited.

9.

TAXONOMIC STUDY OF LANTANA, DIPYRENA, PITRAEA, PRIVA AND URBANIA (VERBENACEAE) OF ARGENTINA

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Lantana L. Genus of Tropical and Subtropical America with representatives in Africa and Asia. In Argentina with 16 taxa. Aromatic shrub or subshrub with fleshy fruits and flowers having a tubular calyx in multiflowered, globose, dense heads.
Dipyrena Hook. Endemic genus of Argentina with one species in La Rioja, Mendoza and San Juan. Shrub with rigid, broom-like branches, non-aromatic, with schizocarp, dry fruits and flowers having a short calyx. Five-lobed, in dense, multiflowered spike-like raceme.
Pitraea Turcz. Genus of Argentina, Perú, Chile and Bolivia. Non-aromatic herb, with tuberose root, schizocarp, dry fruits and flowers having 5-toothed calyx, in multiflowered terminal spikes, lax or dense.
Priva Adans. Genus of Tropical and Subtropical regions of America, Africa and Asia, with one species of Formosa and Salta of Argentina. Non-aromatic herb, with schizocarp, dry fruits and flowers having a 5-lobed calyx, in terminal, lax, multiflowered spikes.
Urbania Phil. Genus with one species in the Argentinean and Chilean Puna. Non-aromatic subshrub, in dense cushions with schizocarp, dry fruits and flowers having a deeply 5-lobed calyx, with hygroscopic hairs, in dense pauciflowered spikes.

10.

THE GENUS ROSELLINIA (XYLARIACEAE-ASCOMYCOTA) IN THE NORTHWEST OF ARGENTINA (NWA)

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Rosellinia (Fr.) De Not. is a cosmopolitan genus with more than 90 species; they are economically important pathogens of roots and stem bases. Spegazzini (19^{th}-20^{th} century), the pioneer in the study of this genus in Argentina, proposed 14 species but *R. paraguayensis* and *R. smilacicola* were only collected in NWA. Later, *R. breensis* was proposed by Starbäck from Jujuy and recently Catania & Romero quoted *R. franciscae* and *R. subiculata* growing on *Podocarpus parlatorei* in Catamarca and Tucumán. The aim of this study was to determine the diversity of *Rosellinia* species in the Northwest of Argentina. The specimens were collected in protected areas of Jujuy, Salta and Tucumán. We studied our own collections and/or those from national and international herbaria (BAFC, FH, LIL, LPS). As a result, six taxa were registered: *R. arcuata* is first recorded for South American; *R. canzacotoana* is first recorded for Argentina; *R. necatrix* is first reported growing on a native host of the Argentinean flora; *R. smilacina* is proposed as a synonym for *Astrocystis smilacicola*; *R. australis* is a synonym for *R. bonaerensis* and *R. paraguayensis* is accepted as a good species.

11.

ROOT ANATOMIC DISTORTION IN A *Chenopodium quinoa* VARIETY INFECTED BY *Meloidogyne (Nematoda, Heteroderidae).* A NEW HOST IN TUCUMÁN

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Chenopodium quinoa Willd is a gluten-free pseudo-cereal which contains food proteins, hence it is an alternative food for celiac people. This *Chenopodium* species originated in the Peruvian Andes and spread to Ecuador, Bolivia, Chile, Argentina, Colombia and the U.S.A. Under the ANPCYT-Andean crops -PICT23153 Project ten varieties were assayed in field trials in order to reintroduce it as a food crop. Nematodes were detected in *C. quinoa* var. *ratuqui.* The aim of the present work was to evaluate root anatomic distortions caused by *Meloidogyne* sp. During 2007-2008, roots samples collected in Encalilla (2000 m.a.s.l., Tafí del Valle) were fixed and treated with conventional methods. Cysts were water- macerated for collection and identification of females. Giant cells in vascular cylinders altering regular tissue structure were observed. Agronomically, *C. quinoa* may be considered as a parasite trap plant. This is the first report of *Meloidogyne* sp. infecting *C. quinoa* var. *ratuqui* in Tucumán.

12.

ASEXUAL REPRODUCTION IN *SEEMANNIA* (GESNERIACEAE): PROPAGATION BY CORNS IN A NATURAL HYBRID

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Seemannia Regel is a genus of vascular plants with representatives in the Argentinean Yungas. They reproduce vegetatively by corns, underground structures. In nature, hybridization among native species occurs spontaneously. The aim of this work was to analyze the production of corns under different culture forms, considering that the individuals originated retain the characteristics of the mother plant. The plants of the selected hybrid were placed under different conditions of light (sun, shade), fungicide application and station time of the corns before planting. At the end of the annual cycle, the number of new corns and the biomass produced were determined. Wilcoxon and Kruskal-Wallis tests were used for the statistical analysis. There was an increase in the number of corns and a greater production of biomass when the plants were treated with a half shade and there was an increase in the dry weight when corns were stored for 30 days. The application of fungicide did not modify biomass production significantly. For good corns production, the use of shade and storage of the corns for 30 day are advisable.

13.

MORPHOANATOMY AND FOLIAR ARCHITECTURE OF *SCHINUS AREIRA* L. (ANACARDIACEAE)

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Schinus areira L. sin. *Schinus molle* L. var. *areira* (L.) DC. N.p. "molle", "terebinto", "aguaribay", "molle blanco", "molle castilla", "pimentero" (Legname, 1982) is a medicinal tree native of Central and South America (Martinez Crovetto, 1963). In Argentina, it grows in the provinces of Jujuy, Salta, Tucumán, Catamarca, Córdoba, La Rioja and San Luis. There is very little information about the anatomy of this species. The aim of our study was to analyze the morphoanatomy and foliar architecture of populations of *S. areira* from El Cadillal, Dpto. Tafí Viejo, Tucumán. The diagnostic characters found were idioblastic cells, with crystals, or tannins, glandular and non glandular trichomes and resin conducting channels.

14.

HONEY EXTRACTION MACHINES USED IN THE PROVINCE OF BUENOS AIRES

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Since 1995 the production of honey has regulations for facilities, machinery and handling. The purpose of this study was to assess materials and average capability of the machinery. Out of 140 facilities, 76% used honey sumps, 69% wells, and 50% honey and wax separators. Capacity: knives (frames/hr) (%) 50-350: 28; 351-650, 59; 651-950, 3, 951-1250, 6 and 1251-1500, 3. Extractor (frames/extr.) (%): 20-48: 65; 49-76, 6; 77-104, 24; 105-132, 4; 133-160, 1. Honey Sumps (kg) (%): 400-1500, 38; 1501-2600, 28; 2601-3700, 23, and 3700-4800, 11. Machines are made of Stainless Steel, painted galvanized, unpainted galvanized, and others: Uncapping Knife (%) 49, 42, 1, and 7. Tray: 38, 52, 9, and 1. Extractor: 38, 59, 4 and 0. Pumps: 26, 28, 4, and 42; and Honey Sumps: 46, 48, 3, and 4 in that order. Conclusion: most machines are made of painted galvanized and stainless steel. Most common rate for knives is 350-650 fr/hr; for extractors, 20-48 and 77-104 fr/extr., and for sumps, from 400 to 1500 kg.

15.

LONGEVITY OF SEEDS OF *Wedelia glauca* (Ortega) O. Hoffm. *ex* Hicken BURIED IN THE GROUND AND CONSERVED AT THE LABORATORY

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Wedelia glauca is a most important weed for many crops in northwestern Argentina. Knowledge of buried seed survival in the field gives important information about persistence and degradation patterns and helps to develop management practices. Studies were made to determine the longevity of: a) seeds buried in the ground; b) seeds conserved at the laboratory. In the first case bags with 50 fruits were placed 20 cm deep. Four were collected after 1 $^1/_2$, 3, 6, 12, 18 months. In the laboratory the fruit state was observed. For germinative power, seeds were placed in a chamber at 20º C for 25 days. In the second case, mature seeds harvested from 1991 to 2007 were conserved in the laboratory and kept at 20º C. Four replications of 25 seeds per year and origin were made. Germination percentage of buried seeds decreased and became null in 12 and 18 months. Buried seeds preserved viability for less than one year. In the lab, fruits from 1991 to 2002 did not germinate, from 2003 had 17% germinative power; from 2004, 48%; from 2005, 70%; from 2006, 71.5% and from 2007, 90%. In the field, the loss of germinative power was 100% at 12 months. This is because the fruits conserved in the lab do not suffer deep dehydration or metabolism interruption. *Wedelia* buried fruits lost germinative power after one year while those in the lab preserved germination capacity up to five years.

16.

LOSSES CAUSED PER UNIT OF THE WEED *Sicyos polyacanthus* Cogn. ON YIELD OF THE SUGARCANE cv LCP 85-384

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S. polyacanthus is a weed that affects sugarcane crops in low densities. It can cause great damage by overturning the crop. The objective of this work was to determine effects on yield by competence of one *Sicyos* plant. Assays were made in 2006 in Santa Bárbara, Tucumán, on cv LCP 85-384 with high infestation. Experimental design was randomized blocks with 4 treatments, 4 replications in 4 furrows of 10 m long plots. Treatments: T1) 40 weeds/plot (6300 pl.ha^{-1}; low infestation; 0.63 pl.m^{-2}); T2) 104 weeds/plot (16.300 pl.ha^{-1}; intermediate; 1.63 pl.m^{-2}); T3) 160 weeds/plot (25,000 pl.ha^{-1}; high; 2.50 pl.m^{-2}); T4) Control without competence. *S. polyacanthus* caused losses on yield for: T1) 21% with 20,664 kg cane.ha^{-1}; T2) 28% with 27,552 kg cane.ha^{-1}; T3) 37% with 36,408 kg cane ha^{-1}; T4) 0% in Control. Sugar losses were: T1) 24% with 3,070.08 kg sugar.ha^{-1}; T2) 32% with 4,093.44 kg sugar ha^{-1}; T3) 41% with 5,244.72 kg sugar ha^{-1}; T4) 0% in Control. Losses caused by one plant were: T1) 3.28 kg cane/weed and 0.487 kg sugar/weed in low infestation; T2) 1.69 kg cane/weed and 0.251 kg sugar/weed in intermediate; T3) 1.45 kg cane/weed and 0.209 kg sugar/weed in high; T4) clean Control. One plant causes losses of 2.4 kg of cane and 0.315 kg sugar. One *S. polyacanthus* plant causes great losses in cane production and sugar with significant effects in all treatments assayed.

17.

USE OF DIFFERENT MULCHING GRADES FOR *Cyperus rotundus* L. AND SOME *POACEAS* MANAGEMENT IN SUGARCANE CROPS

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The use of mulching as cultural technique in crop cleaning has increased. The objective of this work was to determine the different covering-grades of sugarcane harvest remains and their incidence on weed control. The weeds studied were *Cynodon, Sorghum, Panicum, Digitaria* and *Cyperus*. Work was carried out in 2005-2006 at Lolita, Tucumán, on cv LCP 85-384 with integral harvest system. Treatments were: T1: 5tn/ha; T2: 9tn/ha; T3:14tn/ha; T4:18 tn/ha (mulching control), T5 weedy without mulching; 15 m long plots by 4-furrows wide (96 m^2) were distributed at randomized blocks with 4 replications. Weed evaluation was realized by Chaila's (1986) abundance-covering scale. The results showed that treatmernts of 5 tn/ha mulching had weeds until Level 2 (11-25%) of abundance-covering scale. *Digitaria* is always at Level 1(1-10%). *Sorghum* and *Panicum* are always at Level 2. *Cynodon* and *Cyperus* can reach level 3 (26-50%) on some occasions. For 9 tn/ha only *Cynodon* and *Digitaria* (Level 1) and exceptionally *Sorghum* appeared. For 14 and 18 tn/ha none of the studied species (except *Cynodon*) appeared. Losses in cane and sugar production were: T1(13.51% and 16.83%); T2 (8.78% and 10.65%); T3 (1.35% and 1.92%); T4 (0%); T5(24.34% and 30.14%). *Cynodon* is the only one that grows on mulching. The covering degree of mulching on ground will determine the control efficiency and will prevent production losses.

18.

EXPERIMENTAL DEMOGRAPHY OF *Solanum nigrum* L. WEED IN SUGARCANE CROPS OF LOS RALOS (TUCUMÁN-ARGENTINA)

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S. nigrum is a weed in important crops in Argentina. Data about competence, crop damages and demographic studies are unknown. The objective of this work was to contribute to demographic parameter use that defines weed incidence in sugarcane crops. Work was carried out at Los Ralos (Tucumán) in 2005 on cv TUC 77-42 in randomized blocks with 3 replications, 480 m^2, plots with intermediate to high infestation. Demographic parameters (Chaila, 1998) were: MBR (mortality brute rate), NBR (natality brute rate), Sv (Survival), PSv (probable survival), IP (infestation potential). For IP a Chaila (2001) model that relates viability (tetrazolium test), germinative power, seeds entering the bank and species density was used. A non-parametric statistical analysis was made. In Los Ralos, the mean values were lower than the theoretical means for survivals in 6,284.65 $pl.ha^{-1}$ with a density of 0.62 $pl.m^{-2}$. An MBR of 750.00‰; an NBR of 250.00‰ and a Sv of 63.10‰ were found. IP was lower than 218.62 $m^2.pl^{-1}$, the same as the theoretical genus mean. One plant can infest 161.36 $m^2.pl^{-1}$ with its next offspring. We concluded that MBR is a high rate and greater than the species mean; NBR is intermediate and lower than the species mean while PSv is very low. Low survival rate determines that species can support the weed's interference relationships with sugarcane crops at the establishing stage, with moderate competence strategies. This explains the presence of the weed in spots around the original plant.

19.

INFLUENCE OF UNITARY BIOMASS OF *Talinum paniculatum* (Jacq.) Gaertn. IN COMPETENCE WITH SUGARCANE IN A SYSTEM OF MULCHING MANAGEMENT

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T. paniculatum (TALPT) is a weed in different eastern Tucumán sugarcane crops with mulching management systems. The objective of this work was to analyze cane and sugar production losses by weed action in specific competence on crop. Work was carried out in 2005-2006 at Lolita Norte (Tucumán, AR), on cv LCP 85-384 with mulching (13,57 tn/ha); 27-64 m2 plots in randomized blocks in 50 ha with TALPT. Treatments: T1: 2440 $pl.ha^{-1}$; T2: 3180 $pl.ha^{-1}$; T3: 3840 $pl.ha^{-1}$; T4: 4380 $pl.ha^{-1}$; T5: 4920 $pl.ha^{-1}$; T6: 5280 $pl.ha^{-1}$; T7: 6420 $pl.ha^{-1}$; T8: 7140 $pl.ha^{-1}$; T9: Clean Control. Losses were: T1: 2682 $kg.ha^{-1}$, 413.02 $kg.ha^{-1}$; T2: 3129 $kg.ha^{-1}$, 507.43 $kg.ha^{-1}$; T3: 3754.80 $kg.ha^{-1}$, 601.84 $kg.ha^{-1}$; T4: 4470 $kg.ha^{-1}$, 755.25 $kg.ha^{-1}$; T5: 5364 $kg.ha^{-1}$, 814.25 $kg.ha^{-1}$; T6: 5811 $kg.ha^{-1}$, 849.65 $kg.ha^{-1}$; T7: 6347.40 $kg.ha^{-1}$ and 991.26 $kg.ha^{-1}$;T8: 7599 $kg.ha^{-1}$, 1132.87 $kg.ha^{-1}$; T9: 0. One weed plant causes losses of 1026.00 g. cane and 161.17 g sugar. TALPT average dry biomass for one plant in each treatment was: T1: 180 g $bs.pl^{-1}$; T2: 160 g $bs.pl^{-1}$; T3: 144.50 g $bs.pl^{-1}$; T4: 123.40 g $bs.pl^{-1}$; T5:89.10 g $bs.pl^{-1}$; T6: 65.20 g $bs.pl^{-1}$; T7:53.70 g bs. pl^{-1}; T8: 42.20 g $bs.pl^{-1}$; T9: 0. Inside mulching, average of losses by 1 g dry biomass is 12.49 g cane and 1.92 g sugar. Losses at production indicate the presence of a competitor weed and establishment with mulching practice.

20.

ANALYSES OF DEVELOPMENT AND ADAPTABILITY IN SEEDLINGS OF STRAWBERRY (*Fragaria x ananassa* DUCH.) FROM DIFFERENT PROVENANCES

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In Argentina there are 1100 ha planted with strawberries. The main production zones in the province of Tucumán are Lules (fresh fruit) and Tafí del Valle with seedling production. The objective of this work was to evaluate the development of strawberry seedlings of different provenances to determine their adaptability to the Tucumán production zones. Work was carried out from June to December 2007 at CEAL (Lules)- INTA, located at 26º 55' 55" SL., 65º 19' 55" WL. A completely randomized experimental design was made with Camarosa variety from the provinces of Santa Cruz, Chubut and Tucumán (Tafí del Valle). During the crop cycle, minimum and intermediate temperatures were registered. Weekly counts of reproductive organs and number of flowers and fruits were recorded to calculate seedling development and response. Results: there was maximum fruit production in Santa Cruz seedlings in July-August. In September-October there was a great production from Chubut seedlings. Tafí del Valle seedlings had maximum production in October, November and December. The seedlings studied were adapted to the agroecological conditions of Lules at different crop stages. We concluded that Tucumán can offer fresh fruit during the greater part of the year. This is important for the exportation of strawberries in the summer and spring months.

21.

LABORATORY-SCALE STUDY OF BIOCIDES USED IN THE SUGAR INDUSTRY IN TUCUMAN

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The sugar industry uses biocidal products mainly to reduce the reaction of sucrose inversion caused by microbial invertase. The purpose of this study was to evaluate at the laboratory scale the action of the main biocidal products used in sugar cane juice in the Tucumán sugar industry.
The process of sugar cane juice clarification before being warmed up to enter the decanter was reproduced. The biocides used were: sodium hypochlorite (NaClO), quaternary ammonium compounds (AM), organo sulfur (OS) and dimethyldithiocarbamate-ethylenebisdithiocarbamate (DE). Two concentrations were tested: i) normally employed in the local sugar industry and ii) 10 times higher concentrations with respect to (i). The doses commonly used at the local sugar industry did not produce a significant reduction in the microorganisms present in sugar cane juice. At 10-fold higher concentrations the decreases were significant only for NaCl and quaternary ammonium.
Further studies would be necessary using higher concentrations or combinations of different biocides.

22.

BIOTYPES OF WHITEFLY *Bemisia tabaci* (GENNADIUS) VECTORS OF BEGOMOVIRUS IN BEAN CROPS

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Studies of whitefly *Bemisia tabaci* populations have demonstrated a complex taxonomy and the possibility that some members of this taxon could be different species or a complex of different biotypes. The aim of this study was to determine the whitefly biotypes of *B. tabaci* in bean in northwestern Argentina. Adult whiteflies were collected from 5 localities in the districts of Gral. J. San Martin, Orán and Metán in the Salta province. DNA was extracted from individual insects. Biotypes were identified through RAPD-PCR. Band profiles from 9 lots were similar to biotype A used as a control. Samples of 2 lots from the locality of Pichanal showed profiles different from the standards used for biotypes A and B. Other primers will be used to continue identifying samples that presented different profiles. These results showed the presence of biotype A of *B. tabaci* and the possibility of another biotype in the beans crops at Pichanal. Monitoring whiteflies biotypes is essential for efficient control as well as to prevent the invasion of foreign biotypes and enable a better management of the diseases they transmit.

23.

EFFECT OF THE POPULATIONS OF *Alabama argillacea* Hübner ON COTTON CROPS AT TWO DISTANCES IN THE IRRIGATION AREA OF SANTIAGO DEL ESTERO

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In order to evaluate the incidence of damage to the leafworm in yields in cotton narrow and ultra narrow rows crops, was tested from 2005 through 2007 at distances between lines of the crop of 0.38 and 0.76 meters. The experimental design was split plot with four replications. The period evaluated was extended from the early of blooming to first open boll. The treatments were: T1 without control of larvae; T2: with control of larvae; T3: control since the early of blooming to the end of effective blooming rest without control and T4: with control since end of effective blooming to first open boll. The effect of injuries on the crop was evaluated trough the cotton yield and fiber quality. The density of the populations of larvae were recorded weekly, with vertical cloth, and were expressed per square meter. The populations of *A. argillacea* in the evaluated period and distance of 0.38 and 0.76 m between rows, were present from early of blooming until to first open boll. The highest densities were recorded between the end of effective blooming and to first open boll. There were differences in the densities of populations in the distance between rows, they remain higher for 0.38 m. The defoliattion reduced weight and number of fruits during the evaluated period.

24.

ANALYSIS OF THE PRODUCTION OF PROPOLIS WITH DIFFERENT EXTRACTION SYSTEMS AND OF THE PRODUCTIVE CAPACITY OF HIVES

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Propolis is collected with screens and traps. The study evaluates collection systems and yield/hive. We used moulded fibre glass (A), die-cast plastic (B), double thread woven plastic (C) screens, and trapezoidal opening traps (D). We checked for lifespan, collection complexity and retention % after extraction. We also determined yield/hive: screen or trap, and scraping. Results were: retention % A 8.97, B 13.36, C 3.21, D 25.67; Extraction complexity (time) A medium, B and D Low, and C high; lifespan (seasons) A low, B and C medium and D high; yieldi/hive: Apiary I 37.07 gr/screen or trap/hive and 23.07 gr/scrape/hive. Apiary II 28.41 gr/screen or trap/hive and 14.22 gr/scrape/hive. Double thread woven screens showed easier extraction and lower retention %, and intermediate lifespan. Both apiaries showed similar yields but #1 had higher values for scraping of those heads with screens and traps.

25.

EFFECT OF SALINE AND HYDRIC STRESS ON THE GERMINATION OF *Wedelia glauca* (Ort.) Hoffmann ex Hicken

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Germination is a key event in success determination of a weed in an agro ecosystem. The ability to germinate under hydro stress or high saline content in soil can give advantage to a weed but not to other species. The objective of this work was to determine the effects of saline and hydro stress on the germination of *W. glauca*. Twenty fruits were incubated in sodium chloride solutions of 0; 0.4; 0.8; 1.2; 1.6 and 2.0 mM. Then, the germinated plantlets were weighted and root length was measured. Solutions with osmotic potentials of 0; -0.2; -0.4; -0.6; -0.8, -1.0 MPa were made with PEG 6000 (Polyethylene glycol 6000) in water. Non-linear regression analysis was used. *Wedelia* germination decreases when sodium chloride concentrations increase from 0 to 2.4 mM. Percentage was highest (91.88%) in distilled water and decreased to 16.25% at 2.0 mM. Germination was inhibited at 2.4 mM; 50% of germination was at 1,215 mM. Under saline conditions root length and plant weigh were affected. Plants do not survive under high saline soils. Germination decreased from 85% to 11.25% when hydric stress increased from 0 to -0.6MPa. Germination was completely inhibited at -0.8 MPa and higher. *Wedelia* ability for germinating until -0.6 MPa indicates that the weed is not sensitive to low hydric potentials and is capable of establishment in low humidity content soils.

26.

IMPACT ON SEED PRODUCTION OF *Sicyos polyacanthus* Cogn. IN THE DAMAGE ESTIMATION OF SUGARCANE CROP cv LCP 85-384

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S.polyacanthus is a dangerous weed that spreads by seed. The objective of this work was to determine the impact on *Sicyos* seed production in the damage level at cultural and saccharine sugarcane cv LCP 85-384 yield. Work was carried out at Finca Manantial-FAZ in completely randomized blocks, 3 replications with 4-furrows plots. Seeds were collected every seven days. Tetrazolium test and germinative power on 50 seed samples were made. Treatments: T1) 310 pl.ha^{-1}; T2) 640 pl.ha^{-1}; T3) 1,250 pl.ha^{-1}; T4) 1,820 pl.ha^{-1}; T5) 2,440 pl.ha^{-1}; T6) 3,170 pl.ha^{-1}; T7) 4,220 pl.ha^{-1}; T8) 6,129 pl.ha^{-1}; T9) 7,839 pl.ha^{-1}; T10) 9,230 pl.ha^{-1}. Results: T1) 1,620 sem.pl^{-1}; 502,200 sem.ha^{-1}; 18,144 m^{-2}.pl^{-1}; 97.65 kg sugar.ha^{-1}. T2) 1,600 sem.pl^{-1}; 1,030,400 seed.ha^{-1}; 9,016 m^{-2}.pl^{-1}; 201.60 kg sugar.ha^{-1}. T3) 1,540 seed.pl^{-1}; 1,925,000 seed.ha^{-1}; 4,312 m^{-2}.pl^{-1}; 393.75 kg sugar.ha^{-1}. T4) 1,480 seed.pl^{-1}; 2,693,600 seed.ha^{-1}; 2,762.66 m^{-2}.pl^{-1}; 573.30 kg sugar.ha^{-1}. T5) 1,330 seed.pl^{-1}; 3,245,200 seed.ha^{-1}; 1,862 m^{-2}.pl^{-1}; 768.6 kg sugar.ha^{-1}. T6) 1,310 seed.pl^{-1}; 4,152,700 seed.ha^{-1}; 1,375.50 m^{-2}.pl^{-1}; 998.55 kg sugar.ha^{-1}. T7) 1,300 seed. pl^{-1}; 5,486,000 seed.ha^{-1}; 1,040 m^{-2}.pl^{-1}; 1,329.3 kg sugar.ha^{-1}. T8) 1,260 seed.pl^{-1}; 7,721,280 seed.ha^{-1}; 694.03 m^{-2}. pl^{-1}; 1,930.32 kg sugar.ha^{-1}. T9) 1,200 seed.pl^{-1}; 9,406,800 seed.ha^{-1}; 516.92 m^{-2}.pl^{-1}; 2,469.28 kg sugar.ha^{-1}. T10) 1,180 sem.pl^{-1}; 10,891,400 seed.ha^{-1}; 430.95 m^{-2}. pl^{-1}; 2,907.45 kg sugar.ha^{-1}. Plant density is less than 1 pl.m^{-2} but influences total seed number and infestation potential.

27.

PROTEIN DETERMINATION IN CITRUS FRUITS PEEL

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The main cultures of the province of Tucumán (Argentina) are lemon (*Citrus lemon*) and mandarin (*Citrus reshni*). Peel composition includes trace elements, ascorbic acid, carotenoids, dietary fibber, polyphenols, pectin, flavonoids, fats, proteins and ash. The objective of this work was to determine the protein content of lemon and mandarin peels by a spectrophotometric method for their possible use in animal foods. Standardization was done with samples of commercial bovine milk and soybean liquid food as standard solutions, also using the Kjeldahl method. This methodology was used to try to implement a quick and easy method without acid digestions as in the official method. A Total Protein Kit, Micro Lowry, Ohnishi & Barr modification, from SIGMA, was used. Samples were analyzed in triplicate and average values were calculated. The data obtained showed that it is possible to determine the protein content in citrus peel by Lowry's method because the values of standard samples do not show significant differences in either technique. Therefore, the proposed technique could be applied as a routine method for protein determination in citrus peel. Samples contain low protein concentration; therefore, in order to elaborate animal foods, other sources of animal proteins and carbohydrates would have to be added.

28.

EVALUATION OF THE LACTEAL PRODUCTION IN THREE RACES OF A FLOCK OF DAIRY GOATS IN A SEMIINTENSIVE FAMILY PRODUCTION SYSTEM

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Milk goat is produced in limited quantities in our country and is traded in different forms, which are gaining acceptance on the consumer market. It is important to underline the therapeutic value of this product for the treatment of suckling children alergic to cow milk. The objective of this work was to measure milk production and to determine its quality by means of the composition of the milk obtained from two breeds and their cross belonging to one flock of milky goats in a family production system. The work was carried out in a small farm in the Central Valley of Catamarca; there were 12 adult goats of Saanen and Anglonubian breeds and their cross, maintained partly stabled. Milk controls were made every 28 days. For the determination of the milk composition representative samples were taken in each breed lot. The milk samples were analyzed for butter and total protein percentages, acidity, density and pH. A significant difference (p<0.05) was found for the values of milk production between the different breeds:Saanen 1,80000±0.6363 l/day, Anglo Nubian 0,79750±0.1628 l/day, cross 0,97650±0.1138l/day. The protein values and acidity presented a significant difference (p<0.05): protein in the breeds: Anglo Nubian 3. 50 g% ml, Saanen 2. 81 g% ml, and its cross 3.70 g% ml. The following means of acidity percentages observed in lactic acid were: Anglo Nubian 0.11 g %, Saanen 0.18 g % and cross 0.12 g %. The percentages of butter, the density values and pH of the milk showed no significant differences between breeds and cross. It was concluded that milk production and quality in a semintensive system change accordng to breed type and feeding system.

29.

PRELIMINARY STUDIES OF THE ANALYSIS OF THE GROWTH OF *Sphaeralcea bonariensis* Cav. Griseb

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Sphaeralcea bonariensis, a member of the malvaceae family, is a perennial weed that has been reported as far as northeastern Argentina. The objective of this work was to determine the growth curve and the foliar area of globe mallow. In April 2007 contemporary plants pertaining to stand were demarcated. From then on and at regular intervals plants were collected to obtain data on growth and its components: height, fresh weight and dry weight of the complete plant, fresh weight and dry weight of leaves and stems and foliar area. For the determinations of weight the individuals were divided and dried at 60ºC for 72 hours and soon weighted. The data of accumulated dry weight were adjusted to an exponential function. The totality of the foliar fraction was used in the determination of the foliar area by scanning of the leaves and calculation of the total surface. The last harvest was performed when the plants began to produce their first fruits. The foliar area followed a sigmoid pattern. The preliminary results suggested that approximately after 30 days of emergence a plant average exhibits a foliar area of 3 dm^2 and that afer 40 days it reaches more than half of the total foliar area. Both surfaces are sufficient to receive a suitable amount of weed killer.

Key words: globe mallow, growth analysis, *Sphaeralcea bonariensis.*

30.

EVALUATION OF *WHEAT STREAK MOSAIC VIRUS* (WSMV)-CAUSED DAMAGE ON YIELD ACCORDING TO INCIDENCE IN ARTIFICIAL INFECTIONS

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Yield decrease was determined according to incidence in artificial infections in ACA 801, ACA 304, P. Gaucho, and P. Molinero wheat cultivars using a BCA design with 3 replicates, performed at the experimental station of INTA Marcos Juárez (Córdoba province). Plants were mechanically inoculated and evaluated by severity grade and serology and flag lead stage. The results of incidence and decrease relative to health controls were: ACA 304, 5% and 12%, ACA 801:1% and 26%, P. Gaucho:1% and 18%, and P. Molinero: 2% and 47% respectively. The cultivar that showed a the highest yield decrease under the assayed conditions were Prointa Molinero and ACA 801, although their incidence was not very relevant. These results should be taken into account by wheat producers with respect to the damage caused by WSMV concerning yield decrease as a consequence of WSMV presence in this crop.

31.

VOCALIZATIONS IN DOMESTIC CATS: ACOUSTIC PARAMETERS IN DIFFERENT CONTEXTS OF EMISSION (*FELIS CATUS*)

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We analyzed acoustic features (max., min. freq., intensity, etc.) of calls in domestic cats to determine whether significant differences existed between the different sexes and contexts. We also found that the calls occurred in bouts, a fact not mentioned in the literature. We recorded the calls of 14 cats (8 females and 6 males) in 2 situations: 1) isolation and 2) request for food. Subsequently, we analyzed the spectrograms with computer programs, and we characterized the bouts and derived parameters for them for both sexes and contexts. Statistical analyses revealed that the calls did not show significant differences between contexts. However, we noted significant differences between sexes; in isolation, the average duration was greater in males, and in begging for food, the number of calls in each bout was greater in females. The similarity of average values among sexes (except for the significant differences observed) and contexts in most of the parameters are probably due to the fact that motivations were similar in both cases (lack of food and freedom) according to Morton's motivation-structural rules.

32.

ACOUSTIC ANALYSIS OF THE VOCAL REPERTOIRE OF OCELOT (*Leopardus pardalis*) IN CAPTIVITY

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The present study was carried out in a Neotropical wild cat (*Leopardus pardalis*); the main objectives were to record and describe physically the vocalizations of ocelots. After recording, their spectrograms were computed with a computer program. We worked with 8 individuals caged individually in two reservations. By means of the analysis of different acoustics parameters (duration, range of frequencies, repetition rate, pulse duration, etc) we defined 8 different calls classified in two groups (4 agonistic and 4 non agonistic). Three agonistic vocalizations (growl, hiss and spit) were noisy, one (yowl) was a tonal call (219-2500 hz.). We defined two growls: growl 1 has a larger bandwidth (70-3563 hz) than growl 2 (70-877 hz) and only growl 1 was emitted in combination wiht hiss and spit. The non-agonistic calls (mew, purr, gurgle and chatter) are more varied (tonal, pulsate, atonal). Mew 1 is less intense and mew 2 longer (0.66 sec against 2.79 sec) although the bandwidths are similar. Purr has a pulsation rate different from other felines (24.83 p/sec). We confirmed the presence of the gurgle, an affiliative call only postulated previously, as well as its linkage with other vocalizations. We analyzed the mew, its variations and linkages, and we included the first spectrogram of the chatter. Growl and mew were the most varied intraspecific vocalizations and differed from those of other felines (puma, yaguarundi, Geoffrey´s cat and domestic cats).

33.

THE OSPREY (*PANDION HALIAETUS CAROLINENSIS*) IN THE RIO HONDO RESERVOIR, SANTIAGO DEL ESTERO - TUCUMAN: A HEMISPHERICAL MIGRATORY SPECIES

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The Osprey has a world distribution and winters or breeds in all continents. *Pandion haliaetus carolinensis* breeds in the Northern Hemisphere and winters in Southern South America (Argentina and Uruguay). In this work we present new information about this migratory species based on the observation of numerous individuals in Northwestern Argentina. In the Rio Hondo Reservoir from the Salí-Dulce Basin (27º30'S and 65º00' W), 37 visual sightings were made during the period 2006-2008 between October and February, except for a single record in May. The first records of this species for Argentina correspond to this basin in Tucumán. We also observed an individual in the La Angostura Reservoir (26º55' S, 65º41' W and 2000 masl) in 2005. Work on bird communities contribute to the general knowledge on birds and are particularly useful in the monitoring of bird populations.

34.

BIOLOGICAL ACTIVITY OF THE METHANOL EXTRACT OF *Hyaloseris andrade-* LIMAE, *Hyaloseris cinerea* GRISEB AND *Hyaloseris rubicunda* GRISEB ON *Triticum aestivum* L. AND *Lactuca sativa*

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In this work, the effect of methanol extract (EM) from three species of the genus *Hyaloseris* on wheat seeds and lettuce, was evaluated in a comparative way. Germination percentage (PG), length of radicle (LR) and hypocotyl (LH) and activity of dehydrogenase (ADH) were determined. The extract was prepared with the aerial parts of three species. Concentrations of 300, 600 and 1000 $\mu g.mg^{-1}$ were used. Thirty seeds of each species were placed in Petri dishes with sterilized soft agar, with three replications of each concentration and treatment control. Incubation at 25ºC for 96 h was applied. Single-factor ANOVA and rate of relative variation (TVR) was applied in order to evaluate the results. For *Triticum aestivum,* results were: *H. andrade* and *H. rubicunda* the EM to 1000 $\mu g.mg^{-1}$ produced 68.8% inhibition of germination; *H. cinerea* there was a decrease in PG 50.0% to 300 $\mu g.mg^{-1}$. The three plant species showed a similar decrease for LH and LR at all concentrations. All plant species showed an increase in ADH for all concentrations. *Lactuca sativa:* for *H. andrade* and *H. cinerea*, the EM 300, 600 and 1000 $\mu g.mg^{-1}$ produced 100% inhibition of germination, as for *H. rubicunda*, there was a decrease in PG 96.8% to 300 $\mu g.mg^{-1}$ and from 81.3% to 1000 $\mu g.mg^{-1}$. In germinated seeds it showed a reduction of 90% in LR and LH. The increasing % of ADH indicates an alteration of the metabolic process of the plant. Based on the these results, we clearly tested the EM's ability to inhibit the germination and development of *L. sativa* and *T. aestivum.*

35.

COMPOSITION OF THE ICTHYOFAUNA IN AQUATIC ENVIRONMENTS OF THE LERMA VALLEY, SALTA

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Rivers present a longitudinal and seasonal gradient from nascent to mouth, with the consequent changes in their environmental characteristics and specific composition. The aim of this work was to analyze the fish fauna of the Lerma Valley aquatic environments: Arias river, La Caldera river, Gallinato stream and Rosario river. Seasonal samplings were carried out following the longitudinal gradient. The catches were performed with fishing rod and fish hook, cod-end fish net and traps. The material was fixed in 10% formaldehyde and its identification was performed using keys. Description of fish communities comprised specific composition, richness, abundance and diversity estimated for every environment. During the study period 12 species belonging to the orders Siluriforms, Cyprinodontiforms and Characiforms were determined. The most common species were *Corydoras paleatus*, *Jenynsia lineata*, *Astyanax eigenmanniorum*, *Trichomycterus spegazzini* and *Heptapterus mustelinus*. The richness of species changed seasonally, with a decrease in the autumn. The values of high equitativite were registered in the spring. The icthyo-communities analyzed presented a similar composition and comprised small fish species.

36.

USE OF WATER QUALITY INDICATORS AT THE MARAPA AND CHICO RIVERS IN TUCUMAN, ARGENTINA

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Quality indicators are very much in use at present since they enable the assignation of values to a quality resourse using a limited number of parameters. The objective of this work is to compare the quality of the Marapa and Chico rivers during 2006 in Tucumán, Argentina. Both are affluents of the Río Hondo Dam and can have an impact on its contamination. DRH (Hydric Resources) staff collect monthy samples from these rivers. The variables used to determine Water Quality Index (WQI were: pH, turbidity, biochemical oxygen demand, total dissolved solids, nitrates and phosphates, dissolved oxygen and faecal colliforms. The method used (WQI) determines that values ranging from 71 to 90 correspond to good water quality whereas values from 51 to 70 indicate courses with fair water quality. According to our results, the Marapa river may be considered as having good quality water because it had good qualifications in all the months analyzed. The Chico river has fair quality water in October. On the other hand, the Marapa river has excellent values (with the exception of June and August). In both cases quality gets worse in the months with less dilution. It can be concluded that in both watercourses human activities (urbanization, industries, agriculture and cattle raising) have an impact on the quality of the water.

37.

GAMMA-PROTEOBACTERIA PRESENCE IN DELPHACID VECTORS OF MAL DE RÍO CUARTO VIRUS

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Wolbachia pipientis (*alfa-proteobacteria*) has been recently detected in three natural vectors of *Mal de Río Cuarto virus* (MRCV) in Argentina: *Caenodelphax teapae*, *Delphacodes kuscheli* and *Toya propinqua*. Given the fact that *W. pipientis* is absent from some of the species studied and on the basis of the hypothesis of the existence of another symbiont in them, the aim of this work was to demonstrate the presence of another bacterium which allow us to continue the study of the role of endosymbionts in the MRCV cycle. DNA was analyzed by PCR using specific primers for eubacteria and *Buchnera aphidicola*. Sequence analysis suggested the presence of a *gamma-proteobacteria* in all the vectors species studied though *B. aphidicola* could not be detected. This is the first report on the presence of *gamma-proteobacteria* in MRCV vectors, which will enable the widening of the research field and the increase in the knowledge of the propagative transmission biology of this virus.
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38.

PREDATORY INSECTS IN COTTON CROPS WITH NARROW AND ULTRA NARROW ROWS

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The aim of this experiment was to determine the relative abundance of species of predator insects in narrow and ultra narrow row cotton crops in the irrigation area of Santiago del Estero; associated with the populations of insect pests such as aphids *Aphis gossypii* G., capulleras complex *Gros.Heliothis-Helicoverpa* and leafworm *Alabama argillacea* H. The distance between lines of the crop were 0.38 and 0.76 meters. The experiment was conducted during the agricultural 2005-06 season in the experimental field of La Maria (EEA Santiago del Estero). Cotton was planted on 22 Nov 2005 and the experimental design was split plot with four replications. The densities of the populations of predators were recorded every seven days, during the stages of squaring, blooming and fruiting, with vertical cloth of one meter. There was a greater abundance of the populations of predatory insects to crops with rows spaced 0.76 m. Ladybird beetles (Coleoptera: Coccinellidae) represented the largest group, with values of 54-58%, followed by lacewings (Neuroptera: Chrysopidae) with 30-32% and by bugs (Hemiptera: Heteroptera), with values of 11-13%.

39.

BIODIRECTED FRACTIONATION OF ETHANOLIC EXTRACTS OF *Phoradendron liga* (Gill ex H.& Arn.) Eich. ANTIFUNGAL ACTIVITY AGAINST LEMON PATHOGENIC FUNGI

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Citrus (lemons) are attacked by fungi which produce great losses during post-harvest. Plants of Northwestern Argentina produce antifungal substances. A biodirected study was performed to separate the active substances from *Phoradendron liga*. Ethanolic extracts, 10% (w/v) from dry leaves were prepared and assayed on *Penicillum digitatum, P. expansum, Aspergillus niger* and *Geotrichum candidum* growth. Antifungal activity was assayed by bioautography on silica gel plates and by radial growth inhibition. Extract fractionation was performed by extraction with solvents of increasing polarity (ethyl ether, dichlorometane and methanol). The most active fraction (methanolic) was fractionated by gel filtration on Sephadex LH 20. Three main fractions (F1; F2; F3) were pooled. F2, the most active one, was fractionated in five fractions (P1-P5) by silica gel. P4 was selected to analyse its general composition for the purpose of determining the chemical structure of its components.

40.

ANALYSIS OF GENOTOXICITY OF COMPOUNDS ISOLATED FROM *TRIPODANTHUS ACUTIFOLIUS* LEAVES

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Plant extracts may have significant biological activities (antiinflammatory, antibacterial or antioxidant) but may also exhibit genotoxicity (genomic toxicity). Purification of bioactive compounds may diminish or prevent that toxicity. The infusion from *T. acutifolius* leaves has antibacterial, antioxidant and antiinflamatory properties. Five phenolic compounds, partially responsible for those activities, were purified and characterized from the infusion. The genotoxic activity of all samples was studied by using *Bacillus subtilis* rec-assay, which measures the differential growth of DNA repair proficient and deficient *B. subtilis* strains (called rec+ and rec – respectively), and the results were expressed as S-probit values. $K_2Cr_2O_7$ (strong genotoxic) and Kanamycin (non genotoxic) were used as reference substances. The results showed that the infusion has a strong genotoxic response (S-probit=0.8) while the isolated compounds: rutin, nicotiflorin, hyperoside, isoquercitrin and tripodanthuside have non genotoxic responses (S-probit<0.2). The results showed that the toxicity of a raw extract could be removed by purification of the bioactive constituents.

41.
ANTIOXIDANT ACTIVITY OF *LARREA DIVARICATA* CAV. EXTRACTS

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Free radicals and non-stable species that react with biomolecules such as proteins, nucleic acids, lipids and pigments are implicated in several physiological and pathogenic processes, e.g. aging, carcinogenesis, rheumatoid arthritis, artheriosclerosis and neurovegetative diseases. Damage to DNA can be irreversible and consequently inheritable. Antioxidants are substances that can prevent these effects by neutralizing free radicals. The object of this work was to determine if ethanolic extracts of *Larrea divaricata* Cav (Ld) and their fungitoxic fraction (Fr B), isolated by bioguided fractionation, had scavenging capacity on free radicals and reactive oxygen species (ROS). Their antiradical activity was evaluated by 1-1 diphenyl-2-picryl-hydrazyl (DPPH) leaching rate showing that IC_{50} was 14 and 27 µg PC (Phenolic Compounds).ml^{-1} of Ld and Fr B respectively against 7 and 40 µg.ml^{-1} of quercetin and BHT used as reference substances. Antioxidant activity was evaluated by heat induced oxidation in a β-carotene and linoleic acid system. Antioxidant Activity Coefficient (AAC) at 120 min of BHT, quercetin, Ld and Fr B were 918, 708, 666 and 351 respectively. Ld had higher scavenging capacity of superoxid anion than Fr B; their IC_{50} was 12 and 18 µg PC.ml^{-1}. Ascorbic Acid IC_{50} used as control was 58 µg.ml^{-1}. Our results demostrated that *Larrea divaricata* Cav is a potential source of natural antioxidant compounds, suggesting that it could be useful in the treatment of different pathologies in which free radical production plays an important role.

42.
***CAESALPINIA PARAGUARIENSIS* (D. PARODI) BURK. EXTRACTS AS SOURCE OF NATURAL FOOD PRESERVATIVES**

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Current preservatives have a limited range of action in relation to the concentrations used. *C. paraguariensis* is a tree known in folkloric medicine because its extracts have vulnerary properties. The aims of this study were to investigate *in vitro* the antimicrobial and antioxidant activities as well as the toxicological aspects of bark extracts (Infusion, Decoction and Tincture) from *C. paraguariensis.* The content of phenolic compounds (PC) was determined by the Folin-Ciocalteu method. Antimicrobial activity was tested by the agar dilution method against *E. coli*, *St. aureus*, *Sacch. cereviciae and Sacch. carlsbergensis.* Antioxidant activity was evaluated by DPPH assay. The Brine Shrimp Test was used to determine LD_{50} (cytotoxicity). Genotoxicity was determined by the *Bacillus subtilis* rec-assay. The extracts showed antimicrobial activity against the species tested (40-3.000 µg/ml PC). All extracts showed good scavenging activity against DPPH radical at 5 µg./ml PC. The aqueous extracts were neither cytotoxic nor genotoxic. The tincture was both cytotoxic and strongly genotoxic. Consequently, the aqueous extracts can be used as food preservatives.

43.
BIOEQUIVALENCY AND PHARMACEUTICAL EQUIVALENCY OF TWO COMERCIAL PRODUCTS OF LOCAL ANESTHETICS

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Pharmaceutical products are considered pharmaceutical equivalents when they contain the same active ingredients and are identical in dosage form and power. In dental local anesthetics, methods should be used that enable efficient evaluation of physiological parameters as a function of time, onset of pharmacological action, its duration, effect and depth. The aim of this work was to determine the bioequivalency and pharmaceutical equivalency of two commercial preparations of carticaine 4% plus epinephrine 1:100. The population was made up of patients of the Surgery Chair (n = 20) on whom blood extractions were performed. The age average was of 34.30 years. The anesthetics used were 2 equivalent commercial preparations. The study of the pharmacodynamic properties was based on the effect on pain sensibility and the onset of the action. Blood pressure was registered before anesthesia and after the end of surgery. The adverse effects were registered as a function of pulse and blood pressure. The statistical analysis of the independent variable test showed no significant differences between both groups (p >0.05). Analysis between initial and final pressure using t-test for related samples showed significant differences (p <0.05). One hundred % of the patients showed loss of tactile and pain sensibility. This study revealed that both products are therapeuticequivalents.

44.
PRELIMINARY PHYTOCHEMICAL STUDY AND BIOLOGICAL ACTIVITIES OF *Frankenia triandra J.* Rémy EXTRACTS

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The members of the Frankeniaceae family belong to a single genus, "*Frankenia". F. triandra* grows in extreme regions of high UV radiation in the Argentine Puna. The aim of the present work was to make a preliminary phytochemical analysis and evaluation of the biological activities of extracts obtained from the aerial parts of *F. triandra* by different methods of extraction. Three extractions were made: alcoholic, aqueous and hydroalcoholic. The total phenolic compounds and flavonoid content were determined by spectrophotometric methods. Scavenging capacity of $ABTS^{+}$ cation radical was determined by autographic methods. Minimum inhibitory concentration of the extract against antibiotic-resistant human pathogenic microorganisms was determined by the macrodilution method. All extracts showed free radical scavenging activity and only the alcoholic and hydroalcoholic extracts presented antibacterial activity. A selective inhibitory effect against *Staphylococcus aureus* was observed. The results indicated that *F. triandra* could be used in cutaneous infections and for the relief of oxidative stress.

45.

FORMULATION OF AN ANTIBIOTIC GEL WITH *Acacia praecox* EXTRACT FOR TOPICAL USE

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Four species of the genus *Acacia* exist in northern and central Argentina: *A. aroma, A.caven, A. Visco* and *A. praecox*. They are traditionally used as antiseptics. In a previous work, we demonstrated that *A.praecox* showed antimicrobial activity against Gram-positive and Gram-negative bacteria. The aim of this study was to design and formulate pharmaceutical forms with antibiotic properties for topical use.

Plant material was collected in Tapia, Tucumán, Argentina, in March 2007. Hydroalcoholic extract was prepared according to the Farmacopea Argentina VI Ed. Three formulations of hydrogel with Carbopol polymers were prepared: base hydrogel (G1), hydrogel with gentamycin sulphate (G2) and hydrogel with *A. praeco*x extract (G3). Quality controls: physical and microbiological controls were performed during a three-month period.

The results demonstrated that the formulation of *A. praecox* had good stability. Its physical and organoleptic characteristics did not show changes and it was microbiologically stable during the experience.

The formulation made from *A. praecox* extract fulfilled quality control, so that it would be suitable for topical use in dermatological affections.

46.

PHARMACEUTICAL SEMISOLID FORMS CONTAINING *Baccharis incarum* EXTRACT

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Baccharis incarum grows 3,800 meters above sea level (Antofagasta de la Sierra, Catamarca, Argentina). This species is commonly used as a gastric and hepatic protector, to reduce inflammatory processes, to treat sores, burns and leather wounds. In previous works we demonstrated its antimicrobial, free radical scavenging and antiinflammatory properties. The aim of this study was to design and develop pharmaceutical semisolid forms using *B. incarum* extract as a therapeutic agent.

The extract was prepared from the aerial parts of *B. incarum* according to the Farmacopea Argentina VI Ed. Minimal Inhibitory Concentration (MIC) of the extract was determinated against multiresistant bacteria. Six creams were formulated: A) base, B) with gentamycin sulphate, C) with BHT, D) with gentamycin sulphate and BHT, E) with *B incarum* extract (4 x MIC values) and F) with *B incarum* extract (8 x MIC values). Stability and physical controls were carried out for 3 months.

B. incarum formulations showed good stability. Its physical and organoleptic characteristics did not show changes and it was microbiologically stable at room temperature for 3 months. The formulation made from *B. incarum* extract fulfilled quality control. Ttherefore, it would be suitable for topical use in dermatological affections. Further studies of long-term stability and bioavailability will be carried out.

47.

PHENOLIC COMPOUNDS AND ANTIOXIDANT ACTIVITY OF *PHRYGILANTHUS ACUTIFOLIUS* FLOWERS (CORPO)

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During the last few years interest in phenolic compounds has increased because they exert preventive effects on many chronic diseases due to their antioxidant properties.

Results revealed a significant amount of phenolic compounds for ethanol and aqueous extracts, 10 ± 0.30 and 8.23 ± 0.16 mg/gr respectively. The infusion values were 3.25 ± 0.65 mg/gr. The scavenging effects of ethanol, water, and infusion extracts on DPPH radicals were 89.72 ± 1.25%, 86.35 ± 0.30%, 64.15 ± 2.35% at a concentration of 200 µg/ml, respectively. The scavenging effect of the standards, BHT and Quercetin were 84.50 ± 1.55% and 93.43 ± 0.25% at a concentration of 200 µg/ml, respectively. The results of the antioxidant activity using the β-carotene-linoleate oxidation method revealed that ethanol (69.24 ± 2.75%) and water (75.85 ± 0.91%) extracts were the most effective ones, whereas the effects of the infusion (20.93 ± 1.90%) were not as strong. All the extracts were less effective compared to BHT (91.40 ± 2.37%) and Quercetin (91.30 ± 2.37%) at the same concentration.

A good correlation was obtained between the antioxidant activity of the extracts with the DPPH method (99 %) and with the β-carotene-linoleate oxidtion method (93%) and their total polyphenol content.

48.

CONTROL OF THE MITE *Varroa destructor* (Varroidae) IN HONEYBEE COLONIES OF *Apis mellifera* (Hymenoptera: Apidae) BY CUMAPHOS

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The aim of this work was to evaluate the acaricide efficacy of cumaphos to control the mite *Varroa destructor* in honeybee colonies during the autumn months of 2008. Work was done at La Plata city, province of Buenos Aires. Ten Langstroth hives were used, divided in two equal groups. The first group received a total of one tablet containing cumaphos during a 42-day period. The second one was the control group. Dead mites were collected weekly from special floors designed to prevent mite removal by adult honeybees. Then, both groups received one Amivar® strip to kill remanent mites. Cumaphos showed an average acaricide efficacy of 88.58% ± 7.003, showing significant differences with the control group (p= 0.05). No negative effect on honeybee brood was recorded. Results showed cumaphos as a usefull agent to kill a significant number of mites. However, its potencial acaricide residues suggest use only during the post harvest period.

49.

CLINICAL UTILITY OF FIBRINOLYTIC SYSTEM PARAMETERS IN BREAST CANCER PATIENTS

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Fibrinolytic system components such as Plasmin, Urokinase type (UPA), tissue type (t-PA) activators and plasminogen activator inhibitor-1 (PAI1) are involved in the proteolytic degradation of the extracellular matrix by activating growth factors and metalloproteinases (MMPs), which favors invasion processes and metastasis. The main point of this study was to establish the clinical utility of fibrinolytic system parameters in patients with Breast Cancer (BC) with or without response to the therapy. We studied 70 patients who were separated into three groups: (GA) 25 patients without any pathologies or with benign diseases in the breast; (GB) 19 patients with BC in stages I and II who responded positively to the therapy; (GC) 26 patients with a progressive BC disease after the therapy. The expression of t-PA, PAI-1 and MMP-9 was determined using ELISA techniques. The results obtained for t-PA (ng/ml); PAI1(ng/ml) and MMP9 (ng/ml), in GA it were 0.84 ± 0.38, 1.87 ± 0.72 and 433 ± 124; in GB they were 0.37 ± 0.11, 2.53 ± 0.97 and 305 ± 101 and in GC they were 0.36 ± 0.17; 3.44 ± 0.54 and 929 ± 103 respectively. The results of this study suggest that the high levels of PAI-1 and MMP-9 in patients with BC with a negative response to the therapy would be associated with a more aggressive behavior of the tumor and with a less favorable prognosis.

50.

HEMATOLOGIC AND SEROLOGIC EVALUATiON OF THE WICHI INDIANS OF THE ARGENTINE NORTHEAST

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Nutritional deficiencies such as anemia constitute a significant social problem in developing countries. The Wichi Indians constitute one of the many ethnic groups that inhabit the North of Argentina and will be the focus of our study. We performed a study about the frequency and etiology of anemia in the Wichi population in Argentina. **Materials and Methods:** We studied 40 Wichi Indians (25 females, 15 males), age was 30 (15 to 96) years old. The laboratory studies included: Hematocrit, Iron, Transferrine, Ferritine, Blood Group, Chagas, Hepatitis B surface antigen, Hepatitis B core antigen, Hepatitis C virus, VDRL, HTLV, HIV and Brucellosis. **Conclusions:** Hemoglobin determination in the Wichi Indian population showed a significant decrease ($p<0.0001$) with respect to the normal range of reference. This finding means that 48% of the females and only 15% of the males suffer from anemia. Iron deficiency was present in 18% in the female group and 13% in the male group. Trypanosome Cruzi's Infection was present in 27.5% of the population, which leads to ferropenic anemia associated with chronic infection. Transferrine levels were not above the normal limit, which could indicate a physiological compensation to a ferropenic condition, but this finding could be related toh transferrine as a marker for malnutrition protein.

51.

EFFECT OF *LACTOBACILLUS CASEI* ON ENDOTHELIAL ACTIVATION IN A PNEUMONIA MODEL

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Inflammation alters the hemostatic balance and becomes a potential trigger of a procoagulant state. We reported that *Lactobacillus casei* (Lc) beneficially modulates the inflammation-coagulation interaction in an infection model. The effects of Lc on inflammation and endothelial cells activation that occur in a pneumonia model were studied. Mice were fed with Lc for 2 d and then infected with *Streptococcus pneumoniae* (Lc group). Untreated mice were used as controls (C group). At different times post-infection (pi) we determined: a) serum C-reactive protein (CRP), b) TNF-α e IL-1β in serum and broncho-alveolar lavage (BAL), c) von Willebrand factor (vWF) antigen and plasminogen activator inhibitor-1 (PAI-1) in plasma and BAL **Results:** The challenge increased CRP, TNF-α and IL-1β levels in BAL and augmented vWF and PAI-1 concentration in BAL. The Lc group showed lower values of CRP and higher levels of TNF-α than C during the first hours pi. Serum cytokines kinetics were similar in both groups with lower values in the Lc group on d 5 pi. The Lc group showed a decrease in vWF and PAI-1 levels in BAL (vWF in LBA 5 d pi C=39±3.6%; Lc=11.5±3.5; PAI-1 in LBA 1d pi: C=19.5±1.9 UA/ml; LC=14.2±1.7). **Conclusion:** *Lactobacillus casei* administration reduced endothelial activation and contributed to the modulation of the inflammation-hemostasis balance.

52.

RELATIONSHIP BETWEEN THYROID DYSFUNCTION AND LIPID PROFILE

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Introduction: Thyroid dysfunction, which affects a considerable portion of the population, is related to changes in the lipid profile. Levels of Thyrotropin (TSH) are related to cardiovascular risk. **Objectives:** To evaluate the association between TSH levels and the lipid profile and body mass index (BMI) in a population of Tucumán. **Materials and Methods:** a hundred and fifty patients aged 18-82. We determined height (m), weight (k) and BMI=weight/height^2. According to the value of TSH (uU/ml), they were classified as: Hyperthyroid (up to 0.29), Euthyroid (0.30-4.0) or Hypothyroid (more than 4.1). Blood extractions were performed with 12 hours of fasting and TSH in serum (immunoradiometric method). Descriptive Exploratory Study. **Results:** Hyperthyroid patients (17%), BMI=26.5, total cholesterol (CT, mg/dL) 163.2±50, Triglycerides (Tg, mg/dL) 115.8±52, HDLc (mg/dL) 45.3±13 and LDLc (mg/dL) 94.7±39. Euthyroid (118%), BMI=30.5, CT 187.2±43, Tg 132±81, HDLc 46.4±11 and LDLc 117.8±39. Hypothyroid (15%), BMI=35.6, CT 208.2±76, Tg 148.1±112, HDLc 45.6±16 and LDLc 130.6±46. **Conclusion:** BMI increases when the values of TSH are high. There is a rise in total cholesterol, LDLc and triglycerides in thyroid dysfunction with the increase in TSH, triglycerides being the parameter which showed the most significant difference.

53.

INSULIN RESISTANCE INDEX IN CHILDREN WITH TYPE II DIABETES PARENTS

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Insulin resistance is the initial metabolic alteration in patients with type II diabetes. High blood insulin levels constitute a compensatory response to maintain glycemia normal levels until the pancreas secretory capacity is decreased or eliminated. **Objectives:** to evaluate the efficacy of insulin resistance indices as early markers of the possibility of developing type II diabetes. **Materials and methods**: children with diabetic parents (ChD) and individuals without a family history of diabetes (C) were evaluated. Glycemia, triglycerides and insulin were determined in blood samples. **Results:** statistically significant variations were found in: glucose (p=0.013), triglycerides (p= 0.007), insulin (p=0.035), HOMA index (p= 0.041) and Mc Auley's index (p=0.023). The rate of relative variability was: HOMA index, 75.05% and QUICKI index, 4.3% higher in children from diabetics. McAuley's index was 9.98% lower in children from diabetics, demonstrating the decrease in insulin sensitivity. **Conclusions** the results allowed us to conclude that the parameters studied could be early markers of insulin sensitivity in populations with a family history of type II diabetes.

54.

BIOLOGICAL ACTIVITY AND CONTENT OF POLYPHENOLS FROM CHAÑAR SYRUP (*GEOFFROEA DECORTICANS*)

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Chañar (*Geoffroea decorticans*) is a tree autochthonous of the Argentine Northwest. Its fruits are edible and have a sweet flavor. "Arrope", a very popular syrup among the local people, is obtained by grinding and cooking the fruits slowly to the consistency of honey (without the addition of sugar). This syrup is used in popular medicine, due to its efficacy in cough treatment. The aim of this work was to determine *in vitro* whether chañar syrup has antimicrobial properties (against *Staphiloccocus Aureus*) and antioxidant activity and to determine total polyphenols content. For the determination of total polyphenols Folin´s method was employed and for the analysis of antioxidant activity the DPPH method was employed. For the determination of the antimicrobial activity, we worked with pure syrup and with syrup diluted in water to 50%, 25% and 12.5% (w/v). An inhibition diameter of 12 ±1 mm was observed for the pure syrup. For the 50% dilution the diameter was of 9 ±1 mm, for 25% it was 7 ±1 mm and for 12.5% it was 5 ±1 mm. Antioxidant activity was 86±3%. Total polyphenols content expressed as Gallic acid equivalent was 10.3±0.9 mg of per gram of chañar syrup. In conclusion, this work verified that the popular use of chañar syrup has a scientific bases due to its high polyphenols content and its antimicrobial and antioxidant activity.

55.

EVALUATION OF THE NUTRITIONAL PROFILE OF THIRD AGE ADULTS

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Introduction: Third age people face physical, psychological and social problems due to biological changes and to nutritional physiology. Clinical solutions should be given to health problems. **Objectives:** to identify the origin (rural or urban) of patients between 60 and 85 years of age treated at the hospital laboratory; to relate people's food habits and dietary history to anthropometric data to evaluate their nutritional condition. **Methodology:** A hundred and sixty-nine voluntary ambulatory patients were studied at Padilla Hospital. Age, sex, origin, arm outline, waist circumferenc, weight and height were considered for body mass index (BMI) as well as food habits. **Results:** The results showed: patients were 60 to 85 years old: 73% female and 27% male; 78% lived in urban and 22% in rural areas. According to sex, significant differences were observed in arm outline and waist circumference, these being larger in women. BMI showed: 1% low weight, 23% normal weight, 38% overweight, 28% obesity; 5% morbid obesity; 59% were on an adequate diet; 41% did not eat enough. **Conclusions:** Most of the patients were female. The increase in waist circumference and arm outline in women showed a fat increment in the stomach area with a loss in muscular mass. There was no risk of malnutrition. It could be related to the subjects' origin, sex and diet.

56.

INJURIOUS COLEOPTERA SPECIES OCCURRING IN SOYBEAN CROPS IN TUCUMAN, ARGENTINA

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Soybean crops have expanded quickly in our country, and nowadays they occupy different environments. The aim of this psaper is to evaluate the abundance, frequency and populational fluctuation of the main Coleoptera pest species affecting soybean crops (*Promecops claviger* (Hustache) (Curculionidae); *Lagria villosa* F. (Lagriidae), *Chaliognatus sulcaticollis* Blanch. *(*Cantharidae), *Maecolaspis monrosi* Besh, and *Diabrotica speciosa* (Germ.) (Chrysomelidae). The sampled areas were located in two localities: Santa Rosa (Leales) and Tala Pozo (Burruyacu). During the 2005/2006 crop season, samples were collected by weekly sweeping along three transects with a standard sweep net. The abundance of individuals of all the registered species occurring in Tala Pozo was four times higher than in Leales. In Tala Pozo, *P. claviger* was the most abundant and frequent species (93.5% and 77.2% respectively) while in Leales *L. villosa* showed greater abundance and frequency (60.0% and 39.04 respectively). *P. claviger* is frequent in Tala Pozo from the beginning of the plants emergence (with a highest peak during this period) till the end of the reproductive stage. In Leales, *L. villosa* occurs during the whole crop season, and it showed a population increment during the fructification stage. *Ch. sulcaticollis* and *M. monrosi* were abundant only at the beginning of the crop season, while *D. speciosa* was frequent but not very abundant.

57.

CONTRIBUTION TO THE STUDY OF ASCOMYCETES ON PODOCARPUS PARLATOREI PILG. IN THE TUCUMAN AND CATAMARCA PROVINCES (ARGENTINA). II.

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This work is part of a larger study on the biodiversity of fungi growing on *Podocarpus parlatorei* Pilg. in Argentina. This contribution describes Ascomycetes morphospecies found on bark and/or wood of *P. parlatorei* Pilg. Seasonal samplings were carried ouf in the forest in the Tucumán and Catamarca provinces. The material was dried and preserved in the LIL herbarium. The microscopic preparations and observations were made with the usual methods. *Botryosphaeria sarmentorum* A. J. L. Phillips, *Ceratostomella pyrenaica* Réblová & Fournier, *Cochliobolus kusanoi* (Y. Nisik.) Drechsler ex Dastur, *Heptameria obesa* (Dur. & Mont.) Sacc., *Hypocrea ceramica* Ellis et Everh., *H. gelatinosa* (Tode: Fr) Fr., *Hypoxylon duranii* J. D. Rogers, *H. subrutilum* Starb., *Nemania difusa* (Sowerby) S. F. Gray and *Ophioceras dolichostomum* (Berk. & Curt.) Sacc. are recorded for the first time in Argentina.

58.

CONVENTIONAL IDENTIFICATION TO THE SPECIES LEVEL OF COAGULASE NEGATIVE *STAPHYLOCOCCUS* BOVINE STRAINS

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Mastitis is an inflammation of the mammary gland caused primarily by infectious agents. This disease affects the production and quality of the milk in our country, causing economic losses that represent at least 15% of the annual production. Conventional strategies to control the disease have not reduced mastitis incidence produced by coagulase-negative *Staphylococcus* (CNS). Species identification is a prerequisite to perform studies in epidemiology and pathogenicity. The aim of this study was to design a scheme for identification to the species level of CNS strains isolated from bovine milk in dairies of the Villa Maria region (Cordoba). The proposed taxonomic scheme was based on the combination of 16 tests that include susceptibility to novobiocin, hemolytic activity, nitrate reduction, phosphatase and urease activity, acetoin production, growth on anaerobic conditions, growth at low temperatures (15ºC), and acid production on aerobic conditions from various sugars. One hundred and seventy out of 175 (97.1%) CNS isolates were correctly identified by this method. Therefore, the conventional scheme proposed here can be considered an appropriate method to identify CNS strains of bovine origin because of its affordable cost in developing countries, and it may contribute to determining the frequency of isolation of these emerging pathogens.

59.

ZOONOSES PREVALENCE INCREASE IN RISK POPULATIONS. RIOCUARTO. CORDOBA. ARGENTINA

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In Rio Cuarto city two important changes took place in the last few years. On the social level families at environmental risk, mainly due to housing conditions and vicinity to river margins, were relocated. Hydrological changes also occurred because of the construction of a small dam. These modifications i generated changes in zoonoses prevalence. Systems of Geographic Information (SIG), based on temporary and spatial data, are useful in epidemiological studies. The objectives of this study were to determine the prevalence of Giardiosis, Chagas´ disease, Leptospirosis, Brucellosis and Cryptosporiodiosis and to develop a georreferenced map of prevalence distribution and risk factors. Blood and fecal samples were collected from 150 people. The recruiting places were medical centers located nearby. Blood and fecal samples were collected from 103 dogs that shared the same housing. Data were analyzed by EPIDAT V. 3.0. Serology tests used for human samples were BPA, Wrigth and 2ME for Brucellosis, HAI and IFI for Chagas, and MAT for Leptospirosis. The same tests were used for dogs' sera. Fecal samples were processed with direct microscopic examination, simple flotation, Telleman and modified Ziehl-Neelsen techniques. Prevalence results for humans were 51% for Giardiosis; 8.5% for Chagas; 6.5% for Leptospirosis, 5% for Brucellosis, 1.8% for Cryptosporidiosis. For dogs, they were 9% for Chagas, 56% for Leptospirosis and 6.2% for Brucella spp. New ecological and environmental conditions could increase the prevalence of these zoonoses as thus also show the presence of Cryptosporidiosis.

60.

A STUDY OF THE ANTIBACTERIAL EFFECT OF DISSOLUTION PRODUCTS OF BIOACTIVE GLASS-CERAMIC SCAFFOLDS

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The aim of the present study was to evaluate the antibacterial effects of the soluble ions lixiviated from bioactive glass-ceramic scaffolds 45S5 and 45S5.2B containing (wt%) 45% SiO_2, 24.5% Na_2O, 24.5% CaO, and 6% P_2O_5 doped with 2% of B_2O_3 (45S5.2B). Scaffolds of 5x5x2 mm^3 were obtained by the replication technique, with more than 90% porosity, and interconnected pores of approximately 510-720 µm. The antagonistic effect of the dissolution products on bacteria of the genus *Staphylococcus* was evaluated by incubating the scaffolds in 30 mL of Hank's saline solution at pH 7.4 and 37ºC for 7, 14 and 28 d. The ionic composition of the solution was analyzed pre- and post-incubation by ICP. Different concentrations ($1x10^5$ to $1x10^8$ cfu/mL) of different strains of *S. aureus* (ATCC 25923; ATCC 29213; ATCC6538P) and *S. epidermidis* (ATCC 12228) were employed. These cell suspensions were put in contact with the dissolution products at a 1:1 ratio at 37ºC. At 0, 1, 2, 3 and 24 h of incubation, cell viability was determined by plate count in Müller-Hinton agar. Despite the high pH value (9.5-10) and/or the concentration of free B (120 µg/L) in the dissolution products of scaffolds 45S5 and 45S5.2B respectively, no significant inhibition was observed in the strains of *S. aureus* or *epidermidis* analyzed.

61.

PRELIMINARY TESTS ON THE ANTI-MICROBIAL ACTIVITY OF PAPRIKA EXTRACTS

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The aim of this work was to evaluate the anti-microbial activity of secondary metabolites present in paprika extracts. The extracts were obtained with 24-hour maceration of paprika powder, with different extraction solvents such as ketone, hexane, and sulphuric ether. The effect of each extract was tried in raw on *Escherichia coli* samples. Bacterial sensitivity test of paprika extracts were done through the radial infusion method in agar medium (BHI agar). For the distribution of the innocuous substace, a brushing technique was used, applied to each plaque of three disks drenched in 10 µl of the extract. Assays were perfomed in triplicate. Plaques were incubated for 24 hours at 37ºC and inhibition of bacterial growth was determined by observing the halo. Extract assays did not show anti-microbial activity for *Escherichia coli*, which could be a result of the low concentration of the secondary metabolites present in paprika extracts, or because their combinations made them inactive. These results are a contribution towards the utilization of this species as a preserving agent, in powder or extract form, and it would be very interesting to do research on the anti-microbial activities of other samples related to making food safe and innocuous.

62.

ANTIHERPETIC ACTION OF METHANOLIC EXTRACT FROM *Verbascum thapsus*

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The availability of a reduced number of antiviral drugs and the appearance of resistant strains because of the use of the former in long treatments have caused a difficult situation, especially when dealing with inmunocompromised patients with herpetic infections or with concomitant infection with HIV. This situation leads to the utilization of combined therapies as well as to an intensive search for new antiherpetic drugs, plants compounds being a good alternative. Objective: to analyze antiherpetic activity of methanolic extract (ME) prepared from *Verbascum thapsus* and elucidate which stage of the viral cycle was inhibited. The aerial parts of *V. thapsus* from the Cordoba province were sequentially extracted with n-hexane, chloroform and methanol. Concentrated ME was evaluated on Vero cells for its cytotoxic and antiviral ability. Toxicity was quantified: MNCC and Cytotoxic Concentration 50% (CC_{50}), by Red Neutral uptake (RN) and MTT salt reduction. The antiviral activity was evaluated by plaques reduction at different stages of Herpes suis type 1 replication. Results were expressed in (µg/ml); MNCC: 850; CC50 (RN):1100 and CC50 (MTT):1417. ME exerted over 70% inhibition before adsorption and/or during viral adsorption and not after penetration (intracellular events). It also demonstrated virucidal activity. The index of selectivity (IS = CC50/IC50) of ME was higher than 18. Thus, this index suggests that ME may possess powerful chemical agents whose molecular characterization should be addressed and points to the potential applicability of ME as a natural antiherpetic chemotherapy.

63.

EFFECT OF SO_2 AND L-MALIC ACID ON THE GROWTH AND METABOLISM OF *Oenococcus oeni* FROM WINES IN ACIDIC CONDITIONS

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In a previous work we determined that *Oenococcus oeni* is the predominant microflora in North Argentinean wines. The aim of this work was to investigate the effect of SO_2 and/or L-malic acid on the growth and metabolism of O. *oeni* MS9 strain in acidic conditions. Cells were cultivated in MRS medium with tomato juice (15%), in BM, and in BM supplemented with SO_2 (80 mg/l) or L- malic acid (2.5 g/l), pH 4.8 or 3.8, at 30ºC. Glucose, L-malic acid and diacetyl, acetoin and 2,3 butanediol (aroma compounds) were measured spectrophotometrically. In BM, pH 4.8, the microorganism had a growth rate of 0.24 h^{-1} and a final cell concentration of $3.5x10^8$ ufc/ml. L-malic acid increased its growth parameters whilst SO_2 decreased its growth rate to 0.085 h^{-1}. At pH 3.8 bacterial growth decreased approximately 2 log cycles in the different conditions. At pH 4.8, about 25% of the initial glucose was utilized. At pH 3.8 carbohydrate utilization diminished, which was correlated with the decrease in growth. L-malic acid was always completely consumed. Less than 1 mg/l of aroma compounds were produced in BM at the different pH values. In the presence of the organic acid it increased to 4 and 2.8 mg/l at pH 4.8 and 3.8, respectively. SO_2 also stimulated it at pH 4.8 but the aroma compounds were not detected at pH 3.8. In this condition, SO_2 as ion bisulfite could react reversibly with the carbonyl groups. In conclusion, *O. oeni* MS9 is a strain with high metabolic potentialities to induce malolactic fermentation in harsh wine conditions.

64.

ACTION OF PHENOLIC COMPOUND COMBINATIONS ON THE VIABILITY OF *L. monocytogenes* IN A FOOD SYSTEM

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The aim of this work was to investigate and compare the combined effect of mixtures of phenolic compounds against *Listeria monocytogenes* in a chicken meat system. The chicken meat was aseptically placed in stomacher bags. Different combinations of phenolic compounds were added to food at a final concentration of 100 mg/l or 200 mg/l at a 1:1 ratio. The combinations assayed were: gallic-protocatechuic acids, gallic-caffeic acids and quercetin-rutin. The stomacher bags were inoculated with 10^9 cfu/ml of an overnight culture and were stomached for 3 min. Stomacher bags were stored at 4 or 20ºC for 21 days. Palcam medium was used for the selected enumeration of *L. monocytogenes* in meat. At 20ºC, with the addition of 100 mg/l, gallic-protocatechuic acids produced growth inhibition and gallic-caffeic acids and quercetin-rutin produced cellular death of inoculated cells. With 200 mg/l all combinations caused higher cellular death. At 4ºC, 100 or 200 mg/l of the combinations caused the death of the inoculated cells. No viable cells were detected with the addition of 100 mg/l of gallic-caffeic acids at 21d incubations or with 200 mg/l of quercetin-rutin, at 14d incubation.
The results demonstrated the possibility of using phenolic compounds combinations as natural food preservatives.

65.

IN VITRO EFFECT OF ACID SUPERNATANT FROM _L. fermentum_ CRL 1058 AND CHLORHEXIDINE ON BIOFILM BY _Klebsiella pneumoniae_

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Urinary tract infections (UTI) associated with catheters are caused by biofilm-producing bacteria like Klebsiella. Our research group was able to inhibit biofilm formation by Klebsiella with acid and neutralized supernatant from *L. fermentum* CRL 1058. The aim of this study was to assess and compare the action of the acid supernatant fraction from *L. fermentum* (Lb) and chlorhexidine (clx) on biofilm formation by *K. Pneumoniae* using the multi-well technique. Biofilm inhibition was obtained by pouring 100 and 150 µl of a 4-h *K. pneumoniae* culture ($1.4x10^7$ CFU/ml) into wells and adding 50 and 100 µl of acid Lb supernatant, respectively. Two more wells were poured with 150 µl of inoculum and 50 µl of 0.3 and 0.6% (v/v) clx was added. Plates were covered and incubated for 16 h at 37ºC. OD of controls, biofilm production without addition of inhibitory substances (O'Toole, 1998) was 1.5. With 50 and 100 µl of acid Lb supernatant OD diminished to 0.5 and 0.2, respectively. With 50 µl of 0.3 and 0.6% clx OD decreased to 1.04 and 0.57, respectively. As a result, studies on supernatant components with inhibitory properties were intensified, because clx is used in medicine at a concentration of 0.02%, but our studies demonstrated that this concentration is inadequate to inhibit biofilm formation.

66.

INHIBITION OF _Alternaria alternata_) GROWTH BY _Raphanus sativus_ L. (NABÓN) EXTRACTS. SEPARATION OF FUNGITOXIC COMPOUNDS

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Fungi attack strawberry (*Fragaria x ananassa Duch*.) cultures and cause important economic losses. Products obtained from siliques of *R. sativus* L. (nabón) showed *in vitro* growth inhibition of *C. acutatum* and *C. fragariae.*

The purpose of this work was the study of the antifungal effect of *R. sativus* extracts on *Alternaria alternata.*

Aqueous (infusion and decoction) and ethanolic (tincture) extracts (10% w/v) were prepared from dry and ground siliques. The fungal inhibitory capacity of the extracts was assayed by radial growth inhibition in glucose-potato-agar (GPA) plates. The percentage of inhibition of *A. alternata* growth produced by 15 mg extracted material/mL (EM/mL) was 7%, 32% and 41% for infusion, decoction and tincture, respectively. The yield of the extractions was 8,10; 2.25; 0.45 mg phenolic compounds/mL (FC/mL) for decoction, infusion and tincture, respectively. Extraction of dried tinctures with solvents of increasing polarity (ethyl ether, dichloromethane and methanol) allowed us to determine that the dichloromethane extract was the most active. Several TLC analyses enabled detection of terpenoids and essencial oils. Research is oriented towards the isolation of the compounds responsible for the antifungal activity.

67.

IMMUNIZATION WITH A PROBIOTIC STRAIN ASSOCIATED WITH INACTIVATED _Lactococcus lactis_ PppA REDUCES COLONIZATION OF _Streptococcus pneumoniae_ IN INFANT MICE

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We evaluated different strategies for immunization of respiratory mucosa using a *Lactococcus lactis* PppA (LPA) recombinant strain in order to select the treatment that reduces and/or prevents pneumoccocal colonization in nasopharynx, lung and blood in a *Streptococcus pneumoniae* (Sp) respiratory infection in infant mice. Animals were preventively immunized by the nasal route (N) with: a) LPA, b) inactivated LPA (LPAM) and c) LPAM+ *Lactobacillus casei* (Lc+LPAM). Control groups received PBS and the recombinant strains without expressing PppA. At the end of each treatment, mice were challenged intranasally with *S. pneumoniae* serotypes 14 or 3 (10^6cell/mouse). Results showed that LPAM+Lc treatment was the most effective to reduce the colonization of the two serotypes in nasopharynx and lung. Recombinant inactivated bacteria would be less effective than viable ones for host protection against pneumococcal challenge. However, LPAM administration associated with the probiotic strain provides a promising alternative as a vaccination strategy for humans.

68.

INFLUENZA SURVEILLANCE DURING THE 35th MEETING OF THE COMMON MARKET COUNCIL AND THE SUMMIT OF HEADS OF STATE OF THE MERCOSUR

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Influenza surveillance is one of the most developed global surveillance systems. The Colaborating Laboratoy of Sentinel Unity of Biochemistry Faculty, Tucuman National University, constantly monitors respiratory viruses and provides information on the spread of regional strains circulation. The laboratory was summoned to participate in diseases surveillance when the Mercosur leaders convened in Tucumán on June 30 and July 1, 2008, in San Miguel de Tucumán, Argentina. Sixty people attended the emergency services. Nasopharyngeal specimens swabs were collected from four patients with influenza-like symptoms and analyzed using immunofluorecence. One of them, a police officer from Buenos Aires city, was postive for influenza A. To treat the index subject and to prevent contact transmission, he was prescribed amantadine and rimantadine. The information generated in the Colaborating Laboratory was an important and unified public health response. The success of the sentinel system can serve as a model for the continued development and strengthening of collaboration in the surveillance and control of other communicable diseases.

69.

INFLUENCE OF *Lactobacillus casei* CRL 1505 ON HEMOSTATIC AND HISTOLOGICAL ALTERATIONS IN A PNEUMONIA MODEL IN MALNOURISHED MICE

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Aim: to evaluate if the oral (Lc_{Oral}) or nasal (Lc_{Nasal}) addition of *Lactobacillus casei* CRL 1505 contributes to the modulation of the hemostatic and histological alterations in a pneumonia model in malnourished mice. Malnourished mice received fo 7d a balanced conventional diet (BCD) or BCD with Lc_{Oral} or Lc_{Nasal}, during the last 5d. These animals and malnourished controls (MNC) were infected with *Streptococcus pneumoniae* (10^5 CFU/mouse). On d 0, 1, 5 and 10 post-infection the animals that received different diets showed: increase in number of white cells (nx10^7cells/L) in bronchoalveolar lavage (BAL) (5dpi: MNC=13±0.8; BCD= 19.5±1.2; Lc_{nasal}=60±1.3; Lc_{oral}=40±1.2); lower albumin concentration in BAL; lower histological alterations in lung; diminution in Fibrinogen (F) deposition in lung; partial recovery of prothrombin activity (5dpi: MNC=28.81±3.53%; BCD=53.3±5.77%; Lc_{nasal}=80±4.95%; Lc_{oral}=56±4.55%), lower alteration of activated partial thromboplastin time, increment in F levels and platelets count with respect to MNC. Conclusions: All diets limited the damage induced by the pathogen, but the treatment with *Lactobacillus casei* was more effective, especially when administered intranasally.

70.

CRY GENES PROFILE AND PROTEOLYTIC ACTIVITY OF NATIVE *Bacillus thuringiensis* STRAINS AGAINST *Spodoptera frugiperda*

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Introduction: *Bacillus thuringiensis* (*Bt*) produces entomopathogenic Cry proteins which are activated to pathogenic form by proteases. **Objective:** Determination of *cry* genes and proteolytic activity in three native *Bt* strains. **Material and methods:** Total DNA was isolated with the CTAB technique. *Cry* 1 and 2 genes were amplified with general and specifics primers. Proteolytic activity was assayed by using azocasein as substrate. **Results and Discussion:** Specific *cry* genes and the biomass-bound protease activity are showed in the table. *Bt* RT displayed different *cry* specific content than the others strains. In addition to Cry protein, *Bt* is also an excellent source of protease activities. *Bt* RT has a proteolytic activity significantly different to that achieved for the reference strain *Bt* 4D1 ($P > 0.05$, Tukey test).

This work was supported by grants PICTO-UNT 761 and PIP 6062 (CONICET).

Strains	Specific Protease activity (U/g $_{Dry\ wt}$) ± SD	*Cry* profile
Bt RT	1987,76 ± 98,33 b	*cry1Ab, Ac, cry2Ab*
Bt LSM	1808,94 ± 92,57 b	*cry1Aa, Ab, Ac* and *cry2Aa, Ab*
Bt LQ	1139,69 ± 25,31 a	non-amplified DNA
*Btk*4D1	945,86 ± 14,34 a	*cry1Aa, Ab, Ac* and *cry2Aa, Ab*

71.

SEED GERMINATION OF CITRIC ROTSTOCK INCUBATED IN NaCl SOLUTION

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Citrus are cultivated in semi-arid regions where irrigation is required. In those areas high concentration of salts in soil or irrigation water may inhibit their growth and production. Citric species are generally considered as sensitive to salinity so it is important to detect cultivars with high tolerance to salinity. In this study we determined the tolerance to salinity of citric rootstock at the germination stage such as 61AA3, Agrio, Cleopatra, Citrumelo and 79AC rootstock. Batches of 25 seeds were placed to germinate between paper towels wetted with 10 ml of 30 and 60 mM NaCl in a germination chamber adjusted to 25ºC and a photoperiod of 12 hours. Distilled water was used as a control. The number of germinated seeds was counted every 24 hours for 41 days. The % de PG of Citrumelo was not affected. The 61AA3 and 79AC were inhibited by the 60 mM concentration but not by the 30 mM solution. Agrio and Cleopatra were inhibited by both treatments, proving to be sensitive to salinity. Accordingly, the time of germination became longer in Agrio and Cleopatra with the treatments. These results demonstrated the tolerance of Citrumelo at the germination stage. A more complete evaluation of this rootstock should include similar experiments at the level of seedling and adult plants.

72.

CYTOMIXIS IN ANGIOSPERMS OF THE NW OF ARGENTINA

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Cytomixis is a phenomenon observed especially during microsporogenesis in genetically non balanced plants, diploids and polyploids. It was observed in wall cells of both anther and ovary (Koul, 1990) and it is considered as such the chromatin and cytoplasmic organelles passage through plasmodesms. This phenomenon has been amply studied but its role in the evolution and possible genetic control is still unknown. In this paper we showed Angiosperms presenting cytomixis with cytological chromosomal and ecological traits, which would contribute to the understanding of the phenomenon. The genuses studied were: *Cuscuta, Begonia*, *Polygala*, *Talinum*, *Castilleja*, *Piper* and *Indigofera*. Cytomixis was observed in pachytene, one to multiple channels; in diakinesis, one to three channels; in MI and AI, one to multiple channels; in TI, one channel. The MII in the second division had one to multiple channels; in tetrads, one or two channels. The hypothesis of the incidence was studied in the cytomixis of environmental factors such as temperature, hydric stress, solar radiation, herbicides, chemical agents, etc. We agree with Mantu and Sharma's proposition (1983) that cytomixis is a natural phenomenon with genetic control and physiological factors that influence its manifestation.

73.

DIRECT PCR USING *Spodoptera frugiperda* EGGS AS TEMPLATE

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Introduction: PCR is widely employed in a variety of experimental applications such as studies of *Spodoptera frugiperda (Sf),* an important pest in America. **Objective:** To optimize direct PCR technique using *Sf* samples. **Material and methods:** PCR reactions were performed in 25 µL containing: 21.4 µl sterile water, 0.1 µl of each oligonucleotide primers (JM76 and JM77), 5 µl 5X Taq buffer and 0.2 µl *Taq* DNA polymerase. One, two or three eggs were added to the reaction mixture. Negative and positive controls were performed with distilled water and purified DNA, respectively. Amplification was performed with the following program: An initial denaturation step at 97ºC for 5 min and then 35 cycles of the following: 1 min at 94ºC, 1 min at 58ºC, 2 min at 72ºC, and a final extension at 72ºC 2 min. **Results and Discussion:** Samples with 2 eggs were amplified with the same quality as samples amplified with purified DNA. Only one of three amplifications assays was positive in samples with one egg. Samples with 3 eggs were not amplified, probably due to excessive DNA or PCR inhibitors. The method is simple, fast and cost saving.

This work was supported by grants PICTO-UNT 761 and PIP 6062 (CONICET).

74.

DEVELOPMENT OF SCAR MARKERS FOR THE ANALYSIS OF GENETIC DIVERSITY IN VICUÑA POPULATIONS

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The development of molecular markers is important for the study of genetic populations. Most molecular biology techniques involved in this area require a previous knowledge of DNA sequences in the species studied. Nevertheless, if the genetic information available is scarce, it is possible to apply the RAPD (random amplified polymorphic DNA) technique. The aim of this work was the development of new genetic markers to analyze the genetic variability among vicuña populations of the NOA. We previously analyzed different individuals with 31 RAPD primers. Two of them (V03 y A10) generated four polymorphic amplification products: V03-1 (990 bp), V03-2 (1,085 bp), A10-600 (563 bp) and A10-700 (711 bp), which were cloned and sequenced. In this work, specific primers for V03-1 were designed in order to obtain a SCAR (sequence characterized amplified region) marker. The comparison of the amplification patterns from 25 individual vicuña DNA samples using the V03 and the specific V03-1 primers confirmed that the specific primers reproduced the amplification pattern of V03-1 (presence or absence) and can be used as SCAR markers to study vicuña genetic diversity.

75.

COMPOSITION OF THE ESSENTIAL OIL FROM TWO DIFFERENT POPULATIONS OF *Senecio nutans* Sch. Bip.(ASTERACEAE)

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Senecio nutans Sch. Bip. is a perennial shrub, 20-60 cm high, that grows in South American Andean valleys at 3200-4800 m above sea level. This herb is known by the common name of "chachacoma". Leaves are used for the treatment of cough and chills, to relieve stomach pains and as a remedy for altitude sickness "apunamiento".

The essential oils from the aerial parts of *S. nutans* collected in Tafí del Valle, Tucumán province, Argentina, at two sites separated some 40 Km from each other, were obtained by hydrodistillation with 0.88% and 1.42% yield (based on fresh weight). The oils were analyzed by CG-MS. Both essential oil samples were rich in monoterpene hydrocarbons. The major constituents were alpha-terpinene, o-cymene, sabinene and alpha-phellandrene. These results are similar to the ones previously reported for collections from Jujuy Province (Argentina) and Peru.

76.

HEPATIC ALTERATIONS IN INDIVIDUALS CONSUMING HIGH LEVELS OF ARSENIC (As) IN DRINKING WATER IN TUCUMAN

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The aim of this work was to study hepatic alterations by means of clinical and biochemical parameters in a population of the east of Tucumán that consumes high As levels in the drinking water. The As was determined in water from the well. Two hundred individuals were studied, the following being carried out: clinical evaluation, dosage of serum enzymes aspartate aminotransferase (AST), alanine transaminase (ALT), and lactate dehydrogenase (LDH) as indicators of necrosis and Gamma Glutamyltransferase (GGT) and alkaline phosphatase (ALP) as indicators of cholestasis lesion. Subjects were divided into G1: 85 patients as control, G2: 83 patients, G3: 32 patients without and with evidence of hepatomegaly respectively. G2 and G3 consumed levels higher than 0.01 mg/L of As. x $\pm$ SD of ALP were 152.6 $\pm$ 55.5; 152.2 $\pm$ 47.5; 167.8 $\pm$ 41.5 IU/L; for GGT 12.8 $\pm$ 4.5; 20.2 $\pm$ 6.8; 17.4 $\pm$ 4.1 for LDH 207.4 $\pm$ 56.5; 242.1 $\pm$ 57.6 and 225.9 $\pm$ 51.7 U/L for G1, G2 and G3 respectively. No differences were found between AST and ALT with respect to G1. In conclusion, we demonstrated that, in individuals exposed to As consumption in the water, prevalence of hepatomegaly was not a significant clinical manifestation and that the biochemical changes found were compatible with the presence of a cholestasis pattern.

77.

EVALUATION OF SIALIC ACID (SA), HEXOSAMINIDASE (Hex) AND SERUM B- GALACTOSIDASE (B-Gal) IN INDIVIDUALS EXPOSED TO HIGH LEVELS OF ARSENIC (As) IN DRINKING WATER

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In this work serum levels of SA, Hex and B-Gal enzymes were evaluated in individuals that consume water with high levels of As. Two adults of both sexes were selected in Leales and Graneros. Water samples from house wells were collected, and As concentration was measured with the colorimetric Gutzei method. Eighty-five subjects from the control group (CG) and 115 from the exposed group (ExG) consumed water with allowed or high levels of As respectively. No differences due to sex or age were found in the CG. SA average concentration was of 652 ± 156 mg/L for the CG and 876 ± 235 mg/L for the ExG (statistically significant difference). A ROC curve was plotted to determine SA clinical application as an estimate of exposition to high levels of As. The area below the curve was 0.77 (IC 95% 0.69-0.86). For Hex, it was 135.6 ± 22.6 and 141.4 ± 36.2 and for B-Gal 61.0 ± 19.3 and 75.5 ± 33.1 PNP nmoles released/mL/hour for the CG and the ExG respectively. In both cases differences were not statistically significant. SA concentration could serve as an estimate of exposition to high levels of As, whereas the studied liysosomalic enzymes presented no modifications.

78.

ENERGETIC AND PROTEIN PROFILES VARIATIONS IN PREGNANCY AND POSTGNANCY OF HOLSTEIN COWS OF THE SANTA FE CENTER REGION

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The aim of this work was to study the variation in the concentrations of energetic and protein indicators in 28 Holstein-Friesian milk cows of the Santa Fe center region during pregnancy and postgnancy. The two profiles were evaluated with specific calorimetric enzymatic techniques using UV/visible Spectrophotometer BOECO S-22. The body condition was considered (BC) on a scale from 1 to 5. The ANOVA test was used. Average values and SD of the serum concentrations; Cholesterol (mmol/L):3.49±0.96; 2.62±0.74; Urea (mg/dL.36.57±10.85; 45.58±12.05; Albumen (g/dL): 3.92±0.16; 3.29 ±1.35; TP (total proteins(g dL): 7.04±0.74; 5.68±1.76 and Globulins (g dL): 3.11±0.76; 2.38±1.42 and BC: 3.54±0.39; 2.64±0.31 in pregnancy and postgnancy. Significant differences were observed in the results of urea, cholesterol and TP. BC and cholesterol and albumen mean serum concentrations were within the reference for bovines rank (INTA-Balcarce; Gonzales, 2000). The metabolic demand appeared at the beginning of lactancy, where we observed a greater variation in the energetic and protein indicators. These parameters indicate when the capacity of homeostasis has been altered, thus they indicate the metabolic balance of the animal (Hoff and Cote, 1988).

79.

TRICHINELLOSIS IN PIGS OF COMMUNITY IMPOVERISHED GROUPS FROM THE UNIVERSITY VOLUNTEERING

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The trichinellosis outbreaks in humans that appeared during the last few years were studied with the help of the university volunteer members in an area where the infrastructure, the lack of hygiene and of drinkable water pose a difficult social reality in the community in which these students live. The aim of the present work was to determine the number of animals with serological titles at the time of the study to measure the disease risk. The study was performed in the Capayán department, Catamarca province. Students of the UNCa carried out the public health activities. They identified, bled and collected 15 wild animal carcases. They used pig serum to determine the presence of anti-*Trichinella spiralis* excretory/secretory antibodies, using the solid phase IgG ELISA technique, which was verified by Western blot (WB) analysis (Malbrán Institute) and enzymatic digestions. The results obtained showed the pigs serological distribution. One hundred and seven pigs were processed, out of which 83 were negative, 16 indeterminate (9 were higher than cut off 300) and 5 positive. Four of ot the positive ones were confirmed with WB. Three were sacrificed, obtaining larvas in the artificial digestion. Student participation not only allowed diagnostic confirmation but also demonstrated the presence of the disease.

80.

EVALUATION OF ARSENIC CONTENT IN PROPOLIS FROM THE ARGENTINE NORTHWEST

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Propolis is a natural concentrate of polyphenols and flavonoids that bees elaborate from the resins they collect from trees and shrubs. Recently propolis was incorporated into the Argentinian Food Codex (CAA) as a dietary supplement, and the maximum limits established for the arsenic content was 1 $mg.kg^{-1}$. The aim of the present work was to evaluate the arsenic content in propolis from the Argentine Northwest (NOA), and to seek some differences inside the NOA according to the phytogeographical regions of the beehives in which propolis was produced. Samples were ashed in a muffle furnace at 450ºC and the arsenic content was analyzed by the neutron activation method. In the region of Western Mount an average arsenic content of 0.30 mg ± 0.14 $mg.kg^{-1}$ was determined, whereas in the Chaquenean Park it was 0.12 ± 0.02) $mg.kg^{-1}$. These differences might be due to the fact that flavonoids have the property of complexing heavy metals. Bibliography reports higher flavonoid contents in propolis from Western Mount than in propolis from the Chaquenean Park, which might be the reason for the higher arsenic content. All the samples analyzed presented arsenic contents lower than the maximum limit established by the CAA.

81.
BIOCHEMISTRY OF LOCALIZED AND GENERALIZED AGGRESSIVE PERIODONTITIS

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Aggressive Periodontitis (AP) appears early in life and is classified into Localized (LAP) and Generalized (GAP) Periodontitis. The aim of this work was to determine biochemical characteristics in gingivocrevicular fluid (GCF) of patients with Localized and Generalized Aggressive Periodontal Disease. We worked with 41 individuals that attended the Dental School, UNT, 21 with LAP and 20 patients with GAP, aged between 21 and 35. Twenty individuals without periodontal disease belonging to the same age group were used as the control group. Periodontal diagnosis was made by a single calibrated examiner and included: plaque index (Silness & Loe), gingival index (Loe & Silness), in-depth-probing, insertion level and bleeding on probing. The inclusion criteria were: absence of systemic diseases, previous periodontal therapy and neither anti-inflammatories nor antibiotics on the last 6 months. GCF samples were taken from 6 sites of the buccal cavity with absorbent paper. The chemical determinations were: Aspartate Amine transferase (AST), Lactate Dehydrogenase (LDH) and Alkaline Phosphatase (AP) (Wiener kit). For LDH and AST statistically significant differences were observed (p<0.001) between periodontitis and the control groups. AP showed significant differences (p<0.005) between LAP, GAP and the control groups. Biochemical analysis of the GCF would allow the characterization of Localized and Generalized Aggressive Periodontitis. Through the determination of AP, controls could be distinguished from the disease groups, and with LDH and AST determinations both AP types could be differentiated.

82.
COMPARARTIVE STUDY OF THE EFFECT OF RINSES ON SALIVARY PARAMETERS

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The use of mouthrinses favors the integrity of hard and soft tissues in the buccal cavity. Little is known about their action on important remineralization ions as well as on salivary proteins. The aim of this work was to compare the *in vitro* effect of two buccal rinses on components of non stimulated saliva. Ten healthy individuals with good buccal health and without drug treatment were selected. Total saliva was obtained by salivation, centrifuged to 10000 rpm and conserved at 5ºC. The active principles of the rinses were sodium fluoride and chlorhexidine digluconate. Distilled water was used as control. Equal volumes of each rinse and saliva were incubated at 37ºC with agitation for 1, 5, 10 and 15 min. Then they were centrifuged and calcium and phosphorus ((Wiener-Lab), total proteins (Lowry's method), amylase (Wiener-Lab) were quantified. Data were analyzed by ANOVA. Calcium did not show significant differences (p>0.05) between the control and the rinse with fluoride, whereas the rinse with chlorhexidine showed differences (p<0.05) at 10 and 15 min with respect to the control. Phosphorus showed a significant diminution (p<0.05) at 15 min with respect to the control for the rinse with fluoride. Proteins showed differences (p<0.05) with both rinses, a noticeable diminution occurrring at 5 min. Amylase did not show significant differences (p<0.05) between any of the groups. The chloride of the bisguanide would fix calcium, as well as fluoride complexes would tramp salivary phosphates. Both principles would precipitate proteins.

83.
INFLUENCE OF CALCIUM CHLORIDE ON CELLULAR POLARITY OF *Aspergillus niger* MYA 135

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Introduction: The hypha is a tubular cell whose shape is conserved thanks to the cell wall, the site of various enzymatic activities. In this connection, the wall lytic enzyme β-N-acetyl-D-glucosaminidase can be used as a biomarker of hyphal morphology. The stimulating effect of calcium on this activity was reflected by an increase in of mycelium ramification and by the presence of abundant bulbous cells. Thus, the loss of cellular polarity could be the result of a weakened cell wall. **Objective:** To determine if cellular polarity is restored in a high osmolarity medium. **Materials and Methods:** The mycelium developed in mineral medium at 30ºC was considered as standard. The morphological changes were examined in mycelium obtained in the presence of $CaCl_2$ with and without the addition of NaCl as an osmotic stabilizer. **Results and conclusion:** No bulbous cells were observed in medium supplemented with 1.5 M NaCl, suggesting the presence of a weakened cell wall.

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84.
EVALUATION OF A PROINFLAMMATORY STATE IN TYPE 2 DIABETES PATIENTS

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Type 2 diabetes (DT2) is associated with a precocious and accelerated atherosclerosis (ATH). The begininng of ATH involves an endothelial activation and a subclinic inflammatory state. Our aim was to evaluate markers of both events in DT2 patients and their relationship with other cardiovascular risk factors. Forty patients with DT2 aged 48.7±11.2 yr, evolution of 3.7±2.6 yr, with no clinical evidence of vascular disease were studied. sE-Selectin (sE-S), VCAM-1 and von Willebrand Factor (vWF) were determined as activated endothelium markers and hCRP, fibrinogen (Fb) and white globules recount (WGR) as inflammation markers. The values obtained in diabetic and control groups were: sE-S (86.±39.8 vs 60.8±19.8 ng/ml, p=0.016); VCAM-1 (810±208 vs 633±45 ng/ml, p=0.006); vWF (112±13 vs 93±10 UI/dl, p=0.006); hCRP (5.3±3.0 vs 3.1±1.0 mg/l, p=0.02); Fb (308±74 vs 251±34 mg/dl, p< 0.001) and WG (7808±1869 vs 6360±655/ul, p=0.02). In DT2 patients we found a good correlation between sE-S and hCRP (r=0.449); Fb (r=0.423); WG (r=0.439), while vWF was correlated with hCRP (r=473). These results suggest the existence of a subclinic inflammatory state as an endothelial dysfunction. Also, high sE-S and VCAM-1 levels in diabetics with increased waist circumference show the relevance of abdominal obesity as a cardiovascular risk factor.

85.

HEREDITARY HEMOLYTIC ANEMIA IN A TUCUMAN POPULATION

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Hemolytic anemia is due to a decrease in the half life of red blood cells. A descriptive study on the incidence of hereditary hemolytic anemia (HHA) was conducted in a population of Tucuman, Argentina. Between April 2004 and August 2008 37 individuals (24 women and 13 men) referred for HHA diagnosis were studied. Their ages ranged from 9 months to 85 years. The study included the determination of hematological blood counts, reticulocytes, iron, bilirubin, and lactate dehydrogenase. The diagnosis of HHA was made through immediate erythrocyte osmotic resistance and post incubation for 24 hours at 37ºC, Brewer Test [glucose 6-phosphate dehydrogenase (G6PDH) deficiency], hemoglobin electrophoresis, direct Coombs test, Ham test (paroxysmal nocturnal haemoglobinuria) and urinary porphobilinogen. HHA was present in 57% (21) of the patients. The most frequent cause of HHA was hemoglobinopathy C, followed by spherocytosis, hemoglobinopathy S and G6PDH deficiency. Anemia was normocytic normochromic, except in those patients with an iron deficiency. The hemolytic state was not always accompanied by anemia. Asymptomatic individuals had access to diagnosis due to a family study of anemic patients.

86.

MORPHOLOGICAL AND FUNCTIONAL STUDY OF SPERMATOZOA OBTAINED FROM THE EPIDIDYMIS TAIL OF *Chinchilla lanigera*

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The males of chinchilla lanigera commercialized as reproducers are selected according to their phenotypical characteristics. There are no parameters to evaluate the quality of the semen of the reproducers. In this sense, it is of great interest to set up standards for semen in this species that will enable characterization of the best reproducers. The objective was to determine some sperm parameters from samples obtained by punction of epididymis in a population of sexually mature males of *Chinchilla lanigera*. The motility and the number of spermatozoa were evaluated. The morphological study was made with Papanicolau stain modified for sperm. The selection of motile and capable spermatozoa was made by means of the density gradient technique of Sperm Grad and Swim-up. Viability was determined by eosin. The sperm count indicated an average value of 4.08 $x10^7$ sperm/ml and the normal forms represented 25% of the population. The viability test showed 75% of mortality in the immotile sperm. The recovery of sperm by density gradient was 40% and by Swim-up 18%; in both cases, sperm showed fast translative movements. These results constitute a first stage in order to set morphological and functional standards for *Chinchilla lanigera* sperm and indicate that sperm from the tail of the epididymis could be used with good results in reproductive technologies.

87.

HISTOLOGICAL STUDY OF *Chinchilla lanigera* OVARY IN ITS BREEDING GROUND

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An important problem of chinchilla lanigera breeders is its low reproductive rate. There are no antecedents in the bibliography of the ovarian histomorphology of this species in captivity that can serve as a reference to determine alterations in the reproductive cycle. The purpose of this paper is a histomorphological study of the ovary at different reproductive stages (new born, adult that had litter regularly and adults that did not) to determine the possible causes of the low reproductive rate and to design management strategies that will lead to a solution. The ovaries were processed by common histological techniques and stained with H-E, PAS and Masson.
The ovarian surface of the three analyzed types is smooth; the organs are slightly lobulated, especially in the adult females without litter. The coating epithelium of the newborn females and the adult mother is cubical simple, whereas in the adults without litter hyperplasia of the epithelium is observed in some zones. In the newborns, primordial follicles and primary ones are observed; in the adult mothers all the follicle stages without any predominance are represented; yellow corpora were also found. In the females without litter, primary and secondary follicles and some atresia were observed as well as changes in stromal tissue, which showed cells with a high lipid content. These results suggest that females with no litter present ovarian alterations in which the follicles are replaced by an atypical stromal tissue.

88.

LOCALIZATION OF GLUCOCORTICOID RECEPTORS IN THE PLACENTA OF CHRONICALLY STRESSED RATS

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Maternal stress alters the morphology and endocrine functions of the feto-placental unit, and the placenta is a critical determinant for normal fetal growth. The aim of this study was to analyze the location of glucocorticoid receptors in the placenta of stressed rats. Pregnant Wistar rats were separated into two groups: control (C) and experimental stress groups (E). The rats were killed at 12, 17 and 21 days of pregnancy and the placentae removed. The sections were marked immunohistochemically with anti-GR monoclonal antibody and the results were analyzed semiquantitatively. At 17 days of pregnancy, glucocorticoid receptors (GR) were located by immunohistochemistry in trophoblast giants cells (GC) in the junction zone (JZ: 85%) and labyrinth zone (LZ:3.6%) in both control and stressed placentae. At 21 days of pregnancy GR is inmmunomarked in giants cells of the LZ 24% and JZ 2% in the control group, whereas in the stressed group 17% marks in the LZ and 12% marks in the JZ were observed. There were no inmmunomarked GR in 12 days placentae. The differential localization of GR in the placental J Z at 17 days and in the LZ at 21 days of pregnancy would be in line with the further development of the LZ, highly vascularized towards the end of pregnancy. Given that the LZ is an important site of maternal-fetal exchange, increased GR in this zone would indicate that it is a target site of glucocorticoids on their transplacental way.

89.

SEASONAL FEMALE REPRODUCTIVE CYCLE OF THREE SPECIES OF SILURIFORM FISH COMMON IN RIVERS OF SALTA

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Siluriform fishes constitute a very diverse group widely distributed in South America, Africa and Southeast Asia Given the importance of the reproductive characteristics to understand the dynamics of the fish populations, the aim of this work was to analyze the seasonal changes in Siluriform fish ovaries in the Lerma Valley rivers and streams. Seasonal samplings were carried out from 1995 to 2006 in six different environments of the Lerma Valley. The species selected were *Corydoras paleatus*, *Trichomycterus spegazzini* and *Heptapterus mustelinus*. We analyzed K condition value, gonadosomatic index (GSI), oocyte frequency, fecundity, size al first sexual maturity, macrocospic characteristics and histological changes of the gonads during the different seasons of the year, determining the spawning period for each species. Ooocyte frequency analysis revealed that these species had partial spawning, since fish eggs matured synchronously in two groups. The spawning period lasts from early spring to mid-summer in the three species studied.

90.

EXPRESSION ANALYSIS IN MOUSE REPRODUCTIVE TRACT OF OVOCHYMASE 2, THE MAMMALIAN ORTHOLOGUE OF AMPHIBIAN OVIDUCTIN

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The acquisition of amphibian egg fertilizability during its transit through the oviduct is accompanied by proteolytic conversion of the vitelline envelope glycoprotein components induced by a protease called Oviductin, specifically expressed in oviductal pars recta portion. In mammalian degradome, the orthologue of the amphibian Oviductin, Ovochymase 2 (Ovch2), was reported. Taking into account that neither Ovch2 expression nor its role in the mammalian reproductive process had been studied yet, the aim of this work was to analyze the *Ovch2* gen expression in different mouse tissues. Total RNA was isolated from oviduct, ovary, uterus, intestine, kidney, liver, skeletal muscle, epididymis and testis from BALC/c mice. Based on the Ovch2 mRNA nucleotide sequence identified from the mouse genome (acc. n° NM_172908), a pair of primers was designed. The amplification of a 498 pb cDNA fragment by RT-PCR indicated *Ovch2* expression in uterus, epididymis and testis. However, the product was not detected in the oviduct. The specific expression of Ovch2 in reproductive organs indicated a possible role in the mammalian reproductive process that needs to be analyzed thoroughly.

91.

TOXICITY BIO-TESTS OF DEHYDROLEUCODINE AND ITS HYDROGENATED DERIVATIVE IN OOCYTES OF *Rhinella arenarum* IN MEIOSIS

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Artemisa douglasiana Besser, commonly known as "matico", is a medicinal herb used in Argentina that contains dehydroleucodine (DhL), a sesquiterpenic lactone. DhL has the ability to block meiosis and inhibit cellular proliferation and the growth of tumor cell cultures. A saturated variant of this molecule, 2H-dehydroleucodine (2H-DhL), was obtained in the laboratory by catalytic hydrogenation. The purpose of this paper was to evaluate if treatment with DhL or its hydrogenated derivative affected cell viability using as sensors oocytes of *Rhinella arenarum* in meiosis. Two types of assays were carried out: 1) reversibility of the effect using doses that produced 100% inhibition of the cell cycle; 2) capacity to complete the cell cycle. Fully grown oocytes of *Rhinella arenarum* matured *in vitro* were used. Meiosis resumption was induced with progesterone (2,5 µM) and the end of the cell cycle was confirmed by means of *in vitro* fertilization with homologous sperm (2 $x10^6$ sperm/ml). The results showed that oocytes pre-incubated with 12 mg/ml of DhL or 36 mg/ml of 2H-DhL and washed three times with RM before progesterone (2.5 µM) treatment presented a significant percentage of reversibility of lactone inhibition. The toxicity evaluation showed that both agents were innocuous, since when oocytes were washed and placed in media with lactones, they were fertilized and developed pronuclei. In all tests, the hydrogenated derivative was less active, requiring greater doses to achieve the same effects.

92.

IMPORTANCE OF PKA AND PP2A IN FULLY GROWN OVARIAN OOCYTES OF *Bufo arenarum* MATURED *IN VITRO*

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The activation of pre-MPF requires the dephosphorylation of residues Thy 14 THr15 by cdc25 phosphatase. The diminution in the intracellular levels of cAMP by progesterone is responsible for PKA inhibition. Although PKA is an important regulator of meiosis resumption, its substrate is still unknown. PKA has been proposed as a regulator of pp2A that inactivates cdc25. In *Bufo arenarum*, cytoplasms containing active MPF are able to amplify pre-MPF and induce maturation in an immature oocyte. The aim of this paper was to determine if PKA and pp2A were involved in the maturation of *Bufo arenarum* oocytes. Oocyte maturation was induced in different experimental conditions: a) by treatment with progesterone, b) by injection of PKI, H89 c) by okadaic acid (OA) and d) by injection of mature cytoplasm. NaVO3 was used as an inhibitor of the activity of cdc25hosphatase. Treatment with H89 or OA was able to reinitiate the cycle in the absence of progesterone, which suggests that PKA and pp2A are regulators of a transition to G2/M. The inhibition of cdc25 with NaVO3 prevented maturation induced by H89; however, treatment with OA induced maturation even in the presence of the cdc25 inhibitor. This suggests that the substrate of PKA would be cdc25 or some of its regulators, whereas pp2A could inhibit the Myt1 kinase.

93.

IMMUNOPREVENTION IN AN M3 MURINE EXPERIMENTAL ADENOCARCINOMA MODEL. HYSTOPATHOLOGICAL FINDINGS

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Objectives: The aim of this study was the induction of the *in vivo* antitumoral immune response in order to evaluate morphological changes in draining lymph nodes, spleen and tumors. **Material and Methods:** 6-8 week-old female Balb/c mice weighing 20-25 gr were inoculated at day 1 with tumor cells. Groups: Control Group *(C)* received tumor cells only, Doxorubicin-Vaccine Group *(DOX-V)* received DOX IV on day 3 and 10 and IM vaccine on days 4 and 11, Doxo group *(D)* received IV Doxorubicin on days 3 and 10, and Vaccine Group *(V)* received IM V on days 4 and 11 (1^{st} and 2^{nd} doses respectively). **Results:** In *(C)*, white pulp hyperplasia (WPH) was a frequent finding in spleen, while lymph nodes showed no differentiation. In *(DOX)* the AdCa evidenced necrosis and muscle invasion. WPH and red pulp hyperplasia was seen in spleen. The *(V)* and *(DOX-V)* groups showed similar findings, i.e. spleen WRPH, with congestion and microhemorrhages. In both groups, marginal and diffuse histiocytosis was found. **Conclusions:** The spleen red and white pulp hyperplasia described as an antigen immune response to chemical products or tumors, added to reactive histiocytosis, could suggest an activation of the immune system

94.

QUANTITATIVE ANALYSIS OF GOBLET CELLS THAT EXPRESS DIFFERENT GLYCOCONJUGATES IN THE INTESTINE OF ATHERINES IN PONDS OF THE PROVINCE OF CORDOBA

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The intestinal tract is characterized by the presence of folds composed of cylindrical pseudostratified epithelium with goblet cells and brush borders. In these structures glycoconjugates are present. The objective of the present work was to quantitatively analyze the number and distribution of goblet cells that express glycoconjugates. Samples of the intestinal tract of atherines captured in Aimar and Camoatí ponds during October/November-January/February-April/May-July were incubated with SBA, DBA and PNA lectins. ANOVA and Tukey's test ($p<0.05$) were used. In the case of SBA, the goblet cells of the intestinal samples (Oct-Nov) of both ponds evidenced significant differences in the middle region. With respect to DBA and PNA, goblet cells (Oct-Nov-Jan-Feb-Ap) showed no significant differences in the whole intestinal tract. It can be concluded that significant differences were found only in the goblet cells marked with SBA of the middle intestine belonging to samples from the Aimar and Camoatí ponds (Oct-Nov).

95.

HISTOLOGICAL AND HISTOCHEMICAL DESCRIPTION OF THE SMALL INTESTINE OF THE NANDU

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The objective of this work was to produce an histological and histochemical description of the small intestine of nandu. Samples were fixed in buffered phormol, included in paraffin and stained with H/E and PAS/H. The results showed that the duodenum presents: a mucosa consisting of villi with a cylindrical single epithelium and pseudostratified, scarce goblet cells and PAS (+) brush border and an axis of connective tissue with muscular sides. Intestinal glands and muscular of the mucosa were observed; the submucosa of dense connective tissue lacks glands; the muscular tunic presents an inner circular and outer longitudinal layer; the serous tunic is composed of connective and mesothelium tissue. The histological structure of the jejunum-ileon is very similar to the duodenum with the exception that the villi are shorter and with abundant (PAS +) goblet cells. It can be concluded that the small intestine responds to the basic structural pattern of the digestive tract (mucosa-submucosa-muscular tunic-serous tunic) and is made up of villi and abundant PAS (+) goblet cells that express the presence of neuter mucopolysaccharides.

96.

FREQUENCY AND DISTRIBUTION OF LIQUID LEVEL IN ORAL MUCOSA

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Oral Lichen Planus (OLP) is a mucocutaneous disease of unknown etiology regarded by the WHO as a potentially malignant alteration. Even with the progress in molecular biology there are no reliable markers to predic OLP malignancy. Objective: To determine the frequency, distribution and location of lesions in the oral mucosa in relation to age, sex and factors associated with OLP. The study is descriptive and the target population are people of both sexes from 25 to over 70 years of age who attended the service of the chair from 1997 to 2007. Data were recorded in medical records according to the clinical criteria for Location: single and multiple types of OLP: typical and atypical, reticular and atrophic erosive (Bagan); oral rehabilitations. Associated factors: occupation, stress, systemic diseases. OLP was diagnosed clinically, biopsied, fixed in formalin, stained with hematoxylin-eosin and evaluated by optical microscopy. Results: Average age was 52 years (range = 45 years), 23 (79%) women, 13 (39%) suffered from stress. Atypical forms were more common 22 (76%) and 7 (24%) of the reticular type. Seven (24%) had a single location, the most frequent distribution was the buccal mucosa 20 (91%); atrophic-erosive forms prevailed in areas not keratinized mucosa 19 (55%). Conclusions: The frequency and distribution patterns associate OLP with risk factors, whose evolution suggests the need for systematic and interdisciplinary approaches to limit the risk of malignancy of OLP.

97.

MICROSTRUCTURE OF ANTERIOR TEETH ENAMEL

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The aim of this work was to compare enamel types in human anterior teeth using longitudinal cuts (Lc) and cross cuts (Cc) of upper incisors and canines. Two hemisections were obtained from each piece, embedded in epoxy resin, grinded, etched with acid, metallized and observed under SEM. Micrographs were obtained from the incisal, medial and cervical thirds such as vestibular and lingual faces in Lc and vestibular and palatine faces in Cc. In the Lc samples, both in incisors and in canines, there was enamel with Hunter Schreger bands (HSB) in the vestibular face in the incisal and medial thirds, decreasing towards the cervical third. Differences in HSB thickness in the enamel were found, this being higher in the incisors group. On the outer surface radial enamel type was found. In the cervical zone there was a predominance of irregular enamel with prism intercrosses that did not quite form bands, this being more evident in canines. In the three thirds of the incisors, lingual face HSB in the inner zone and radial enamel in the rest could be observed. In the cervical third the enamel was irregular, with prism intercrosses. In both groups in Cc, striae of Retzius were described. In the inner zone the enamel was irregular and prisms were observed in the transverse and oblique sections. In the external zone, the enamel was radial and prisms met the surface in a perpendicular way. The microstructure of both groups showed no significant differences although, as a consequence of their functional adaptation, the impact zones of occlusal forces showed a higher proportion of enamel with bands.

98.

SUGAR CANE JUICE CLARIFICATION WITH A NON-CONVENTIONAL METHOD

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Juice clarification assays were performed by addition of equal doses of anionic polyacrilamide (trade name, AP 273) and cationic polyacrilamide (trade name, FC 2763) under the effect of temperature.

Procedure: 100 ml of juice sample were collected consecutively and heated at temperatures of 70 and 85ºC. Then the cationic polyacrilamide and after 15–20 sec the anionic polyacrilamide were added. The mixture was allowed to rest for 3 min (the doses were the following: 1, 2, 4, 6, 8 & 10 ppm of each polyacrilamide).

Then, the mixture was filtered through a common filter paper and ºBx was measured with a refractometer. A dilution was made to obtain a solution of 1ºBx, which was then vacuum filtered with a filter of standardized pores. The clarified liquid was taken to pH 7.00 ± 0.05 and its absorbance was measured in a spectrophotometer at 420 nm.

Conclusion: with higher temperature and more doses, the Icumsa color range diminished compared to the industrial juice.

99.

OXIDATION VELOCITY OF TWO SOURCES OF SULFUR

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In recent years there has been widespread use of sulfur (S) as a fertilizer in different crops, whose assimilable form is sulfate (SO4.) The purpose of this study was to evaluate the rate of oxidation of elemental sulfur applied to the soil in two commercial formulations, powdered sulfur and sulfur granules, both presentations having an S content of 98%. A soil sample from Simoca, Province of Tucumán, was used for the experiment.

The test consisted of two treatments, T1 (powdered sulfur), T2 (sulfur granules), each with five repetitions, and an untreated control, which were placed in plastic pots containing 1kg of soil air-dried and sifted with a 2 mm mesh. In each pot, 2 g. sulfur spray for T1 and 2 g of sulfur granules for T2 were applied, with a sufficient amount of distilled water to bring the soil to field capacity. The pots were then placed in an oven at 30ºC ± 2ºC. Every two days, the missing water was replaced to maintain the soil at field capacity. At 7, 14, 30, 60, 90, 120 and150 days of incubation, soil samples were taken from each pot and the amount of SO4 present was determined by the turbidimetric method.

We concluded that sulfur powder was oxidized faster than sulfur granules and that after 90 days of incubation the values of SO4 were almost equal, this being in agreement with what was expected: sulfur powder has a greater amount of the specific element than granules and is much more rapidly oxidized by sulfooxidant soil bacteria.

100.

POTENTIAL "PROBLEM WEEDS" IN SOYBEAN ROTATION CROPS IN TUCUMÁN. 2ND PART

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Weed control is never fully successful. The weeds that resist controls compete against the crop or cause different problems. There are three parts: 1) "successful weeds": they reach their life cycle in the crop (De Marco *et al*., 2007). 2) They increase their density, becoming "emergent importance weeds" (Roncaglia *et al*., 2005). 3) "problem weeds", which resist control treatments. The success of these species is due to their capacity for survival against chemicals and cultural practices. Emergent importance weeds found in soybean-wheat crops of eastern Tucumán (Roncaglia *et al*., 2005) include *Amaranthus quitensis*, *Sphaeralcea bonariensis*, *Talinum paniculatum*, *Leptochloa virgata* and *Bromus catharticus* (De Marco *et al*., 2007). The aim of this report is to determine the percentages at which potential problem weeds are found after three soybean-wheat years. A sampling was made between the 2005-2008 campaigns in a 3000 Ha. field called Los Aluxes. Percentages were defined according to each lot: *Sphaeralcea bonariensis*: 83%; *Amaranthus quitensis*: 37%; *Verbena bonariensis*: 21%; *Trichloris crinita*: 18%; *Heliotropium procumbens*: 16%; *Portulaca oleracea*: 17%; and *Euphorbia prostata*:11%. On the basis of the above results, weed control is suggested to lessen the propagules in the seeds bank.

101.
SOCIO-ECONOMIC INDICATORS TO MEASURE THE SUSTAINABILITY OF LEMON AGROSYSTEMS. TUCUMÁN. ARGENTINA

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There is a strong perception that the process of improving agriculture in extra-pampa regions is incompatible with sustainability. Agricultural systems need to evaluate their sustainability by means of an analysis of environmental, social and economic factors. The objective of this work is to select socio–economic indicators of sustainability for the evaluation of lemon agrosystems in Tucumán, Argentina. National and international organization outlines were analysed for the selection. A randomised survey was applied to lemon growers. The Indicators are the following: 1) Health: access to health, access to potable water (origin and quality of drinking water), access to basic sanitary needs (adequate installations for excretion/elimination and nutrition), 2) Education: degree of primary, secondary and adult schooling, 3) Productivity and income: yield (kg/ha), number of workers employed (average salary/worker), 4) Capital assests (machinery, products, wiring, own or third-person services, chemical and forest barriers). Indicators are easy to understand and answer. They constitute a Minimum Group of Indicators (MGI) necessary to analyse the tendency of small, intermediate and large lemon farmers towars sustainable production.

102.
PHOSPHITE AND CITRATE APLICATIONS IN PEPPER PLANTS FOR MILLED PEPPER (*Capsicum annuum* L.)

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Foliar fertilization supplies nutrients to help in the growth of different parts of the plant. Different types of phosphite and citrate were used in drench and foliar applications on pepper plants for milled pepper in order to evaluate how they affected their growth and production. Seven and 8 cm sprouts with their 2 first pair of leaves from nursery bed were transplanted and mantained in a glasshouse with 3 repetitions. Foliar sprayings were made with : Citrate 2.5 cc in 500cc of water + Super Phosphite 2.5 cc in 500 cc of water; Citrate 2.5cc in 500 cc of water + KN Phosphite 2.5 cc en 500 cc of water; Citrate 2.5 cc in 500 cc of water ; and Super Phosphite. The last ones were sprayed in the foliage and 5 cc in 500 cc of water on the plant base. The aplications were made at 14, 28, 42, 56 and 70 days. Sprout height (cm), number of leaves, sprout dry weight (g), radical system dry weight (g) and fresh fruit weight of the pepper plant were evaluated. No significant differences were found in number of leaves, shoot height or dry weight in the aerial part or in the root system. Citrate and Super Phosphite + drench treatments gave the highest fruit weight 41.6g in Citrate and 30g although they had a smaller plant size. Separate applications of Citrate or Super Phosphite would have a positive influence in fruit production.

103.
EFFECT OF BURIAL DEPTH ON THE GERMINATION OF BIDENS PILOSA L.

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Bidens pilosa L, a member of the Asteraceae family, is a major weed on summer crops and fruit orchards in Tucuman (Argentina). The aim of this study was to determine the effect of burial depth on germination. Fifty mature seeds (achenes) of this weed were sown and buried in 3 l plastic pots at 0, 2, 4, 8, 12 and 15 cm in cages made of wired mesh. Eight replications of each depth were made. The soil used was collected from two places in the province of Tucuman where this weed was not observed previously. Plots were maintained under natural conditions of humidity and observed daily for 30 days after sowing. Seedlings were removed after each observation when cotyledons were on the soil surface. For each sowing depth we determined the inhibition of depth germination as a function of non-buried seeds germination. Results showed that emergency decayed linearly with depth of burial. No significant germination was observed at more than 10 cm of burial depth. Highest emergence percentage (80%) was observed at 0 and 4 cm. These results suggest that tillage previous to summer sowing stimulates germination of viable seeds located in the upper layers of the soil. This is consistent with the high infestations of this weed observed in non-disturbed soils such as citrus plantation rows.

104.
TUMOR GROWTH VELOCITY IN A M3 MURINE ADENOCARCINOMA MODEL WITH IMMUNOPREVENTION AND CYTOSTATICS

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Introduction: Vaccines based immunoprevention and cytostatics could be effective in the control of tumor progression. **Objectives**: To evaluate tumor mass and growth in an experimental population treated with vaccines and cytostatics. **Material and Methods:** 6-8 weeks-old female Balb/c mice weighing 20-25 g were inoculated on day 1 with tumor cells Adenocarcinoma M3 (AdCa M3) and divided later into 4 groups: the Control Group *(C)* received only tumor cells, the Doxorubicin-Vaccine Group *(DOX-V)* received IV Doxorubicin (DOX) on days 3 and 10 and IM vaccine on day 4 and 11, the Doxorubicin group *(DOX)* received IV DOX on days 3 and 10, and the Vaccine Group *(V)* received IM Vaccine on days 4 and 11 (1st and 2nd doses respectively). **Results:** By Two-Factor Analysis of Variance ("treatment" and "days of exposure"), a lower time progression from day 10 in *DOX* (p 0.0870) and from day 15 in *DOX-V* (p 0.0010) was seen. **Conclusions:** A time and treatment effect was observed. Tumor growth velocity showed an exponential distribution but to a lesser extent in *DOX* and *DOX-V*.

105.

GLYCOCONJUGATES DETERMINATION IN FUNDUS AND PYLORUS OF THE HORSE FOETUS STOMACH

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Histology. Dpto. of Anatomy. FAV-UNRC. Río Cuarto. Cordoba.

The aim of this work was to determine the presence of glycoconjugates in the fundus and pylorus of horse foetus. Samples were processed by the lectinhistochemistry technique. (ConA-DBA-UEA-1) for glycoconjugates determination (glucose/mannose-N-acetylgalactosamine/D-galactose-fucose. The data showed: *ConA (fundus): strong reaction was observed on the surface of the epithelium and in some of the glands while in the apex of the epithelium and of the glands marcation was moderate. In the pylorus there was a positive reaction on the surface of the epithelium and in some glands. *DBA (fundus): strong marcation was observed on the surface of the epithelium. In the pylorus there was an intense positive reaction on the surface of the epithelium and in mucous glands *UEA-I (fundus): a positive reaction was visualized on the apical surface of the epithelium and slight marcation in epithelium while the reaction was more intense in some glands. In pylorus, positive reaction was marked on the surface of the epithelium while the epithelium presented a non granulated aspect. Conclusion: fundus and pylorus evidence a degree of variable reactions due to the presence of the glycoconjugates analyzed in the epithelium and gastric glands.

106.

HISTOLOGICAL DESCRIPTION OF THE OVOTESTIS OF THE GARDEN SNAIL (*Helix aspersa*)

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The aim of this work was the histological description of the ovotestis of the snail. The reproductive apparatus was dissected and samples of the ovotestis were collected and processed using conventional histological techniques. Data showed the following results: the ovotestis it is compossed of a single cubic or cylindrical epithelium, an albuginea layer and different oocyte types (previtellogenic and vitellogenic). Oocytes are large, with a large ovoid eccentric nucleus with an evident nucleolus; the cytoplasm is also large and spongy-looking. Tubules were also observed with male germinal cells in groups (spermatogonias, spermatocytes, spermatids and sperm clusters) and no germinal cells such as Sertoli cells. In the interstice large acidophilous cells (probably male hormone producing cells) could be observed. We concluded that the ovotestis is the hermaphrodite gland that produces the ova indistinctly and sperm starting from precursor germinal cells.

107.

HISTOLOGICAL DESCRIPTION OF THE FUNDUS AND PYLORUS OF THE OF HORSE FOETUS STOMACH

Dauria P, Castagnino R, de la Cruz J, Sona L, Mac Loughlin V, Navarro O, Martínez R, Bonino F.
Histology. Dpto. of Anatomy. FAV-UNRC. Río Cuarto. Córdoba.

The aim of this work was the histological description of the fundus and pylorus of the horse fetus (G2-180) stomach. The samples were processed using conventional histological techniques. The data showed the following results: the fundus presented well-defined mucous, muscular and serous tunics. The mucous tunic has a single cubic to cylindrical epithelium, gastric crypts and a submucous chorion with glands with different degrees of development. The muscular tunic presents a smooth muscle (internal circular and external longitudinal) while the serous tunic presents lax connective tissue and mesothelium. The pylorus has the four well differentiated basic tunics: mucous, submucous, muscular and serous. The mucous tunic is characterized by the presence of a single cylindrical epithelium, gastric crypts, mucous glands and muscular of the mucous tunic. The submucous tunic is made up of dense connective tissue. The muscular tunic is made up of smooth muscle. Externally, there is a serous tunic of lax connective tissue and mesothelium. In conclusion: the fundus and pylorus follow the basic structural pattern of the alimentary canal, the two regions being different especially in their glandular type.

108.

ESTIMATION OF CHRONOLOGICAL AGE THROUGH THE DENTAL CALCIFICATION USING THE NOLLA METHOD

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Several methods evaluate dental age according to the degree of calcification of permanent teeth observed in radiographic images. The method most often used is that of Nolla. The aim of this work was to determine the groups for better predicting teeth of the chronological age in a population of Tucumán. Twenty children who came for previous radiological studies, 13 females and 7 males, aged 4 to 12, were randomly selected. Panoramic X-rays were taken and images digitized with scanner (Genius) 600 dpi. Dental age for each teeth (central and lateral incisors, canines, first and second premolars and molars), except for third molars, was calculated. Fourteen variables of upper and lower maxillas were obtained. Chronological age was obtained from the dates of birth and of the study. The linear regression test was applied. Results for girls: upper incisors: R=0.98; canines: R=0.90; premolars: R=0.99; molars: R=0.99. For the lower maxilla: incisors: R=0.98; canines: R=0.93; first and second premolars: R=0.91; first and second molars: R=0.99. For boys the most exact predictor were first and second upper premolars (R=0.82). In the low maxilla: for central and lateral incisors: R=0.91; canines: R=0.63; premolars: R=0.94; molars: R=0.91. The more exact estimation of chronological age was in both maxillas for girls, while in boys only teeth of the low maxilla were more exact.

109.

Rhinella arenarum OOCYTE ACTIVATION BY MICROINJECTION AND SUPERFICIAL CONTACT OF SPERM EXTRACTS

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During fertilization, the sperm induces changes in the oocyte and its covers known as oocyte activation. The mechanism by which the fertilizing sperm induces these changes is still controversial but it suggests the necessity of interaction with receptors of the plasma membrane and the incorporation of molecule signal after sperm-oocyte fusion. The aim of this paper was to study the effect of superficially located application and microinjection of chromatographic fractions obtained from extracts of sperm of *Rhinella arenarum* on the activation of oocytes *in vitro*.

The extract was prepared from sperm selected by means of swim-up and then lysated by freezing-defrosting cycles. The lysate was centrifuged at 15000 RPM and the supernatant was chromatoghraphed using BIO-Gel P-60. For the superficially located application, acrylic spheres Heparin-Sepharose CL-6B (Amersham) soaked in sperm fraction were used. In another series of tests the ability of the sperm fractions to induce activation when injected into the oocyte was assayed. The results indicated that fraction 8 only showed biological effect when applied externally, whereas fraction 18 was only active when microinjected. The electrophoresis of fraction 8 showed two protein bands of 32 and 36 kDa, whereas in fraction 18 there appeared a single band at 24 kDa. The located application tests indicated that there was no zonification in the oocyte membrane to respond to this fraction.

110.

PROSTAGLANDINS EFFECTS ON *RHINELLA ARENARUM* OOCYTE MATURATION

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Progesterone (P_4) is the physiological maturation inducer in amphibians. The effects of prostaglandins (PGs) on ovulation are well-known although its effects on maturation have been poorly studied. The aim of this work was to study the role of PGF_{2a} and PGE_1 on oocyte maturation in *Rhinella arenarum.*

Dose-response curves of $PGF_{2\alpha}$ (12.5-400 ng/ml) and PGE_1 (100-800 ng/ml) and time-response curves (0-24 hours) were performed. P_4 (1 ug/ml) was used as a control. Meiosis resumption was scored by germinal vesicle breakdown (GVBD).

The preliminary results obtained showed that $PGF_{2\alpha}$ and PGE_1 administered at doses of 400 ng/ml and 800 ng/ml, induced maximum oocyte maturation response (95 and 77% respectively). These results were comparable to progesterone-induced maturation. Both PGs were less potent on the follicles treated, inducing only 55 and 59% maturation. Oocytes and follicles reached high rates of GVBD at 9 and 15 h, respectively. Both PGs enhanced maturation induced by low doses of progesterone (0.01 ug/ml). These results suggest that PGs induce maturation in *Rhinella arenarum* oocytes and follicles in a dose and time dependent manner. Treatment of denuded oocytes with low doses of P_4 and PGs showed a synergistic behavior of these inducers on the maturation process.

111.

RYANODINE RECEPTOR- MEDIATED CORTICAL GRANULE EXOCYTOSIS IN *CHAUNUS ARENARUM* OOCYTES

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Intracellular calcium (Ca^{2+}) increase at fertilization is pivotal to oocyte activation and to subsequent development. The source of Ca^{2+} originates from intracellular stores mainly through two calcium channels: the universal inositol trisphosphate receptor (IP3R) and the species-specific ryanodine receptor (RyR). The way in which they interact in eggs expressing both receptors is still unsolved. Functional RyRs appear to be present in the eggs of some species such as sea urchins, mice and humans, although their role in calcium signalling at fertilization is unclear. Previous studies enable us to infer the existence of ryanodine receptors in *Chaunus arenarum* oocytes.The aim of this work was to evaluate the role of RyRs in cortical granule exocytosis of mature C*haunus arenarum* oocytes and their interdependence with IP3Rs. Caffeine and Ruthenium Red microinjections confirmed the existence of functional RyRs, capable of inducing cortical granule exocytosis. Previous heparin microinjection, a specific IP3R inhibitor, delayed caffeine-induced cortical reaction, revealing relative dependence with IP3Rs, probably through a calcium-induced-calcium-release mechanism (CICR).

112.

IMMUNOLOCALIZATION OF REGULATED MITOCHONDRIAL PROTEINS BCL-2 AND BAX DURING PORCINE PLACENTATION

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The aim of the present work was to determine DNA fragmentation using TUNEL and the presence of the mitochondrial regulating proteins Bcl-2 and Bax in porcine placenta during gestation, to detect the pro and antiapoptotic mechanisms of the mitochondrial way involved during placental remodelling. Histological slides of ±4 µm of porcine placenta of ± 30, 55, 70, 80 and 114 days of gestation were used. For the detection of the Bcl-2 and Bax commercial antibodies and for the TUNEL technique the ApopTag® equipment were used. At 30 days nuclei with chromatic margination were identified by TUNEL. At 30 days of pregnancy marcation apperared in patches, and in linear form at 70 and 80 days of pregnancy. At the beginning of gestation, positive Bax HScore values were detected. Bax expression is regulated by the expression of Bcl-2. According to previous works, at 30 days of pregnancy, expression by the extrinsic way is negative. Bcl-2 expression was negative at 30 days of pregancy. Then the one detected by TUNEL in this period should be the activation of the intrinsic way. In conclusion: in pigs the biggest placentary remodelling for apoptosis was observed at 55 and 114 days of pregnancy by the intrinsic way.

113.
SPERMATOGENESIS IN *Leptodactylus chaquensis*
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The aim of the present work was to establish the basis of the reproductive biology of *Leptodactylus chaquensis*, an amphibian of regional interest for northwestern Argentina. In order to study for the first time the characteristics of the spermatogenesis process, adult males were captured during the post-reproductive period and processed by routine histological techniques. The wall of the seminiferous tubules, surrounded by miod cells, shows the presence of well defined Sertoli cells and different cells of the germinative progeny. With the exception of the primary spermatogonia, which have isolated and basal location, the rest of the cells form clusters at the same maturation stages (cysts) attached to the Sertoli cells. Secondary spermatogonia show large nucleus and scarce cytoplasm. The primary spermatocytes evinced different stages of meiotic division, while primary spermatid evinced marked proacrosomal vesicles. The interstitial spaces show the presence of Leydig cells and in the hilium proximity nervous ganglia associated to blood capillaries were observed. The results obtained show that, during the reproductive cycle period analyzed, even if a clear predominance of secondary spermatid cysts and sperm was observed, the presence of all germinative line cells,with well defined characteristics demonstrate that continuous spermatogenic activity takes place.

114.
SEASONAL VARIATION OF ABUNDANCE, SEX PROPORTION AND MORPHOMETRY OF *Peudochordodes dugesi* (GORDIIDA) IN CATAMARCA
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Pseudochordodes dugesi is one of the species of Gordiida widely distributed in Argentina. Due to the fact that information on its biology is scarce, one of the objectives of this research was to analyse the relationship between seasonal occurrence, sex proportion and lengths in males and females during one year in The Simbolar stream. Likewise, and with the purpose of enlarging the distribution data, collections in rivers and streams of Catamarca province were carried out with the geographical reference of the sampling places. The studies on abundance, annual occurrence and morphometry were performed in The Simbolar stream (28º 40' 37,6''S- 66º 03' 18,0''W), with manual collections in the four seasons of the year along 200 m on both banks of the stream. Eighty-five specimens were collected and taxonomically determined by optical microscopy; both sex and measures were analised. The greatest abundance was in spring, 33 specimens, and the smallest in winter, 7 specimens. The occurrence of sexes showed differences in frequencies in males and females in the four seasons. No females were collected in summer. The differences observed in autumn and spring (χ^2, p< 0,000) were statistically significant. The media in female lengths was 311.00 ± DS 52.43mm with a minimum value of 210mm and a maximum value of 372mm. In males the media was 125.95 ± DS 36.16mm, with a minimum value of 42mm and a maximum value of 220mm. The difference between the mean corporal length of males and females was 85.05mm, statistically significant (t, p<0,000). New data on the distribution of this species for six streams of Catamarca are presented.

115.
EFFECTS OF CADMIUM ON *Bufo arenarum* SPERMATOGENESIS
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Considering that a decline in several amphibian populations was reported, probably due to the action of chemical pollutants on the reproductive organs, the objective of this work was to study the effect of Cd^{2+} on *Bufo arenarum* testes. Cd^{2+} was selected taking into account its high concentration in the aquatic ambients as a result of industrial pollution, and due to its low rate of excretion, which causes it to be bioaccumulated. Adult male *Bufo arenarum* (100-150g) specimens collected during the reproductive period were injected into the dorsal lymph sac with $CdCl_2$ at doses of 0.5 or 5 mg/kg every day for 15 days. Controls were injected with Ringer's solution. Then, testes were processed with the routine histological technique and stained with haematoxylin-eosin. The results showed that treatment with Cd^{2+} at 0.5 mg/kg, did not induce changes in the arrangement of the different cells. These testes, as well as the controls, evinced the presence of well defined and preserved cysts exhibiting all the cellular progeny. Treatment of animals with the dose of Cd^{2+} 5 mg/kg shows distended and disorganized seminiferous tubules, with disappearance of cysts and leucocitary infiltration. Also numerous germ line cells showed hydropic degeneration and signs of focal necrosis, while other cells were probably apoptotic. The interstitial tissue was intact without any inflammatory cell infiltrates in any the studied groups. These data indicate that in the *Bufo arenarum* testes germ cells are the single target for Cd^{2+} at 5 mg/Kg.

116.
ANTIBACTERIAL ACTIVITY OF *SENECIO NUTANS* SCH. BIPONTINUS (ASTERACEAE) ON COAGULASE NEGATIVE STAPHYLOCOCCI
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Senecio nutans, a member of the Asteraceae family, is widely used in traditional medicine in the Andean region of northern Argentina, Chile, Bolivia and Peru. The methanol extract (ME) from the aerial parts of *S. nutans* was assayed against 63 coagulase negative staphylococci (CNS): *S. haemolyticus* (n=22), *S. epidermidis* (n=21), *S. cohnii* (n=9), *S. hominis* (n=4), *S. saprophyticus* (n=3), *S. capitis* (n=2), *S. warneri* (n=1) and *S. simulans* (n=1). Fifty-two % of the strains assayed were resistant to β-lactams and 60% to macrolides. All the strains were inhibited by ME concentrations between 200 and 600 ppm. ME showed satisfactory antimicrobial activity against CNS strains resistant to the most commonly used antibiotics in clinical medicine.

117.

PRESENCE OF DERMATOLOGICAL SIGNS AND CONTAMINATION WITH ARSENIC (As) IN THE DRINKING WATER OF INHABITANTS OF LEALES (L) AND GRANEROS (G) IN TUCUMAN

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The aim of this study was to determine the degree of arsenic (As) contamination in the drinking water and the relationship between contamination, well depth and clinical dermatological signs in individuals that consume the water. One hundred and forty and 95 samples of drinking water from wells in Leales (L) and Graneros (G) respectively were analysed. The depth of each well was registered. As was determined in the samples by the Gutzeit method. A hundred and twenty-two exposed individuals were assessed for dermatological signs of arsenicism. In samples from L and G, 9.3% and 34.7% respectively showed allowed levels. Averages in L were 0.112, 0.087 and 0.96 for a depth of less than 10, 11-25 and more than 25 m respectively. There were no differences between different depths. Average concentrations in G were 0.163, 0.056 mg/L for wells lower than 10 and deeper than 25 meters respectively. In wells with depths between 11 and 25 meters two zones were found: one moderately and one markedly high with averages of 0.045 and 0.405 mg/L. Differences were found in As concentrations and well depths. In L, 12.4% out of 89 individuals and in G, 39.4% out of 33 individuals presented dermatological signs, which is a prevalent pathology in poor areas of northwestern Argentina with an inadequate water supply.

118.

RELATIONSHIP BETWEEN EXPOSITION TO ARSENIC (As) IN THE DRINKING WATER AND SKIN LESIONS IN A TOWN IN TUCUMAN

Soria de González A, Martínez M, Tefaha L, Arias N, Guber RS, Toledo R, Sandoval NG, Valdivia M, Bellomío C, Romero C.
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Dermatological lesions (DL) were studied in a the inhabitants of a town in the east of Tucumán with high arsenic (As) concentration in the water. Samples of drinking water were collected from 138 adults (98 women and 40 men). As was measured by the quantitative Gutzeit method. DL search compatible with arsenicism was carried out (hyperhydrosis, hyperkeratosis, leukomelanoderma). In the women exposed to levels higher than 0.01 mg/L (n=83) and in those not exposed (n=15) 17 and 6 presented DL respectively. Levels of As of women with DL were lower than in those without DL (0.05 ± 0.02 vs 0.07 ± 0.05 mg/L). Absolute Risk (AR): 0.2. The AR in exposed women was of 0.39 (95% CI, 1.1-11.1). One hundred % of the men were exposed to high levels of As and 12 presented DL. AR: 0.3. The levels of As in men with DL were similar to those without DL (0.26 ± 0.25 vs 0.27 ± 0.12 mg/L). In conclusion: in the studied population there would be a relationship between DL and exposure to As. The greater risk of DL in men than in women could be explained by the high concentrations of As to which they are exposed. This data should be considered when planning epidemiological programmes to minimize danger due to exposure to As.

119.

COMPARATIVE STUDY OF PROTEIN METABOLISM INDICATORS OF MILK COWS IN GESTATION AND LACTATION

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Urea is a fast sensible indicator of proteins ingestion. The aim of this workn was to determine the concentrations of protein indicators in milk cows of the Santa Fe center region, department Las Colonias, in two physiological states. Twenty-four healthy Holstein-Friesian cows were selected. We determined in serum: urea (Indophenol Blue), TP: total proteins (Biuret), albumen (Bromocresol Green); and globulins by difference between TP and albumens, in a BOECO S-22 UV/visible Spectrophotometer. We used ANOVA test statistics. The average values and SD were: Urea (mg/dL) 28.08±8.37; 39.62±3.49; Hemoglobulin (g/dL): 9.7±0.72; 9.17±0.63; Albumen (g/dL): 3.06±0.58; 3.61± 1.08; TP (g/dL): 5.95±0.83; 5.12±1.32; Globulins (g/dL): 2.89±1.01; 1.51±0.66 in gestation and lactation. Significnt differences were observed in the urea and globulins between both physiological states. The average serum concentrations were within the rank reported in the literature for urea and hemoglobulin. The transition caused appreciable changes through its protein indicators. The contribution of nutrients to the fetus was maintained and milk production was initiated and maintaned. The above data comprises milk cows from the center Santa Fe region.

120.

TOTAL POLYPHENOLS, FLAVONOIDS AND ANTIOXIDANT ACTIVITY IN LEMON JUICE FROM TUCUMAN

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Altough Tucuman is the most important lemon juice producer in the world, there are at present no published characterization parameters to insure the genuineness of the juice production. The content of total polyphenols and flavonoids is a parameter that enables the characterization of lemon juice from a certain geographical region and also provides information about a nutritional component that has important effects on human health. The aim of this work was to evaluate the content of total polyphenols and of flavonoids in juice as a characterization parameter. The determination of flavonoids was performed by gradient HPLC using a C-18 column 250 mm long and 4.6 mm diameter with particles of 5 µm, and as mobile phase water/acetic acid (A) (99:1, v/v) and methanol (B). The main flavonoids identified and quantified were: eriocitrin (221±19) $mg.L^{-1}$, hesperidin (74 ± 7) $mg.L^{-1}$, diosmin (23±2) $mg.L^{-1}$ and neohesperidin (11±1) $mg.L^{-1}$. The content of total polyphenols determined was 933.0 ± 87.5 $mg.L^{-1}$ of equivalent galic acid. The antioxidant activity measured was equivalent to 1863±57 $mg.L^{-1}$ of ascorbic acid. In conclusion, lemon juice from Tucuman has a high content of total polyphenols and flavonoids, and its antioxidant activity is very important.

121.
EFFECT OF IRRIGATION SOLUTIONS ON HUMAN AND BOVINE DENTIN

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Different irrigation solutions are used for the cleaning of the root canal. The aim of this work was the quantitative comparison of the effect of endodontic solutions on human and bovine dentin. Sixteen recently extracted human (aged 17-33) and recently sacrificed bovine (aged 2-4) roots were used. After crown removal and longitudinal sectioning, the pulp was extracted and submerged in 1%NaClO, 17%EDTA, 1%Ca(OH)2, 0.2%chlorhexidine (CHX), and dest H2O. Experiments were performed in quadruplicate. Roots were rinsed, dried, fixed and processed for MEB. The mid surface was observed and quantified using the Image Tool program: number of tubules/area (T/A), intertubule density (ITD), tubule diameter (TD), intertubule space (ITS). T/A diminishes in human and increased in bovine dentin with NaClO ($p<0.001$), which would be a more reliable effect than Ca(OH)2 ($p<0.005$). It decreases less with EDTA ($p<0.005$) and Ca(OH)2 ($p<0.01$) in humans. ITD increases with NaClO and Ca(OH)2 ($p<0.005$), especially in bovine dentin ($p<0.001$), an effect that diminishes with EDTA ($p<0.01$). TD diminishes with NaClO for both species ($p<0.001$) so it would affect the organic component, and increases with Ca(OH)2 ($p<0.005$), which clears human dentin fibers. ITS is increased with NaClO specially in bovine dentin ($p<0.005$); similarly with Ca(OH)2 ($p<.005$) in humans. The more marked effects are quantified with NaClO in bovine and EDTA in human dentin. Ca(OH)2 would benefit the tissue by mineral deposit. CHX shows no change.

122.
MULTIVARIED ANALYSIS OF PARAMETERS IN CREVICULAR FLUID (GCF) OF HIV/AIDS

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The buccal cavity may show a variety of lesions. AIDS and the vulnerability that the virus produces reflect alterations at the buccal level and in the composition of FGC. The aim of this work was to associate chemical parameters of GCF related to progression of AIDS to systemic medical data. We worked with 100 patients HIV+, aged 18 to 52, of both sexes, classified as: >500 cell/µl (n=52), 200 to 500 cell/µl (n=27), <200 cell/µl (n=21); n=61 under Antiretroviral Treatment (ARVT) and n=39 without ARVT. Diagnosis of the oral lesions (OL) followed E-C Clearing-House. GCF determinations were: Total proteins, Hydroxiproline, Lactate Dehydrogenase (LDH) and Glutamic Oxalacetic Transaminase (GOT). The clinical diagnosis included: route of infection, tobacco, state of immunesuppression, systemic diseases, ARVT, and blood: hemmogram, uremia, glukemia, LDH, GOT, urine. Manova was applied. Association ($p<0.005$) between the parameters in GCF with the diagnosed systemic diseases by HIV+ were found, also between the biochemical data, systemic diseases and ARVT ($p<0.005$), the individuals with CD4 <200cell/ul ($p<0.0001$) being those with more systemic diseases. Association ($p<0.005$) between this group and blood analyses was also found, but not ($p>0.005$) between biochemical parameters and OL, route of infection, tobacco and urine analyses. A strong association ($p<0.0001$) between the immunosupression state and OL were found. The biochemical values in GCF can be associated with the diagnosis of systemic diseases and blood analyses, enabling relation to the progress of HIV/AIDS.

123.
PRELIMINARY *IN VITRO* STUDY OF THE ANGLE OF ADHESION TO GLASS OF SOLUTIONS OF ALOE SPECIES

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Aloe has applications because of its humectant properties. This was determined through the smaller adhesion angle. The aim of this work was to determine the angle of adhesion to glass of *Aloe saponaria* (S) and *arborescens* (Ar) solutions. Fresh leaves were liquefied, filtered and diluted. Physiological solution (PS), a commercial oral humectant (OH) (NAF) and liquid vaseline (LV) (EWE) were included. The pH (Altronix TPX1) was determined and adjusted when necessary. For the angle of adhesion (AAD) 20 ul were placed on a glass, digital photographs taken (Coolpix 4600), and the Image tool program applied. Data were evaluated with SPSS.PS: pH, 6.66 and AAD, 10.33; OH: pH, 5.22 and AAD, 8.66; LV: pH, 6.99 and AAD, 7.33. The pH of S (x=6.36 DS 0.48) and Ar (x=5.31 DS 0.12) did not show differences ($p<0.05$) between concentrations, but ($p<0.001$) among species. This also happened ($p<0.001$) between Ar, PS and LV but not ($p<0.05$) between Ar and OH. The AAD of S (x=15.03 DS 1.37) and Ar (x=10.46 DS 1.23) did not show differences ($p<0.05$) between concentrations but ($p<0.001$) among species. Fitting pH to neutrality for Ar and OH, differences ($p<0.05$) among them nor with other solutions were not registered. The AAD of Ar (x=9.43 DS 0.53) was not different between concentrations ($p<0.05$) nor with PS ($p<0.055$), OH at both pH ($p<0.06$) and LV ($p<0.051$) but with S ($p<0.001$). *Aloe arborens* has better humectant properties than *Aloe saponaria*.

124.
DIAGNOSIS OF THE EFFECTS OF SALINITY ON COMMERCIAL CITRUS FARMS IN THE AREA CONTROLLED BY THE FAyA - SANTIAGO DEL ESTERO

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The influence of salinity over vegetative characteristics, fruit quality and productivity of citric plants was determined in commercial farms in an area controlled by the FAyA-Santiago del Estero. The optimum Ph is 6.5 to 7. Citric implanted in soil with high salt content, especially chlorides, usually show symptoms of toxicity. We evaluated 19 commercial citric farms with surfaces from 0.5 to 30 has with irrigation by flooding. Parameters of productivity: Productivity and Productivity efficiency. In the laboratory: Fruit diameter, Shell thickness; Juice content; Total soluble solids; Acid content and Ratio. The results demonstrated that in 65% of the analyzed farms there were areas with problems of accumulation of soluble salts in plant roots associated with poor drainage conditions. These problems were ascribed in 50% of the cases to a high level of underground water and to an irrational use of irrigation water. Every parameter of fruit quality was affected by salinity, especially fruit juice and fruit diameter. Plants grafted on Rangpur lime or Cleopatra mandarin exhibited a higher tolerance to salinity.

125.

CHROMOSOMES B IN *Cornops frenatum cannae* Roberts and Carbonell (ORTHOPTERA, ACRIDIDAE)

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The genus cornops is widely spread in South America but *Cornops frenatum cannae* is endemic to the province of Tucuman. It is closely associated with Canna sp, especially to *C. edulis*. This paper represents the first cytogenetic study. The existence of genetic elements extra to the complement is a frequent fact among Orthopteroid insects. They respond to a particular dynamics of transmission and among them chromosomes B can be found. The cytogenetic analysis reveals: diploid number 2n=23 (♂) and sex determination system XO/XX (♂/♀). Chromosomes are telocentric and one of them with a satellite stands out in the haploid complement. There are differences in the chromosomic number and anomalous of segregation during meiosis. We observed: normal metaphases and metaphases with 3, 4, 5 and 7 extra chromosomes (chromosomes B); anaphases I and II with lagging chromosomes; telophases II with traces of chromatin between poles and micronuclei. The last ones represent a lagging chromosomes elimination mechanism. There is evidence that chromosomes B are involved in cytogenetic and physiological disorders. They are not vital and carry the mechanisms that ensure their transmission.

126.

MUTAGEN SENSITIVITY ASSAYS IN AIRCREW MEMBERS OF INTERNATIONAL FLIGHTS FROM ARGENTINA

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We applied mutagen sensitivity assays to a group of long-haul aircrew members from Argentina, as a first approach to determine DNA repair capacity and thereby the susceptibility to environmental cancer in aircrews. The frequencies of spontaneous and bleomycin (BLM)-induced chromosomal aberrations and spontaneous and streptonigrin (SN)-induced sister chromatid exchanges (SCEs) were determined in peripheral blood lymphocytes of 21 long-haul aircrew members and 18 control individuals. The frequency of spontaneous dicentric chromosomes was 3.5 times higher in aircrews than in controls. Aircrews and controls resulted equally sensitive to BLM G2 clastogenic effects (chromatid breaks/cell), but aircrews were almost two times more sensitive to BLM G0 clastogenic effects (dicentrics/cell) than controls. Aircrew and controls showed no differences in the background levels of SCEs, whereas a significant increase in the mean frequency of SN-induced SCEs was observed in the control but not in the aircrew group. Our results justify further studies aimed at determine if aircrews hypersensitive to BLM G0 clastogenic effects are more prone to develop environmental cancer than BLM-insensitive aircrews.

127.

MORPHOSTRUCTURAL CHARACTERIZATION OF THE CREOLE GOAT FROM THE RACHAITE REGION (JUJUY, ARGENTINA)

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Female creole goats (n = 172, age >3 years old) from the Rachaite region (Puna jujeña) were studied. Seventeen morphometric traits besides corporal weight and fourteen qualitative traits were registered. The objective was to establish the morphostructural profile of the creole goat of this region of the Argentinean highland. Animals with very low weight were obtained (23,14 ± 2.64 kg.) and of small size, as could be observed for all the quantitative variables analyzed and compared with other populations of creole goats. Morphological profile had average lines (97.67%), small udders (98.26%) and collections (9942%), long and fine necks (82.56%), dewlap absent (77.91%), stopped ears (97.67%), subconcave profile (94.77%), composed layer color (86.63%), beard presence (97.1%), spiral-shaped horns (93.02%) and black muzzles (77.91%). Generally, the morphostructural profile of this population resembles that of the creole goats of the rest of the Jujuy province and the other areas of the NOA and it differs significantly from other goats in other regions of Argentina.

128.

KARYOTYPE OF *Bowlesia incana* Ruiz & Pav.

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Bowlesia incana Ruiz & Pav. (*Apiaceae*) is a weed that infects winter cereal crops as well as gardens and orchards. The great competence time occurs during the earlier crop stages. This weed is an annual herbaceous plant of 20-25 cm height that grows in dense groups. It is propagated by seeds. Its presence indicates fertility of soils and it prefers wet and rich ones. In a previous work we determined for *Bowlesia* a chromosomal number of 2n=16 corresponding to a diploid species according to x=8 reported for the genus by Darlington and Wylie (1955). The objective of this work was to make a karyotype to contribute to the study and taxonomic identification of the species. The material came from La Rinconada, Yerba Buena (Tucumán, Argentina). Tip roots were obtained and the microscopic preparations and microphotographs of the mitotic metaphases were realized. These microphotographs were amplified to 1400 x and the karyotype was made with the technique of Levan *et al*. Next, the asymmetric index calculus (intra and Inter. chromosomal) according to Romero Zarco was obtained. The size of the chromosomes was of 4.68 to 14.29 µ. We determined that 5 pairs were submetacentric and 3 acrocentric. There were evident satellites in 2 pairs of chromosomes. The intra asymmetric index (A1) was of 0.95 and the inter chromosomal index (A2) of 0.27. The high value obtained for intra chromosomal asymmetric (A1) corresponds to the great diffusion and adaptation capacity of Bowlesia *incana* Ruiz & Pav.

129.

IMPORTANCE OF LACTIC BACTERIA VIABILITY ON INNATE IMMUNITY STIMULATION IN MALNOURISHED MICE

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Nasal administration of *Lactobacillus casei* CRL 431 (Lc) increases resistance to *Streptococcus pneumoniae* (Sp) infection in malnourished mice. The aim of this study was to investigate the effect of nasal administration of viable and non viable Lc (VLc; NVLc) on the local and systemic innate immune response in a malnutrition experimental model. Malnourished mice were fed with a balanced conventional diet for 7d and nasally treated on d6 and d7 with VLc or NVLc. At the end of each treatment (d8) mice were challenged intranasally with Sp. Leucocyte counts in bronchoalveolar fluid (BAL); phagocytic activity of alveolar macrophages (NBT+ cells); total and differential leucocyte counts in blood and bone marrow (BM) and myeloperoxidase activity in blood and BM (PX+) were determined. Before challenge, VLc and NVLc administration increased blood Px+ cells and leucocyte number, but only VLc treatment improved the number of mitotic, post mitotic and PX+ cells in BM. Both treatments increased number and activity of BAL and blood phagocytes after the challenge with Sp. In addition, both treatments improved PX+ activity in BM; however, PX+ cells were significantly higher in VLc than in NVLc mice. These findings demonstrated that the viability of lactic bacteria is important for the recovery of myelopoiesis.

130.

A NEW PROBIOTIC STRAIN AND ITS POTENTIAL EFFECT ON THE RECOVERY OF IMMUNITY IN MALNOURISHED MICE

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We reported that the oral administration of *L. casei* CRL 1505 (Lc05) to adult mice increases resistance to *Streptococcus pneumoniae* (Sp) infection. The aim of this work was to study whether the administration of Lc05 improves immunity against Sp in immunosuppressed mice. Swiss albino mice were malnourished after they consumed a protein-free diet for 21d. Then they were fed a balanced conventional diet (BCD) for 7d, or BCD for 7d with Lc05 supplementation (10^8cell/mouse/d) on the last 5d. At the end of each treatment, these animals, well-nourished (WNC) and malnourished (MNC) controls were challenged with Sp (10^5cells/mouse). Lung colonization and bacteremia were higher in MNC than in WNC. Treatment with Lc05 significantly decreased pathogen numbers in lung and it was the only group with negative hemocultures. Lc05 treatment improved the number and the bactericidal activity of blood and bronchoalveolar (BAL) leukocytes. In the Lc05 group levels of serum and BAL anti-Sp IgG were higher than in MNC, whereas BAL anti-Sp IgA was higher than in WNC. Lc05 treatment has a beneficial influence on the recovery of malnourished mice, since it is able to improve innate and adaptive immune response in both the systemic and respiratory compartments.

131.

CYTOKINE PROFILE INDUCED BY PROBIOTICS DURING AN INTESTINAL INFECTION AND ITS RELATIONSHIP WITH THE IMMUNE RESPONSE

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Lactobacillus casei CRL 1505 (Lc05) and CRL 1506 (Lc06) can increase the number of IgA+ cells in intestine as well as the bactericidal activity of peritoneal macrophages Aim: to investigate the ability of both strains to stimulate immunity against *Salmonella typhimurium* (St). Swiss albino mice received Lc05 or Lc06 (10^8cells/ day/mouse) for 5d. On d6, mice were infected with St. After challenge, liver, spleen and blood cultures; total and differential leukocytes in blood; activity of phagocytic cells in blood and peritoneal cavity; intestinal fluid (IF) and serum anti-St IgA and IgG; IF and serum TNF-α, INF-γ, IL-1, IL-4, IL-6 and IL-10 were determined. Both treatments reduced significantly St counts in liver, spleen and blood. This effect was related to the stimulation of innate immunity, because treated mice showed greater phagocyte activation and increased production of pro-inflammatory cytokines. There was also an improved humoral response against St in treated mice, which was correlated with significantly higher levels of IL-4 and IL-10. In addition, levels of IF and serum INF-γ were higher than those of control mice, suggesting that both strains are also capable of stimulating cellular immunity. Administration of Lc05 or Lc06 was able to improve immunity against St. This effect would be related to the cytokine profile induced both locally and systemically.

132.

COMPARATIVE STUDY BETWEEN THE SUPERNATANTS OF MONOCLONAL AND POLYCLONAL SAMPLES OF *PSEUDOMONAS AERUGINOSA*

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Introduction: We investigated the differences in the behavior of *Pseudomonas aeruginosa (Pa)*: sample containing polyclonal (PaM), and a monoclonal (PaC) variants isolated from the polyclonal sample. **Objective:** To study differences between bacterial supernatants in a mouse inflammatory response model, and *in vitro* on intracellular pH, apoptosis and necrosis of PMN. **Materials and methods:** Strains: PaM, PaC and Pa129b (reporter for acyl homoserine lactones (a-HSL). *Lactobacillus plantarum* ATCC 10241 (Lp). Supernatants(S): Lp (SLp) and Pa (SPaM, SPaC). Mixtures(M): v:v SLp-SPaM, SLp-SPaC. Using Pa129b, we quantified the a-HSL by Miller´s reaction. S and M were inoculated in Balb/c mouse, and H-E of skin was performed. The effect of S and M on PMN were evaluated by flux cytometry: intracellular pH (SNARF-1), apoptosis (Anexin V), necrosis (propidium iodide). **Results and conclusions:** a-HSL in SPaM is greater than SPaC and M ($p<0.05$). SPaM induced more inflammation than SPaC, SLp and M. SPaM and SPaC produced the greatest decrease in cytoplasm pH ($p<0.01$). The percentages of necrosis and apoptosis induced by SPaM are higher than SPaC ($p<0.01$). These studies indicate that polyclonality is an essential factor in Pa pathogenesis.

133.
IGE LEVELS AND EOSINOPHILIA IN CHILDREN ALLERGIC TO COW MILK FEEDING WITH ALTERNATIVES FORMULAS

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In allergic individuals, eosinophils (Eo) in blood and tissues increase abnormally. Activation of Eo is regulated by IL-5, which participates in changing isotype to IgE, so that there could be a direct correlation between IL-5 and symptoms of hypersensitivity, with eosinophilia and levels of IgE. The objective was to determine levels of Eo and total and specific serum IgE to cows milk (CM) and mare milk (MM), to establish correlation and corroborate the diagnosis of allergy to CM (CMA). Blood staining techniques were used to count Eo peripheral blood in CMA and healthy (CG) children. Levels of total (IgE-T) and specific IgE for CM (IgE-CM) were determined by EIA. These parameters were measured after diet with MM. There was high eosinophilia in CMA compared to CG (p <0.0001). After diet with MM, values were lower than those in the first study (p<0.0001). Seventy-nine percent of CMA increased levels of IgE-T. Among the CMA, 85% showed increased levels of IgE-CM with respect to CG (p<0001). Evaluation after diet with MM showed that values of IgE-CM were diminished with respect to those obtained before the diet (p<0.0001). Eo in peripheral blood and IgE-CM in CMA showed positive correlation. There was correlation between IgE-T-IgE-CM. Increased levels of IgE-T and Eo were indicative of allergy, although positive correlation between IgE-T IgE-CM was important to establish a diagnosis. In most cases correlation between IgE-T and IgE-CM, as well as between IgE-CM-Eo, confirmed atopic hypersensitivity. Excluding CM diet and its replacement by MM caused diminution of Eo, reducing the risk of chronic lesions.

134.
ANTIOXIDANT EFFECTS OF ESSENTIAL OIL FROM *MINTHOSTCHYS VERTICILLATA (GRISEB.) EPLING*

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Introduction: Reactive oxygen species (ROS) such as hydrogen peroxide (H_2O_2) play an important role in cellular apoptosis. The aim of this work was to determine if the essential oil (EO) from *Minthostachys verticillata* displays antioxidants effects, protecting human lymphocytes from apoptosis induced by H_2O_2.
Methodology: LD50 of H_2O_2 was determined by a dose-response curve. In order to evaluate the protective capacity of EO, lymphocytes were pre-treated with 6 µg/mL of EO for 1 h at 37ºC with 5% CO^2. Then, H_2O_2 was added (LD50) and incubated at 37ºC for 4-6 h and 10 µL of MTT was added. The cells were dyed with Hoechst 33258 to observe apoptotics figures.
Results: LD50 of H_2O_2 was 1mmol/L. Pre- treatment with EO increased the rank of cellular viability to 21% (p<0.05) Most of the lymphocytes treated with H_2O_2 only showed apoptotic figures such as kidney nuclei, chromatin condensation, DNA fragmentation and small nuclear blebs. Lymphocytes pre-treated with EO presented decreased indices of nuclear apoptosis (p<0.02).
Conclusions: EO from *M. verticillata* was able to protect human lymphocytes *in vitro* agaist the toxic effect of H_2O_2, suggesting an antioxidant effect.

135.
CALORIMETRIC STUDY OF THE INTERACTION BETWEEN EXTRACTS OF *BRACHIARIA PLATYPHYLLA* AND SOIL

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Brachiaria platyphylla (Munro ex C. Wright) Nash has invaded cultivated fields in Tucumán province, Argentina, with the consequent economic damage to producers. To understand its invasivity, EtOAc and MeOH extracts of its aerial parts were incubated with soil to further investigate chemical, microbiological and calorimetric modifications. Also, soil samples from invaded and non invaded areas were studied. An isothermal heat conduction calorimeter was used to obtain microbial growth curves. Invaded soil had higher values of organic carbon (OC), extractable phosphorus (P), colony formation units (CFU g^{-1}) and pH than the non invaded one. Major modifications were observed with 83 mg kg^{-1} of both extracts and 250 and 500 mg kg^{-1} of MeOH extract. Microbial activity was much higher than control, indicating that microorganisms degrade carbon sources of extracts to increase microbial biomass. This could be related to the high invasivity of this plant species of the Poaceae family.

136.
ROLE OF CUTICULAR ALKYLRESORCINOLS IN THE RESISTANCE AGAINST *FUSARIUM VERTICILLIOIDES*

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The aim of this work was to establish if alkylresorcinols (ARs) from grain cuticles are a resistance factor against fumonisin accumulation in maize germoplasm of Argentina. Grains of landraces (ARZM03018, 04014 and 05040), breeding populations (Leales 25 and pob D), commercial hybrids (Cargill 350 and Syngenta Chaltén) and inbreds (L4637, 6856-11x4674-1 and 1186x1196 LP915x3125) were assayed. Whole grains were inoculated with microconidia of *Fusarium verticilliodes* and placed at 28°C and 90% RH. After 7 d, fumonisin content was determined. ARs were analyzed by the method of Tluscik. Highest contents of ARs were detected in ARZM 03018 and Leales 25. 6856-11x4674-1 and 1186x1196 LP915x3125 had the lowest levels. The remaining genotypes had intermediate levels of ARs. A positive correlation between AR content and fumonisin accumulation was observed, suggesting that ARs are resistant factors against fumonisin accumulation.

137.

CHANGES IN GENE EXPRESION OF STRAWBERRY (Fragaria ananassa) DEFENSE RESPONSE AGAINST TWO Colletotrichum SPECIES

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The plants defense response usually involve early events, and late signals such as certain molecules associated exclusively with a specific signaling path, i.e. salicylic acid (SA), ethylene (ET), jasmonic acid (JA) and some phytoalexins, which lead to changes in the expression of many genes, including certain genes closely associated with these signal molecules. In this work, we evaluated the expression of genes closely associated with SA (e.g. FaPAL, PR-1) and ET (e.g. FaEtr1, FaACO, ApxSC) signaling pathways. As a model of plant-pathogen interaction we used the cv. 'Pájaro' of Fragaria ananassa, the avirulent pathogen Colletotrichum fragariae (isolated M23) and the virulent pathogen Colletotrichum acutatum (isolated M11). Results show an increase in gene expression associated with SA in the incompatible interaction and a lower expression of genes associated with the ET pathway in the compatible interaction as compared to water-treated plants. These results confim the participation of SA in the defense response induced by the isolate M23 and the inhibition of the ET pathway exerted by the isolate M11, enabling by this means the development of the anthracnose disease.

138.

THE CONCEPT OF LYSOZYME ACTIVITY REFERRED TO ITS COMPARATIVE USE

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Determinations of lysozyme activity for veterinary and comparative studies are usually carried out by measuring lysis of *Micrococcus luteus*. These methods produce non comparable results due to several reasons, among which the fact that the effect being measured, absorbance decrease, results from a rupture of bacterial wall that is not proportional to the hydrolysis in peptidoglycan polymer chains. In this work we tested the hypothesis that it is impossible to carry out determination of its activity using a single final time measurement. Materials used here include whey of several species of mammals, turtle blood serums and *M. luteus* suspensions. We read absorbance decrease due to the lysis at multiple wavelengths. Tests included: 1) lysis as a function of time; 2) residual activity not related to bacteria; 3) changes in light scattering dependent on the lytic activity; 4) activity linked or not to bacteria; 5) apparent activity with different amounts of enzyme; 6) initial rate and its relationship with bacteriolysis. Main results showed that: a) the lytic activity total fixed time is not proportional to the amount of enzyme; b) there is a significant amount of enzyme not linked to the bacteria. Conclusions emerging from these observations showed that it is not possible to compare different samples with a single measurement at a fixed time.

139.

CARDIOVASCULAR PROTECTIVE FACTORS: EFFECTS OF DIFFERENT DOSES OF VITAMIN E IN STRESSED RATS

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The present study was carried out to evaluate the effects of different doses of vitamin E (Vit E) on the stress-induced changes in haemostasia, plasmatic cholesterol level and blood osmotic globular resistance (BOGR). Wistar male rats were used: one group without supplement and the others with 6 UI, 50 UI or 100 UI of Vit E. Each group was divided into control (C) and immobilized rats (IMO, 2 h/day for 14 days). Blood was obtained byr decapitation and whole blood coagulation time (BCT), fibrinogen, activated partial tromboplastine time (APTT), corticosterone, BOGR, total cholesterol (TC) and HDL and LDL-cholesterol were determined. The liver was removed for MDA determination. All stressed rats showed higher corticosterone levels (p=0.0002). TC and HDL-C were higher in IMO rats and animals with 100 UI of Vit E (p=0.04 and 0.00002 respectively). A short BCT was observed in IMO rats and a high fibrinogen level was observed only in chronic IMO. However, Vit E extended BCT with respect to rats without supplement. The hepatic MDA levels were higher in acute and chronic IMO than in control rats, although this effect was diminished with all doses of Vit E used. The Vit E administration increased BOGR. In conclusion, Vit E reduced the stress-induced lipidic peroxidation, enlarged BCT and diminished the osmotic fragility of erythrocytes, but did not prevent the hypercholesterolemic effect of stress. These results showed a certain protective effect of Vit E.

140.

QUANTITATIVE VARIATION OF SPECIFIC MILK PROTEINS IN NOA GOATS

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Differences in main milk components (lipids, sugars and proteins) due to sucking, breeding and feeding periods are well known, but an aspect which has not been well studied are the variations in the milk proteins of each animal. Due to productive reasons, studies have focused on total caseins or total lactoserum proteins concentration. The aim of this work was to determine the relative concentration of specific milk proteins in NOA goats belonging to Nubian, Saanen and Criolla breeds. The methods used were: SDS-PAGE of milk samples and caseins isolated samples, scanning of gels and image analyses using a QuantiScan program and main milk proteins stripes quantification. Samples belong from two different populations, one from INTA-Catamarca and the other from Santiago del Estero. Results showed that both populations have a similar behavior in the variables studied. No race based variation was found. The concentration of different proteins varies in different ways depending on their type. SA, Lf and IgsH vary in a similar way, but SA and α- La had an independent and different behavior. Greater variation in amount of total proteins is due to caseins. The concentrations relationship found for different proteins is in agreement with their known or presumptive physiological role.

141.
UNIVERSITY STUDENTS HPN FAMILY ANTECEDENTS
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Epidemiological studies in Argentina indicate a prevalence of population hypertension (HPN). The aim of this paper was to determine the relationship between blood pressure (BP) values and HPN between our students´ sample and their backgrounds. Data resulting from the survey were taken from students, parents and grandparents and resulted in: 1 (suffering from HPN); 2 (not suffering from HPN); 3 (not known). Analysis of the students´, parents´ and grandparents´ BP nominal variables were made calculating risk factors for HPN among them. Maternal-line antecedents showed: 28 students (15.8%) without HPN with HPN antecedents; Relative risk: 0.24. Mother-line second-grade relative antecedents without HPN: maternal-line grandfather 38 students (21.5%); relative risk: 0.55% and maternal-line grandmother 57 students (32.2%) ; relative risk: 1. The highest risk of developing HPN is related to second-grade-relative antecedents, paternal and maternal-line grandmothers.

142.
ANATOMO-PATHOLOGICAL EVALUATION OF MYOCARDIUM IN LEAD-TREATED RATS
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Lead is a factor of cardivascular risk that produces endothelial damage, hypertension, etc.The direct action of lead in he myocardium is unknown. Objective: to identify the modifications in the myocardium of rats treated with 1000 ppm of lead acetate using pathological anatomy studies. Material and Methods: Adult Wistar rats were used, kept in a constant atmosphere at 24°C and 50% humidity with light-dark cycles and fed with lead-free water *ad libitum*. The groups were: 3 rats treated with lead acetate in the drinking water (1000 ppm) for two months and a group of 3 animals given lead- free water. Anatomo-pathological studies studies of the heart were made in all the groups using the hematoxylin-eosin stain technique and observation through an optical microscopy. Results: the group with lead acetate showed diffuse eritrocyte spilling in the myocardium wall, which separates muscle fibers into zones. The free-lead rats showed no modifications in pathological anatomy. This work is one of firstfindings concerning the effect of lead on the myocardium.

143.
STUDY OF CYTOTOXIC PARAMETERS OF *Verbascum thapsus* EXTRACTS ON VERO CELLS
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Introduction: *Verbascum thapsus* L. *Scrophulariacea* (verbascum) is a medicinal plant native of Europe and Asia. It has been described as having expectorant, astringent, febrifugue, descongestive and antialergic properties. However, the use of this plant *in vivo* needs the evaluation of cytotoxic parameters to guarantee its safety. **Aims:** To study the cytotoxicity of 5 vegetable extracts (VE) from *V.thapsus*. **Materials and Methods:** n-hexanic (HE), cloroformic (CE), methanolic (ME), cold aqueous (CAE) and hot aqueous extracts (HAE) were obtained from leaves. They were diluted in MEM-Eagle-Earle + 2% BFS and seeded on Vero cells monolayers. MCNC and CC_{50} by neutro red and MTT were calculated. **Results:** A correlation was observed between the 3 methods employed, so a toxicity order of the VE could be defined: EAF <EAC <EH <EM <EC. **Conclusions:** The study of MCNC by the neutral red uptake (NRU) and MTT salt reduction methods was useful to define toxic concentration ranges. Both methods were very sensitive for the determination of extracts toxicity. CC_{50} values obtained with NRU assay were lower than MTT salt reduction. These results suggest that the cytotoxic action of the VE took place mainly at the lysosomal and not at the mitocondrial level. Knowledge of the toxic ability of *V.thapsus* will help to define the selectivity action of future therapeutic formulations of this VE on eukaryotic cells.

144.
EVALUATION OF THE TOXICITY OF THE ESSENTIAL OIL OF *Aloysia triphylla* FROM DIFFERENT ORIGINS
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Introduction: *Aloysia triphylla* (L´Her.) Briton, (cedrón) is an aromatic shrub native of Argentina, Chile and Perú. It is cultivated in América, Europe and Africa. Its essential oils (EO) are of commercial interest, antimicotic, antibacterial and acaricidal properties having been attributed to them. Studies of the toxicity of the EO on eukaryotic cells should be performed to assess their selectivity action against microorganisms. **Aims**: To evaluate the toxicity of *A.triphylla* EO of different origins on Vero cells (*in vitro*) and on *Artemia salina* (*in vivo*). **Materials and methods:** The EO was obtained by hydrodistillation of plants from La Paz (Cba), La Viña (Salta), Asunción del Paraguay (Paraguay) and INTA-Castelar (Bs. As.) and analyzed by gas chromatography and mass spectrometry (GC-MS). The toxicity on *A.salina* (LD_{50}) and the MCNC and the CC_{50} on Vero cells were calculated. Statistical linear regression analysis was performed. (*Origin 6.0*). **Results**: The main components identified were: neral (12.4-29.2), geranial (3.3-29.3), and limonene (8.2-21.3). The EO from Paraguay and from La Viña showed lower toxicity values than the other oils. **Conclusion:** The low toxicity of *A.triphylla* EO makes it a promising species for the formulation of new therapeutical, cosmetic and food industry alternatives.

145.

PHARMACOKINETIC, PHOTOTHERAPEUTIC AND TOXIC STUDIES OF TWO DERIVATIVES PHTHALOCYANINES FOR THEIR APPLICATION IN PHOTODYNAMIC THERAPY

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PDT is a new therapy against cancer. The aim of this study was to evaluate the toxicity, biodistribution and phototherapeutic action of $ZnPcCF_3$ and $ZnPcOCH_3$. The studies were conducted in a Balb/c mice tumor model, with a dose of 0.2 mg/kg body weight of $ZnPcCF_3$ or $ZnPcOCH_3$. Histophatological studies and biochemical parameters were used to evaluate hepatic and renal functionality. Biodistribution was analyzed at 1 and 3 days after injection. For the phototherapeutic study we determined: percentage of tumor cell death and tumor regression. The $ZnPcOCH_3$ dose did not produce toxic effects while $ZnPcCF_3$ resulted in a slight acute toxicity at 24 h post-administration. On day 7 this damage was reversed. $ZnPcCF_3$ and $ZnPcOCH_3$ were not found in brain or skin. The phototherapeutic effect of 1 and 4 days post-treatment showed a death rate 12.41% and 89.40% respectively and regression was complete in 40% of the tumors treated with $ZnPcCF_3$. $ZnPcOCH_3$ showed an 8.36% death at day 1 and 71.50% death at day 4 post-treatment, and regression was complete in 75% of the treated tumors. In conclusion, the administration of $ZnPcCF_3$ or $ZnPcOCH_3$ would be effective for use in PDT.

146.

EFFECT OF VITAMIN C ON BONE REMODELING ACTIVITY IN LEAD-EXPOSED RATS

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The aim of this study was to evaluate the effects of vitamin C on born turnover in lead-polluted rats. The sample consisted of eight stock Wistar rats divided into two equal groups. The first group was given 500 ppm of lead acetate in the drinking water. The second group was given lead and vitamin C treatment (20 mg/day). Fasting blood was collected. In both samples, we measured: Calcium (mg/dl) (Biosystems), Osteocalcin (ng/ml) (ECLIA), and bone histomorphometry (Microscopy). The rats that received vitamin treatment had more bone remodeling signs than the ones that received lead only. Calcium levels in these animals were significantly higher than in the ones that received only lead (8.43 mg/dl ± 0.44 v.s. 7.46 mg/dl ±0.67 mg/dl; $P<0.001$). On the other hand, osteocalcin level was 8.30 ng/ml ± 2,43. In our study, osteocalcin levels were kept within normal ranges despite histological and calcium level changes. Though the mechanism is not completely clear, a beneficial effect on bone remodeling activity was observed in exposed animals that received vitamin C treatment.
(CIUNT).

147.

ANTIMICROBIAL SUSCEPTIBILITY OF *STREPTOCOCCUS UBERIS* STRAINS ISOLATED FROM COWS IN DAIRY HERDS OF THE CENTRAL BASIN IN ARGENTINA

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Streptococcus uberis (Su) is recognized as the most important environmental pathogen involved in bovine mastitis. Most of the work done in our country has determined the susceptibility through the qualitative agar disk diffusion test. Minimum inhibitory concentrations (MIC) determination by E-test is the most appropriate and rapid method to investigate the pathogen susceptibility. The aim of this study was to determine, by trading system E-test, the MIC of penicillin G (PG), cephalothin (C), erythromycin (E), oxacillin (O), tetracycline (T) and clindamycin (Cl) in 47 strains of *Su* isolated from cows in dairy herds of the central basin in Argentina. MIC breakpoints (NCCLS) were selected to categorize strains as resistant or susceptible. CIM_{90} values for PG, E, Cl, T, C and O were 6, 24, 48, 64, 96 y ≥256 µg/ml, respectively. The highest percentage of resistance was to O and Cl (91.5% and 80.8%, respectively), followed by C (66.0%) and PG (46.8%). The emergence of resistant strains of *Su* shows that monitoring programs are essential not only to conduct epidemiological surveillance, but also to contribute to the design and implementation of strategies aimed at the rational use of antibiotics.

148.

ANTIMICROBIAL ACTIVITY OF VEGETAL SPECIES OF CORDOBA AGAINST MICROORGANISMS RESPONSIBLE FOR HUMAN PATOLOGIES

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Introduction: Medicinal plants have constituted a source for the treatment of disease in primary health care in developing countries and in countries where conventional medicine is predominant. Folk medicine in Argentina employs many herbs to treat diseases. **Aims**: To study the antimicrobial activity (AA) of plant extracts against human pathogenic strains. **Materials and methods:** Extracts of *A.satureioides, V.encelioides, C.pallida, C.album, A.aroma, X.cavanillesii, C.bonariensis, A.annua, A.cotula, B.articulata, C.vulgare, L.turbinata, B.pilosa* and *B.catharticus* were obtained by maceration in hexane (HE), dichloromethane(DE) and methanol-H_2O (ME). AA and minimum inhibitory concentration (MIC) were determined by the agar diffusion method on: *A.baumany, S.aureus, E.coli, P.vulgaris, E.amnigenus, K.pneumoniae, Salmonella sp., P.aeruginosa, P.alcalifaciens, A.radiobacter, E.faecium, E.faecali, B.cereus* and *C.albicans*. **Results and discussion:** *X.cavanillesii, A.cotula, C.bonariensis* and *L.turbinata* showed some AA. HE and DE of *A.satureioides* revealed a wide range of AA. The MIC from flowers HE was 0.56mg/ml for *E.amnigenus* and *S.aureus* and 2.5mg/ml for *P.aeruginosa*. The MIC of leaves HE was 1.25mg/ml and 0.56mg/ml for *E.amnigenus* and *S.aureus* respectively. **Conclusion**: the emergence of resistant microorganisms to antibiotics needs new therapeutic options, *A.satureioides* being a promising alternative.

149.

MICROBIOLOGICAL PROFILE OF MILK FROM DAIRY HERDS IN THE BASIN OF VILLA MARÍA (CÓRDOBA)

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Cordoba has approximately 5700 dairy farms and an average annual production of around 2.4 billion liters. The Villa María basin is the second dairy conglomerate. Milk is an appropriate medium for the growth of most bacteria. The microorganisms found in milk reflect the sanitary conditions of dairy herds. In Argentina no information is available on milk quality in areas of small and medium producers and semi-extensive production systems. The aim of this study was to determine the presence of indicators and pathogens in tank milk from 50 dairy herds in the Villa María basin. We determined aerobic mesophilic, psychrotrophic and thermophilic bacteria (FIL 100 B:1991). In addition, we performed a total coliform (FIL 73:198) and *Staphylococcus* coagulase positive count (FIL 145:1990). *E coli* isolation was carried out (ICMSF 1983). The results of the analysis of aerobic mesophilic and psychrotrophic bacteria were $2.1x10^3$-$3,7x10^7$ and $3.3x10^2$-$8.3x10^7$ cfu/ml, respectively. No thermophilic bacteria were isolated. Seventy-two (72%) of the samples provided a count of coliform bacteria ranging from $3x10^2$ to $1x10^7$ cfu/ml. *E. coli* was detected in the 18% of the milk samples. Twenty-six (26%) of the samples presented a *Staphylococcus* coagulase positive average count of 1 $x10^5$cfu/ml. The results of this study demonstrate an inadequate hygienic quality of tank milk in dairy herds in Villa Maria (Córdoba).

150.

POTENTIAL ADHESION ABILITY TO EPHITELIAL CELLS OF *Saccharomyces cerevisiae* MYCOTOXIN ADSORBENTS STRAINS

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Mycotoxins are toxic metabolites produced by fungi in feed. Their presence at levels above tolerable ones represents a threat to food safety and a significant risk for human and animal health. Some strategies have been developed to reduce mycotoxins contamination. One promising alternative is the use of functional foods containing probiotics capable of exerting beneficial effects on animals. *Saccharomyces cerevisiae* has been supplied as food by their huge profits and constitutes a potential tool for the removal of mycotoxins from animal feed. Adherence to epithelial cells is a prerequisite for temporarily persistence in the host and a key mechanism to carry out probiotic activity. The aim of this study was to determine the potential of *S. cerevisiae* strains for adherence to Vero cells. The *S. cerevisiae* strains used in this study were isolated from pig ecosystem and their ability for aflatoxin B_1 and ochratoxin A detoxification was evaluated. The test was conducted following the methodology proposed by Kumura *et al*. (2004). The results indicate that the adherence ability of *S. cerevisiae* vary among strains. We observed adherence to Vero cells in 100% of the strains studied, RC009, RC012 and RC017 being the most highly adherent strains.

151.

STUDY OF A YEAST STRAIN ISOLATED FROM CHICKEN FECES AS A POTENTIAL PROBIOTIC AND AFLATOXIN B_1 DECONTAMINATION

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Aflatoxin B_1 (AFB_1) is one of the mycotoxins with greater implications on health because of its carcinogenic effects, which have a huge impact on poultry production. An answer to this problem is the use of microorganisms as mycotoxin sequestering agents with potential beneficial properties on the host. The aims of this study were 1) to isolate, identify and characterize the beneficial and decontaminant properties of yeast isolated from feces of chickens. The isolated strain was identified as *Saccharomyces cerevisiae*. It was able to tolerate the acidic conditions (pH 2) and the presence of bile salts (0.5%), which indicates its resistance to gastrointestinal transit. The strain showed a high degree of autoaggregation and coaggregation with the studied pathogens *(S. aureus, E. coli, Enterobacter* spp.; *Salmonella* spp.). The AFB_1 decontamination ability showed good efficiency at both low and high AFB_1 concentrations, revealing a cooperative effect with the increased toxin concentration in the medium. The parameters of efficiency were based on the theoretical model of the mechanism involved in the process of adsorption (Bueno *et al*., 2007). In conclusion, the *S. cerevisiae* strain isolated from feces has potentially beneficial properties and could be used as an AFB_1 decontaminant in chicken feed.

152.

ISOLATION AND IDENTIFICATION OF CELLULOLYTIC FUNGI FROM SOIL IN THE NORTHWEST OF ARGENTINA

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Cellulolytic microorganisms play an important role in the biosphere recycling cellulose polymers. There exists a diversity of bacteria and fungi that produce cellulase enzymes and that can be applied to many biotechnological processes: recycling of cellulosic residues from agroindustrial activities, production of forage and feed for livestock and poultry, juice extraction and biofuel production. The availability of cellulolytic fungal enzymes for industrial application is limited and these processes are costly due to the large amount of enzymes they require. Although there are numerous studies on the production capacity of these enzymes by natural fungal strains, the capacity of regional strains is still unknown. The current study focused on the cellulolytic mycobiota in soil samples from Jujuy and Tucumán provinces (Argentina), in order to obtain strains for later examination of their possible application to biotechnology processes. Twenty surface soil samples were processed. Isolation of cellulolytic fungi was carried out using cellulosic supports (filter paper). Strains were isolated using Sabouraud-agar and potato-glucose agar. Identification was carried out by their morphological characteristics and reproduction mechanisms. The results revealed the existence of *Chaetomium, Trichoderma, Aspergillus, Penicillium, Acremonium, Fusarium* and *Chrysosporium* genera. The diversity of strains suggests the existence of several strains with acceptable activity for application in biotechnological processes.

153.

DETECTION OF *CRYPTOCOCCUS NEOFORMANS* IN NATIVE TREES OF TUCUMÁN - ARGENTINA

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In recent years, *Cryptococcus neoformans (Cn)* was found in the hollows of trees. Molecular studies indicate that such habitats are potential sources of infection that should be studied due to the emergence of Cryptococcosis in humans. The aim of the present work was to look for the presence of *Cn* in the hollows of live trees in 5 public places in Tucumán. The study was carried out in the laboratory of Mycology of the Hospital del Niño Jesús, Tucumán. Swabs of 150 samples of the inner surface of the hollows were inoculated into Agar-Niger Seeds plates, incubated at 25ºC and observed for 5 days. Phenoloxidase positive colonies were identified as belonging to *Cn* by visualization of the capsule with Chinese ink, thermotolerance at 37°C, urease detection, sensitivity to cycloheximide at 25-37ºC and use of the commercial method API 20C In order to identify species CGB medium was used. Two samples were positive for *Cn*, demonstrating for the first time in Tucumán the presence of this yeast in two live trees (*Jacaranda mimosifolia* and *Enterolobium contortisiliquum*), native of our province.

154.

INHIBITORY ACTION OF ANTIMICROBIALS ON BIOFILM PRODUCING BACTERIA ISOLATED FROM FOOD PROCESSING PLANTS

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There are a variety of disinfectants for use in the food industry, which would help prevent and reduce contamination. The aim of this work was to evaluate the effect of sodium hypochlorite and dimethyldithiocarbamate-etylenbisdithiocarbamate (D-E) on the production of bacterial biofilms isolated from food processing plants. Suspensions of *Pseudomonas* spp (P), *Klebsiella* (K), *Citrobacter* (C) and *Pseudomonas fluorescens* (Pf) and mixtures thereof supplemented with the antimicrobial substances at a concentration corresponding to MICfor each bacteria were placed in Elisa plates in quadruplicate. Determination of biofilm production was carried out according to Christensen technique. We noted a marked inhibitory effect on biofilm formation by each bacteria tested as well as microbial combinations compared to the addition of D-E. In the combinations in which *Klebsiella* participated there was a relative ability for biofilm formation (RAFB) higher than with other microbial combinations, which would indicate the resistance of this bacteria to the substances used. A specific study is necessary of the effectiveness of antimicrobial products, as opposed to bacteria in the microflora processing plants and food trends to form biofilm.

155.

STREPTOMYCETES: ANTIBIOSIS AND COPPER RESISTANCE

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Microbial bioremediation is an attractive strategy for the treatment of copper-polluted areas. Streptomycetes can produce secondary metabolites with potential application in biotechnology. The aim of this study was to assess the Cu^{2+}tolerance and removal ability of streptomycete strains and their antibiosis effect. *Streptomyces* sp. AB2A, AB3 and AB5A were grown in MM agar (MMa) supplemented with 6.4, 32 and 64 mg l^{-1} of Cu^{2+} and cultured for 7 days in MM liquid (MMq) supplemented with 6.4, 32 and 64 mg l^{-1} of Cu^{2+}, at 25, 30 and 35ºC. The residual copper was determined by Cu(I)-Bicinconinic acid method and microbial growth by dry weight. Antimicrobial activity was analyzed by the inhibition technique in MMa against pathogenic strains. *Streptomyces* sp. AB5A showed the highest tolerance to Cu^{2+} in MMa and increased activity at the highest temperature in MMq. Antimicrobial activity was observed only in AB5A against four gram-positive strains. *Streptomyces* sp. AB5A may be used as a potential tool for bioremediation of effluents highly polluted with copper in a wide temperature range. The most Cu^{2+}-resistant strain displayed the greatest capacity for antibiosis. This could indicate that these mechanisms can be interrelated or co-regulated.

156.

MYCOLOGICAL WATER MONITORING OF A DENTAL UNIT IN A CLINIC ROOM OF THE FOUNT

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During clinical care, both oral health patients and staff are exposed to water and aerosols generated by rotary instruments and triple syringe. Once the tip of the syringe or triple syringe (air, water, spray) has been contaminated, microorganisms are drawn by capillary action inside the units which implies microbial colonization in the tubes through the bioilm formation. Pipes are an ideal environment for colonization due to their small diameter and large area-volume relationship. We performed a quality monitoring of water from the triple syringes in the 10 dental chairs of the Chamber Clinic C of the Faculty of Dentistry, at different times of the school year (before starting clinical practice, before the winter recess, after the winter recess, and at the end of the annual practice). Letheen broth was added to 1 ml of each sample. Sabouraud-agar with chloramphenicol was used for isolation of the fungal strains. Identification was carried out by studies of the morphological characteristics and reproduction mechanisms. Only 37.5% of the samples showed fungal development. Samples from two armchairs showed no contamination. The samples obtained before the July recess had the highest pollution rate. The analysis of isolated fungi revealed the transitory presence of different species. The absence of contamination in some armchairs suggests that with proper control this situation could be extended to all the dental chairs used in the clinical practice.

157.

METALO- β LACTAMASAS AND EXTENDED SPECTRUM β-LACTAMASAS (ESBL) IN *Pseudomonas sp.* FROM A CLINICAL ISOLATION

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Acquired carbapenemases and ESBL enzimes represent a major threat to the clinical utility of all β-lactam antibiotics. The emergence of these enzymes has clinical and epidemiological implications and is a matter of particular concern worldwide. The aim of this work was to implement a strategy for the surveillance and control of these new resistance determinants. We studied 67 isolates of multiresistent ***Pseudomonas sp*** between March 2007 and July 2008. ESBL was screened according to Clinical and Laboratory Standard Institute recommendations by the double-disk synergy test: imipenem/ceftazidime, ceftazidime/clavulanic acid and cefepime/ clavulanic acid, and MBL–producers relying on the synergy between an MBL inhibitor (EDTA) and imipenem/ meropenem disks. MBL production was confirmed by a bioenzimatic assay and ESBL by ceftazidime versus ceftazidime-clavulanic disks. Only a strain of *Pseudomonas sp* isolated from a patient subjected to prolonged antibiotic treatments was an ESBL and MBL producer, so we can conclude that increased awareness and correct information could help microbiologists to detect ESBL and MBL producing strains early and prompt clinicians to adopt proper measures in terms of antimicrobial use and infection control.

158.

BIOFILM PRODUCTION BY COCCI AND BACILLI ISOLATED FROM DRINKING WATER AND THE EFFECT OF TEMPERATURE

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Biofilms produced by bacteria can be found in drinking water systems and allow survival of these microorganisms. pH, temperature (T), disinfectant concentration, flow rate, microbiological quality of the water and organic substrates are factors that condition biofilm development. The type of microorganism and the temperature can affect biofilm formation (T of 15ºC or higher). **Objectives**: To isolate biofilm-producing bacteria from drinking or tap water and study the influence of T on biofilm production. **Methods**: Bacteria were isolated from the water supply system in Tucumán. Chlorinated water was collected, neutralized and plated onto medium for heterotrophic plate count (HPC). Biofilm production: A modified technique according to O'Toole and Kolter (1998) was used and bacteria were classified according to their biofilm production (Stepanovic *et al*., 2000). T influence: A 24-h culture was suspended in Luria Bertani broth until an OD 0.05-0.1; multi-well plates were inoculated with the suspension and incubated at 6, 22 and 37ºC for 24 h. **Results**: 2 Gram-positive cocci (C+), 6 non-fermenting bacilli (NFB) and 2 enterobacteria (E) were isolated. Four were moderate and 4 weak biofilm producers at 37ºC (3 NFB and 1 E in both cases) and the 2 C+ strains were weak producers, but only at 22ºC. At 6ºC 1 NFB was a weak producer. **Conclusion**: The strains showed variability in their ability to produce biofilm at different T.

159.

PHYSIOLOGICAL, BIOCHEMICAL AND MOLECULAR CHARACTERIZATION AND COMPARISSON OF TWO COLD-ACTIVE XYLANASE PRODUCER STRAINS

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At present, marine microorganisms represent a source of biotechnological and industrial interest due their capability to elaborate cool-active biocatalizers such as xylanases. The aims of the present work were: 1) Physiological characterization of the strains using API 20NE test and growth curves at 4ºC and 20ºC. 2) Biochemical studies of xylanolitic activity. 3) Molecular study by 16S DNAr-amplification restriction analyses, intergenic sequences (ITS) and protein profile of the strains. Starting from 70 isolations from different coastal areas of the Beagle Channel (Ushuaia, Argentina), two strains called P2 and P8 were selected by qualitative techniques because they presented xylanase activity at 8ºC and 20ºC. The P8 strain presented highest specific activity at 25ºC. Filogenetic relationships for the isolations established by 16S RNA gene amplification allowed us to locate them within the γ-*Proteobacteria* subclass, as belonging to the *Pseudoalteromonas* genus. The differences found in proteic and ITS profiles provide evidence that P2 and P8 isolations correspond to different strains. Marine bacteria identification isolated from subantarctic ecosystems contributes to increase knowledge of marine microorganisms diversity in the Beagle Channel.

160.

DEMOSTRATION OF THE APOPTOTIC PROCESS BY ELECTRONIC MICROSCOPY IN THE ADRENALS OF PREGNANT STRESSED RATS

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The aim of this work was to verify by electronic microscopy the ultraestructural changes of the apoptotic process in the adrenal cortex. Wistar rats were used and stress by immobilization was applied.The rats were sacrificed at 12, 17 and 21 days of gestation. The adrenal glands were processed according to the conventional histological technique for electronic microscopy.The grids were observed by electronic microscope and several fields of the cortex were documented. In the glomerular zone apoptotic bodies with different organelles and cellular remains engulted by macrophages were observed. Also apoptotic nuclei characterized by membrane invaginations and fragmented chromatin were identified. In the fascicular zone apoptotic nuclei in an initial phase were observed, with foldings of the nuclear membrane and condensed chromatin. In the reticular zone apoptotic nuclei in a late phase were identified, with chromatin fragmentation and loss of integrity of the nuclear membrane. In the three zones, mitochondria and smooth endoplasmic reticulum were found with signs of condensation and general disorganization. Different cellular morphologies typical of the apoptotic process were observed in the adrenal cortex of stressed rats.

161.
NATURAL PRODUCTS OF *CITRUS AURANTIUM* ACTING INSECTICIDES ON *SPODOPTERA FRUGIPERDA*
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The family of Rutaceae is very important from an economic point of view. The Citrus genus includes numerous species cultivated since time immemorial for their edible fruits. A review of the chemistry of the Rutaceae shows that from this group of plants potent toxic pesticides, parasiticides, fungicides, herbicides and cytotoxic, have been isolated. We selected the bitter orange (*Citrus aurantium*) in the search for natural insecticide plant. The blend of essential oil and ethanol extract of albedo of *C. aurantium* was incorporated to the larval diet of the lepidopteran pest *Spodoptera frugiperda* in order to evaluate feeding behaviour as well as toxic effects. Larval mortality was quantified. Our results indicated that 250 µg of extracts mix per g of diet deterred 46% feeding and had the highest larval mortality (100%) tested. The blend of essential oil of *C. lemon* and ethanol extract of albedo of *C. aurantium* was less active under the assayed conditions.

162.
THE HABIT OF ORAL HYGIENE. A STUDY IN SCHOOL TEACHERS OF EGB 1º AND 2º LEVEL IN SAN MIGUEL DE TUCUMÁN
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Objective: Exploration of the habits of oral hygiene in school teachers of EGB 1º and 2º level in Tucumán.
Material and Method: The study was carried out in the course of the academic year 2008. A questionnaire with 28 items was given to teachers of state schools of public administration of urban and urban-marginal areas. Participation was voluntary and the answers were anonymous. Absolute and relative frequencies were calculated.
Results: The population was constituted by 26 teachers. Fifty-four % of the school teaches claimed that they brushed their teeth after meals. Ninety-six % of the teachers said they used toothpaste with fluorine. They said that fluorine increases the resistance of dental enamel (77%). Only 12% thought that the most important moment to begin oral hygiene was from the time of birth. All the teachers considered that the most important factor about toothpaste was that it should contain fluorine. Sixty-five% expressed the necessity for children under 10 to receive help from adults when brushing.
Conclusion: Considerable information exists among teachers with respect to the benefits of brushing. It would be important to reinforce that knowledge by persuading teachers to consider brushing as an indispensable strategy in the prevention of dental disease.

163.
IMPLICATION OF TEACHING STRATEGIES ON PARTIAL AND FINAL INTEGRATING EXAMINATIONS
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Introduction: We considered the academic performance of the students of the course in Physiology I during the first semester of the year 2008. We compared the results of expository classes, using different strategies Material and methods: 238 students were examined. Group "A" (119 students); group "B"(119 students). During the course both groups were evaluated three times with the same evaluation instrument. At the end of the semester each group sat for an integrating exam consisting in five open questions.
Results: Group "A", with the strategy of questions with open books, 59.13% passed; conceptual maps 53.04% passed and with problem based learning, 50.78% passed. Group "B", using only expository strategy 41.25%, 41.14% and 34.85% respectively passed. The results of passed examinations in the Integrating exam for group "A" was 86%, and for group "B" 90.24%.
Conclusions: some significant differences appeared in the partial evaluations but with respect to the integrating examination small differences were observed in favor of the expository class.

164.
RELATION BETWEEN ACADEMIC PERFOMANCE AND ADMISSION VARIABLES
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The admittance process at the U.N.T. School of Medicine considers high-school average plus the total score obtained in the Admission Test on 4 subjects: Biology, Reading Comprehension, Chemistry and Physics. Then, in an order of merit, the first 240 students enter. The aims of this work are: 1) to compare high-school average (AS), total score obtained in the exams (SEx) and 1st year academic performance (AP) of admitted students in 2005, 2006 and 2007; 2) to relate the students' AP and the admission variables: AS and SEx. All the students admitted in 2005, 2006 and 2007 (n=719) were considered. The data were analyzed with the t test, χ^2 and ANOVA. The AS average for each year was 8.3 (no significant difference, ANOVA p=0.848). The SEx average turned out to be significantly greater in the 2005 students (74 vs 71 for 2006 and 72.6 for 2007; ANOVA p<0.0001). The AP of all the students studied ranged between "Good" and "Very Good", the best being for 2005 students (test χ^2, p<0.0001). Only 2007 students showed that the greater their AS the better their AP (ANOVA, p=0.031). No significant association was found between the AS and the AP in 2005 and 2006. The SEx was significantly associated to the AP in 2005 and 2006 (ANOVA, p=0.004 and p<0.0001 respectively). Conclusion: the students' AP was "Good" and "Very Good"; SEx has greater incidence on the students' PA than AS.

165.

STUDENTS' OPINION ABOUT WRITTEN EXAMS IN THE FACULTY OF MEDICINE- UNT

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Introduction: A review board was set up at the Faculty of Medicine in 2000 to analyze exam profiles. A research to know how teachers evaluate was carried out. **Objective:** to know students' opinion about written exams. **Methodology**: A survey was carried out among students from 2nd to 7th year. A random sampling proportional to the number of students per year with a sampling error of 5% was set up to determine the size of the university population. We considered: I: Personal information: sex; - age. II: As regards exam: time allotted; students knowledge of exam venue; score of questions, type of exam; degree of difficulty; students' training; feedback available at any stage. **Results:** 304 students between 18 and 30 were interviewed. For 65%, the time allotted was right; 85% knew the exam venues; 49% knew the question score. As regards exams: 79% had multiple choice tests; 48% open and 32% combined questions. For 35% the questions were difficult, easy for 26% and of average difficulty for the rest; 52% were trained for this type of questions; 24% got exam feedback. **Conclusions:** Written exams should be rethought as they show students' lack of training. Clear evaluation objectives, common criteria about test scoring and feedback are necessary. A good evaluation tool should diagnose the starting points, check learning objectives and allow changes during the learning process.

166.

EFFECTS OF EXTRACTS FROM EARTHWORM-COMPOST SUSPENSION ON THE QUALITY OF SEEDS OF TWO BEAN CULTIVARS WITH INDUCED DETERIORATION

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The aim of this work was to evaluate the viability and vigour of bean seeds. For that purpose, sublots of the Paloma INTA (white) and Camilo INTA (black) cultivars were damaged by letting them fall 0.2 and 4 times on a metallic plate from a height of 2 m. Afterwards, samples of each lot were immersed for 20 min in an extract of the suspension of earthworm-compost/water (1 to 5 ratio). Germination power, electrical conductivity and – in seedling obtained in germination trials - the fresh and dry weights of aerial and root portions; besides, a vigour index was calculated. Germination of white bean seeds soaked in the extract showed decreases in the percentage of normal seedlings, and resultings significant increases in abnormal seedlings outcome, and of death seeds for treatments of 2 and 4 falls. This was also the case with black bean, only for the 4 falls treatment, compared with the respective control. On the other hand, electrical conductivity of white bean seeds treated with the extract was higher than the control value, whiile in black bean this difference was found in all levels of vigour studied. The vigour index for white bean decreased while for black bean only the 4 falls treatment showed decreases of 16% in all cases as compared to the control. This study showed that treatment did not revert modifications in membrane permeability.

167.

PARAMETERS OF PRE AND POST WEANING DISTRESS IN PIGLETS HOUSED IN INTENSIVE INDOOR PRODUCTION SYSTEMS

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Intensive indoor systems could affect animal health and welfare and have an impact on production. The aim of this work was to evaluate some physiological parameters related to pre-and post-weaning distress in piglets housed in intensive indoor production systems. The study was carried out on 50 piglets from 10 mothers, hybrids of Large White x Landrace basis, with identical genetics, nutrition and handling, reared in confinement with controlled light and temperature. A blood sample 48 hs pre-weaning (14 days old) and another 6 days after weaning (20 days old) were collected. Plasma levels of cortisol, creatinine, urea and glutamic oxaloacetic transaminase (GOT) and neutrophil:lymphocyte (N:L) ratio were measured. Urea and GOT were within normal values with no significant differences between pre- and post-weaning, showing hepatic and renal health. A significant increase in creatinine in post-weaning (p=0.0001), which could be attributed to the change in the diet from milk to solid food, was observed. There were no differences in cortisol levels between pre- and post-weaning. On the contrary, the N:L ratio increased during post-weaning. This result shows that in intensive indoor systems with controlled environmental conditions, exposure to adverse situation is minimal and could prevent the causes of distress.

168.

ELECTROPHYSIOLOGICAL CHARACTERIZATION OF THE SCIATIC NERVE IN AN EXPERIMENTAL MODEL OF PERIPHERAL NEUROPATHY

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The electrophysiological characterization of the rat sciatic nerve was carried out in an experimental model of peripheral neuropathy by nerve chronic partial compression. Adult male Wistar rats were used. Both surgery for nerve compression and surgery for electrophysiological records were done under deep general anaesthesia. Seven to 10 days after compression, the sciatic nerve was exposed and mounted on two pairs of electrodes for stimulation and recording. Compound nerve impulses were preamplified, A/C converted and computer stored (Axon system). The same electrophysiological measurements were taken in normal animals. We found disorders in excitability (thresholds and refractory periods) and both velocity and amplitude of compound nerve impulse after chronic partial nerve compression. This nerve conduction blockage could be due to ischemia or axoplasmatic transport interruption.

169.

OXIDATIVE STRESS AND SOY NUTRITION IN AN EXPERIMENTAL MODEL OF GLOMERULONEPHRITIS

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Oxidative stress as function of soy or casein based diets in a glomerulonephritis (GN) experimental model was studied in male Wistar rats. GN was induced by bovine seric albumin immunization. Following antibody appearance animals were assigned to three different diets: (A) 20% casein balanced food (B) 20% soy protein balanced food and (C) commercial rat formula. Oxidative stress was evaluated in kidney and liver homogenates by malonialdehyde (MDA), nitrite and reduced glutation (GSH) levels 5 weeks after proteinuria was found. Soy feed rats MDA levels were higher than controls, but lower than casein ones. B group nitrite levels were similar to the control one but lower than either casein or commercial food groups. GSH was improved in B group. Balanced diet containing 20% soy protein could reduce the harmful effects of oxidative radicals in kidney and liver.

170.

INHIBITION OF 20-HETE-SYNTHESIS ENHANCED ENDOTHELIAL FUNCTION AND DECREASED VASCULAR REACTIVITY IN ARTERIES OF HYPERCHOLESTEROLEMIC RABBITS

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The aim of this work was to study the effect of a CYP4A2-specific inhibitor in endothelial function and vascular reactivity to angiotensin II (AngII) in hypercholesterolemic and controls rabbits. Rabbits were fed with either normal rabbit chow (CD) or a diet cointaining 1% cholesterol for 6 weeks (HD). PAM, CT, LDL, HDL and TG were measured. The thoracic aorta was excised. Rings were cut and mounted in an organ bath to register isometric contractions. CAY10434 10^{-6} M (omega hydroxylase specific inhibitor) was added or not (control) 30 min. before stimulation with noradrenaline $5x10^{-6}$ M and cumulative dose response curve (CDRC) to Acetylcholine (Ach). After washing, one CDRC to Ang II was performed. The Griess-technique was used to measure nitrites release in the presence or absence of CAY10434. Results: CT and LDL were higher in HD. HD impaired Ach relaxation and improved Ang II-response. These effects were blocked by CAY10434. Furthermore, NO- basal release was higher in DC. CAY10434 improved NO-release in DC and normalized NO-release in DH. Conclusions: In phisiological conditions NO would inhibit CYP4A2 and 20-HETE-production is counterbalanced. In hypercholesterolemia, vascular dysfunction induced by NO-deficit would improve 20-HETE-release. This metabolite would sensitize vessels to Ang II response.

171.

EXPERIMENTAL MODEL: ATEROGENIC INDEX IN LEAD EXPOSURE IN MICE

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Several epidemiologic studies have enabled the identification of cholesterol(CT) as a predictive factor of morbimortality by cardiovascular disease. For stratification of the cardiovascular risk the quotient: CT/C-HDL or C-LDL/C-HDL (Aterogenic Index) is used. Objective: to determine the aterogenic index in mice exposed to 0.5 mg/l of lead acetate. We worked with 10 mice C3H treated with 0.5 ppm of lead acetate in the drinking water, and 10 mice without lead. of Laboratory determinations: ALA-D (Delta-aminolevulinic acid), Total Cholesterol, HDL Cholesterol, LDL Cholesterol and triglycerides by the Wiener lab method. Statistics: t test and analysis of variance. Results: Value average of the total cholesterol of the exposed group and the control: 1.50 ± 0.20 gr/l versus 1.06± 0.17 gr/l; (p< 0,0001); LDL Cholesterol exposed group and control: 1.07± 0.09 gr/l versus 0.76 ± 0.11 gr/l (p< 0.0001); HDL Cholesterol exposed group and control: 0.32±0.07 gr/l versus 0.54±0.07 gr/l (p< 0.0001). Aterogenic index: CT/C-HDL: 4.6 in exposed and control: 1.96 C-LDL/C-HDL: 3.3 in exposed and control: 1.4. (Value of reference of both indexes < 4.). The aterogenic Index is used as a tool to prevent future cardiovasculars events.

172.

***IN VITRO* CYTOTOXIC PREELIMINAR STUDIES OF AQUEOUS EXTRACTS OF *Achyrocline satureioides* ON VERO CELLS**

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Introduction: The *Herpesviridae* family produces latent infections that could be reactivated after long periods of time. Antiviral agents such as Aciclovir generate resistance in the virus so that the search for new therapeutical alternatives to be used alone or in combination is necessary for the treatment of this pathology. In this way, medicinal plants constitute a promising source of active compunds. Several bioactive properties -antiinflamatory, sedative, hepatoprotective, antioxidant, inmunomodulating, antitumoral and antimicrobial- have been attributed to *A. satureioides*. However, the study of the cytotoxic potential of this plant has not been documented yet. **Objetive**: To evaluate *in vitro* the cytotoxic action on Vero cells of aqueous extracts of *A.satureioides*. **Materials and Methods:** Aqueous extracts were obtained at 4ºC (CAE) and 70ºC (HAE). The MCNC was studied at different concentrations of the extracts and CC_{50} was determined by the Neutral Red uptake assay (NR) and the MTT salt reduction assay. Statistics/linear regression analysis was performed for a determination coeficient >0.90 (*Origin 6.0*). **Results**: The MCNC and CC_{50} by the RN and MTT for CAE were: 480µg/ml, 960µg/ml and >1900µg/ml and for HAE 260 µg/ml, 373µg/ml and 559µg/ml, respectively. **Discussion and conclusions**: The NR and MTT methods were more sensitive than the MCNC one. They showed that both extracts could alter the phagocytary ability of the cell. These results will help to define the selectivity action of the extracts for antimicrobial treatments.

173.

EFFECT OF POSTNATAL STRESS ON SPLEEN AND LYMPHOCYTES T PROLIFERATION IN PRENATAL STRESS RATS

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Stress application during pregnancy produces an alteration in the hypothalamic-pituitary-adrenal (HPA) axis that would induce a long-term alteration of the immune function in the offspring. The objective of this work was to investigate the effect of postnatal stress in adult prenatal stressed rats (PS) on the distribution of lymphocytes and cellular immune activity, correlated with the HPA axis activity. Three-month old males were used, the offspring of immobilized mothers (IMO) stressed (PS) and non stressed (CP) during pregnancy. After blood extraction for basal determinations, the animals in both groups were under acute IMO (20 min). Then, blood was extracted after 20 and 40 min to determine corticosterone (COR) levels in all groups. Spleen size, number of mononuclear organ cells and lymphocytes proliferation stimulated with Con-A were determined. No modifications were observed in spleen weight; however, the number of mononuclear cells increased, and *in vitro* proliferation of T lymphocytes diminished. This last effect was more evident at 20 and 40 min after postnatal acute stress. This effect was negatively correlated with COR levels. In conclusion, prenatal stress produced basal hyperactivity and after postnatal stress a habituation of the HPA axis that affected the functional cell immune response.

174.

VARIABILITY IN THE CONSUMPTION OF COCAINE AMONG SECONDARY AND UNIVERSITY STUDENTS OF TUCUMÁN BETWEEN 2007- 2008

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Objective: to learn about the behaviour of young people of Tucumán as regards the misuse of drugs, particularly of cocaine. **Method:** a qualitative and quantitative evaluation of students between 2007 and 2008 was carried out. The survey included 57 closed questions. The random sample included 4922 secondary and university students. For the analysis of data, a statistic study using the SPSS program (9.0) was employed and results obtained in 2007 and 2008 were compared. **Results:** 96.6% of students in 2007 and 95.4% in 2008 did not use cocaine. There was an increase of 1.2% in drug consumption in 2008. Males and females began using drugs at 16 with friends in meetings, because as they said "I like them" or "for fun". Consumption was higher among students between 16 and 18. Percentages showed an increasing drug availability in the streets (2.8% in 2007 – 21.2% in 2008) and through friends (4.8% in 2007- 70.7% in 2008). Paco is consumed as a new form of cocaine**. Conclusions:** Paco and other forms of cocaine have greater influence on the increase of drug use and on health problems. Current preventive measures are insufficient and inadequate.

175.

TRENDS TOWARDS THE CONSUMPTION OF PACO, DESIGNER DRUGS AND HALLUCINOGENS AMONG SECONDARY AND UNIVERSITY STUDENTS OF TUCUMÁN BETWEEN 2007- 2008

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Objective: to determine variations in the consumption of illegal drugs between 2007 and 2008 to frame preventive policies. **Method:** The survey research included 4922 random students from university run schools, "Bartolome Mitre" and JIM high schools as well as 13 from colleges. They were asked about their sex, age, trigger date, place and motives for the use of illegal drugs. A statistic study using the SPSS program (9.0) was employed. **Results:** Percentages showed an increasing drug consumption: Paco (0.04% in 2007- 0.2% in 2008); hallucinogens (0.3% used LSD in 2007 and 1.2% in 2008), designer drugs (extasis consumption increased from 1.2% in 2007 to 2.2% in 2008; tranquilizers, particularly benzodiazepines such as Rivotril (0.2% in 2007- 0.4% in 2008). **Conclusions:** Current preventive policies for drug dependency are insufficient and inadequate. We disagree with decriminalization of drug trade and possession, because we estimate that the lack of control may result in higher consumption levels and produce harmful effects on young people's health.

176.

REGIONAL ENDEMIC CHRONIC HYDROARSENIC DISEASE IN CHILDREN IN THE EAST OF TUCUMAN

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The aim of this work was to determine the percentage of children with traces and/or dermatologic symptoms of RECHD in the east of Tucumán and to obtain an early diagnosis by measuring arsenic concentration in the groundwater, in urine and/or hair. A descriptive cross-section study with children between 3 and 15 years of age from endemic areas at Los Pereyra and Gobernador Garmendia was carried out. A toxicological analysis of arsenic was carried out in the water and in the children's hair and urine. The records obtained accounted for well depths, children's personal information and dermatological manifestations. **Results**: Nine samples from children from G. Garmendia were analyzed; arsenic concentration varied from 3.90 µg% to 9.6 µg% (reference value: 1.7 to 3.5 µg%). Seven samples of children's hair were analyzed at Los Pereyra: arsenic concentration between 7.3 µg/g and 11.9 µg/g from hair was recorded; two samples were obtained with values within the normal reference range of 2.5 µg/g of hair. Concentrations of up to 324 ppb were found in both places. Hyperhydrosis was observed in all the children. Some of them showed hyperkeratosis and melanodemia. **Conclusion**: The results obtained provided enough evidence to carry out an epidemiological survey over a larger population to prevent RECHD. Inadequate arsenic concentrations in the water should be eliminated or minimized.

177.
SMOKING IN STUDENTS OF TUCUMAN

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Tobacco is addictive, produces tolerance and abstinence syndrome. Since 1940, the smoking habit has been related to respiratory and lung diseases and considered a world health problem. **Objetives:** to determine the percentage of smokers at high school and university according to factors such as schooling, age, reasons for smoking, effects, frequency and family influence between 2007 and 2008. **Materials and Methods**: 4922 anonymous surveys and close questions were carried out. Data analysis was performed through an exploratory descriptive associative study with 15.0 SPSS statistical program. **Results**: No significant difference were observed. There were more non-smokers in 2008: 70% as regards the ones that smoke and gave up in 2007 and 2008; 31% of the smoking ones belong to university. Most smokers started smoking before the age of 15; 65% and 63% in 2007 and 2008, respectively. Reasons: (2007, 2008) 49.7% and 50.8% "because I like it"; 25% and 27% "to relieve stress". Sixty-six % smokes every day without consequences. An increase in the smoking habit in the family was observed from 2007 to 2008 (30.2% to 69.8%) **Conclusions:** a high percentage of students who smoked was found. They were ignorant of the consequences of smoking and of the role of nicotine in tobacco addiction. No significant differences were observed in Tucumán with respect to 2007 in spite of law 7575, which was issued to ban smoking in the province.

178.
PURIFICATION AND PARTIAL CHARACTERIZATION OF AN EXTRACELLULAR LIPASE FROM *Aspergillus niger* MYA 135

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Lipases (triacylglycerol acylhydrolases; EC 3.1.1.3) are enzymes that catalyze a variety of reactions such as hydrolysis, transesterification, and esther synthesis. Owing to their catalytic versatility, lipases have received considerable attention with a view to biotechnological applications in a wide range of processes. In this study, we describe the purification and a partial characterization of an inducible extracellular lipase from *Aspergillus niger* MYA 135. PEG (20000) concentrated supernatant from a saline medium supplemented with 2% olive oil was loaded to a native PAGE. The lipase activity was purified using the electroelution method. An apparent molecular mass of 104.7 KDa and a pH of 5.1 were estimated. Kinetic studies showed km values of 0.13, 4.08, 0.017 and 0.60 for p-nitrophenyl acetate, propionate, palmitate, and estearate, respectively. The lipase activity was stable in the temperature range of 4-55ºC, in the pH range of 2-10 and in the presence of Tween 60, Tween 40 and saponin. Thus, these enzyme properties justify the search for potential industrial applications.

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179.
STUDY OF THE MICROBIOTA IN A *Rana catesbeiana* HATCHERY IN AUTOMN

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R. catesbeiana is the selected species for raniculture and its culture is an intensive process that enhances the risks of epizootics such as the red-leg syndrome (RLS). Nowadays, the probiotic utilization represents an alternative to avoid the use of antibiotics. Thus, the purpose of this work was to evaluate the microbiota in a hatchery in Córdoba, Argentina, to select probiotic strains and RLS-related pathogens. Samples were taken from dorsal and ventral skin, and cloaca of healthy animals in fattening phase of growth, water, and balanced feed. Serial dilutions were plated on selective and differential media. The UFC/mL were determined after incubating at 37°C for 24h in microaerophilia or anaerobiosis. Gram staining and catalase activity allowed classifying the selected colonies. The results show that the microbiota is composed of *Bacillus* spp., *Bifidobacterium* spp., Enterobacteriaceae, and yeasts. *Pseudomonas* spp and *Staphylococcus* spp., RLS-associated pathogens, were also present. This study represents the first approach to the isolation of LAB from cloaca (10^6 UFC/mL) of *R. catesbeiana*, *Bacillus* spp., (10^2-10^6 UFC/mL) and *Bifidobacterium* spp., (10^1-10^3 UFC/mL) from a *R. catesbeiana* hatchery. Evaluation of the beneficial properties of the isolates will be carried out to advance in the design of a probiotic for raniculture.

180.
EFFECT OF ASCORBIC AND FOLIC ACIDS ON NUTRACEUTIC PROPERTIES OF ADZUKI BEAN (*VIGNA ANGULARIS* Wild)

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Seedlings of adzuki bean have nutraceutic properties, mainly attributed to their antioxidant compounds. The aim of this work was to establish the effect of folic and ascorbic acids on the accumulation of antioxidant substances in adzuki beans. Seeds of adzuki bean were immersed in distilled water or solutions of ascorbic or folic acids. Then, the seeds were placed in the dark at 28ºC and 90% relative humidity for 7 days. Proline content and phenolic compounds were measured in cotyledons. Ascorbic acid at 0.1 mM and folic acid at 0.2 mM produced a transient increase in proline and phenolic compounds in the cotyledons, 5 days after sowing. Evolution of the cotyledonar content of ascorbic acid was not significantly different among treatments. Our results suggest that exposure to solutions of ascorbic acid 0.1 mM and folic acid 0.2 mM increase content of antioxidants in seedlings of adzuki bean.

181.

AMYLOLYTIC ENZYMES PRODUCTION WITH A RECOMBINANT PICHIA PASTORIS STRAIN

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Pichia pastoris PGKα-G recombinant strain that produces a fusion protein (α-amylase *Bacillus subtilis* and glucoamylase *Aspergillus awamori*) under *PGK1* promoter gene was used.
The pPIC9+fusion was digested with XhoI NotI enzymes to yield the fusion fragment. The vector pPGKΔ3AMY (constructed by Dr. F. A. G. Torres and A. Arruda) was digested with the same enzymes for directed ligation. The fragments were ligated and transformed into *E. coli* XL10-Gold strain. The recombinant plasmids were analysed by HindII digestion and one clone with the correct profile was used to transform *Pichia pastoris* X33 strain. Influence of the carbon source (glucose, sucrose, lactose, glycerol and starch) on biomass growth was studied. PGKα-G strain produced amylolytic enzymes with all carbon sources tested. Glucoamylase and α-amylase activities were also tested in chemostat with glucose as the sole carbon source. Maximum activity (U/ml) in batch for α-amylase and glucoamylase was 99.00 and 46.43 respectively. In continuous culture at $D=0.08h^{-1}$ and $D=0.25h^{-1}$, volumetric productivity of both enzymes was 0.92 and 2.38 U glucoamylase/ ml.h and 10.4 and 28.7 U α-amylase/ ml.h.

182.

BIOETHANOL PRODUCTION BY YEASTS ISOLATED FROM SUGAR CANE MOLASSES

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Introduction. The use of ethanol as a biofuel offers a wide range of promising alternatives which includes the decrease in negative impact on the environmental and the possibility of safe energy. **Objective.** To isolate highest bioethanol producer yeasts from sugar cane molasses. **Materials and methods.** Yeast strains were isolated from sugar cane molasses samples obtained from differents sugar factories in Tucumán using YPD and YPS solid mediums with antibiotics. Fermentations assays were carried out in glass flasks with 200 mL of YPS medium with 250 g/L of sucrose and were incubated at 30ºC. Residual sugars, biomass and ethanol concentrations were determined. **Results and Discussion.** Three isolated yeasts with a hight fermentative power were evaluated: A2, A10 and A11, which produced 11.74, 14.09 and 13.55% of ethanol respectively. A10 strain was selected for further studies because the highest ethanol concentration as well as specific productivity values were obtained with this strain.
Acknowledgments: CIUNT, ANPCyT, CONICET and Fundación YPF for the financial support.

183.

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

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

184.

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

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Oryzaephylus surinamensis L. (Coleoptera, Cucujidae) is a cosmopolitan pest capable of feeding on a variety of stored grains and dried products. In Tucumán, we find it frequently attacking rice. In order to develop more environmentally safe and easily biodegradable insecticides, we conducted feeding preference bioassays with extracts and volatile constituents of *A. hispidum* DC at 250 ppm. The $CHCl_3$ extract was found to be a neutral substance, with a preference index (PI) of - 0.05, while that the free waxes $CHCl_3$ extract showed repellent effect (PI = -0.14). The hexane extract, rich in little polar substances, proved to be attracting (PI = 0.273). An odorant fraction, obtained by column chromatography with a 15% of AcOEt from a $CHCl_3$ subextract, was shown to be repellent (PI = -0.375). The wax-free extract and the fraction with a pleasant smell will be selected for the development of natural agrochemical formulations for the rational control of insects.

185.

EFFECT OF SALTS AND SACCHAROSE REDUCTION ON THE *IN VITRO* GROWTH OF *Encyclia saltensis* HOENE. *Orquidaceae* FAMILY

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Native of Central America, with rhizome and pseudo-bulbs, flowers with green yellowish sepals. Its ornamental value determines its conservation. The objective of this work was to determine the effect of salts, vitamins and saccharose reduction of Murashige-Skoog (1962) medium on growth. Seeds were disinfected with sodium hypochlorite 5% v/v, incubated at 14 h light, 24±2ºC, 80% humidity. Exp. I: TI: 50% salts, vitamins MS+saccharose 30 g/l+Agar 5g/l, EI_1: 25% salts vitamins MS+saccharose 30 g/l+ Agar 5g/l. EI_2: 50% salts, vitamins MS, without saccharose+Agar 5g/l. pH: 5.2. Protocorms (R_0); plants of 1-2 cm, 1-4 roots (R_2); plants of 2-3 cm, 1-4 roots (R_3) were evaluated at 6 months. Results: a) taller plants in Control. EI_1 and EI_2 without significant differences, b) N° of roots: higher values in EI_2, without significant differences, c) N° of plants: higher value at Control, differences with EI_2 . Exp. II: TII: idem Tl, EII_2: idem EI_2 ; EII_3: idem EI_1 + citric acid 50 mg/l ; EII_4: 50% salts MS + 100% vitamins MS+without saccharose+Agar 5g/l; EII_5: 50% salts and vitamins MS+saccharose 30 g/l + citric acid 50 mg/l+ Agar 5g/l. pH: 5.2. Plants of 1-2 cm, 1-4 roots (R_2); plants of 2-3 cm, 1-4 roots (R_3); plants of 3-4 cm. 4-6 roots (R_4) were evaluated at 6 months. Results: a) taller plants in EII_4 and EII_5; b) N° of roots: there ares no significant differences, c) N° of plants: higher value in EII5, significant differences with EII_2 and EII_4. These are preliminary necessary results for determining a conservation protocol by growth reduction.

186.

INFLUENCE OF THE VARIATION IN INOCULUM DENSITY, TEMPERATURE AND pH ON THE PRODUCTION OF *RHODOTORULA GLUTINIS* AND ANTAGONISTIC ACTIVITY AGAINST PHYTOPATOGENIC FUNGI OF LEMON

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Different microorganisms have been used to control postharvest diseases. We studied the influence of the variation in inoculum, temperature and pH on *R. glutinis* to optimize antagonistic activity on *P. digitatum* and *G. candidum*. *R. glutinis* was produced in SAB, pH were: 4; 4.5 and 5.5 and concentration of cells at DO_{560nm} were 1.35; 0.690; 0.179 and 0.008, at 28; 30 and 35ºC, 200 rpm, 24h. The results were: at pH 4 and 4.5 and temperatures of 28; 30 and 35ºC 100% inhibition was observed in the growth of both phytopathogens; on the other hand at DO_{560nm}: 1.35; pH 5.5 and temperatures of 28; 30 and 35ºC the inhibition halo was 100% for G. *candidum*, while *P. digitatum* was 70-80%. We concluded that the variations in pH, T and concentration of R. *glutinis* had great importance on the antagonistic capacity against these phytopathogens. Once the *in vitro* parameters are optimized, *in vivo* assays will be carried out.

187.

***IN-VIVO* STUDIES OF THE EFFECT OF METABOLITES OF *BACILLUS SP.* & *STREPTOMYCES* ON THE APPARITION OF POSTHARVEST DISEASES IN LEMON DURING THE 2007 & 2008 CROPS**

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We studied the efficiency of *Bacillus sp.* & *Streptomyces* metabolites in biological control of *P. digitatum* and *G. candidum*. Tests were done during 2007 and 2008 crops. We worked with 3 lots of lemons: field lemons (without any treatment), lemons washed with hot water, HCO_3^- (200 ppm) and sprayed with the metabolites, and lemons treated with imazalil (5000ppm). The lots were placed for 3 weeks at 8ºC and 1 week at room temperature. This was repeated during 2007 (June, July, August and September) and 2008 (April, May, June and July). Results were expressed as % of disease. 2007: In June there were no diseased lemons. In July, 67% (field lemons) whereas 8% of lemons (metabolites) were diseased. In August field lemons and lemons with metabolites displayed 58% and 17% of disease respectively. In September the % of diseased lemons treated with metabolites was 8% and 58% of field lemons. In 2008, % of disease in the field lemons were 8.3%, 98%, 25% and 10% in April, May, June and July. The % of disease in lemons treated with metabolites was smaller: 0%, 8.3%, 10% and 20%. In both crops no disease was observed disease in lemons treated with imazalil. *Bacillus sp.* and *Streptomyces* metabolites were effective in the control of the apparition of postharvest diseases.

188.

ANTIMICROBIAL ACTIVITY OF CONCENTRATE SUPERNATANTS OF *Zymomonas mobilis* CULTIVATED IN DIFFERENT MEDIA

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Zymomonas mobilis (*Zm*) produces antimicrobial factors which inhibit phytopathogenic bacteria and fungi in yeast-containing medium (1) cultures, whose concentrate supernatants (Sc) show biological activity. The aim of this work was to determine and compare the activity of Sc obtained with medium (1) and sugarcane juice-containing media (2) and (3) on *E. coli* AB1133 and *Xanthomonas citri* subsp. *citri* (causal agent of citrus canker). In all media initial sugar concentration level was 50 g/l. Once the biomass was isolated, each supernatant was concentrated to a final volume 60-fold lower than the original one. Sc obtained with media (1), (2) and (3) showed a 81, 71 and 71 UA/ml activity, respectively. Minimal Inhibitory Concentration (MIC) values for media (1), (2) and (3) with respect to *E. coli* were 27, 43 and 43 µg/ml respectively, and 13, 16 and 16 µg/ml, as regards the phytopathogenic bacterium. A bactericidal effect on *E. coli* was recorded for medium (1), with values twofold higher than MIC values. Sc obtained from natural juices have no detrimental impact on the environment.

189.

CHARACTERIZATION OF ACYLGLYCERIDES OBTAINED BY ENZYMATIC STERIFICATION OF VEGETAL OILS

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The objective of this work was the characterization of fractions obtained by sterification of glycerol with soybean and olive oils using a commercial lipase (Lipase Type XIII, Sigma) for the purpose of obtaining a greater proportion of monoglycerides (MG) and diglycerides (DG). The sterification was developed in closed glasses in nonsqueous media and incubated in a shaker at 37ºC for $1^1/_2$ hour. Progress was monitored by means of samples analysis at different times: 0, 30 and 90 min. Samples analysis were realised by thin-layer chromatography (TLC) of each fraction and revealed in camera with Iodine. In order to determine the relative concentration of products, a densitometry scan with a Shimadzu CS-9000 densitometer was performed. The initial olive oil presented a triglycerides (TG) concentration of 67%, that corresponds to the 2nd and 3rd samples, as well as free fatty acids (Ags), reaching a 10% global loss; MG and DG contents increased in equal proportion. However, in the case of the soybean oil, the initial content of TG was about 10% and Ags 20%; and MG and DG diminished by 5% at the end of the reaction. The proposed enzymatic method was suitable for olive oil as a substrate, but not for soybean oil.

190.

PREVALENCE OF BACTERIAL PATHOGENS IN COWS FROM DAIRY HERDS IN THE BASIN OF VILLA MARÍA (CÓRDOBA)

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Mastitis is still a major challenge for dairy farmers despite the implementation of control strategies. Few studies about prevalence of pathogens have been carried out since 1980 in large numbers of dairy herds (DH) in the central region of our country. The aim of this study was to determine the prevalence of bacterial pathogens in cows from DH in the basin of Villa María, Córdoba. Composite milk samples were obtained from 2296 cows, selected systematically at random from 51 DH from March to September 2007. Somatic cell count determination (SCC) and bacterial identification were done according to NMC. Bacterial growth was detected in 78.2% of the samples. No growth was found in 15.6% of samples. Among the major pathogens, coagulase positive staphylococci (CPS) was the most commonly isolated bacterial group (19%), followed by streptococci (St) (6.3%). Minor pathogens, represented by coagulase negative staphylococci (CNS), were isolated in 42% of the cows. The prevalence of CPS and St isolated from milk with SCC greater than 750 x 10^3 cells/ml was higher than the prevalence found in milk with SCC values lower than 750 x 10^3 cells/ml. The distribution of CNS did not present a significant trend in relation to the RCS. The results show the importance of CPS and St in the aetiology of mastitis in cows from DH in the basin of Villa María, Córdoba.

191.

GROWTH INHIBITION OF *STAPHYLOCCOCCUS AUREUS* BY OILS FROM *ALOYSIA TRIPHYLLA*

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Introduction: *A.triphylla*, "cedrón", is an aromatic lemon-like herb with great importance in Argentina and on the international market due to the sensory and medicinal properties of its essential oils (EO). These have antimicrobial properties. Aims: To study the growth inhibition of *S.aureus* by EO from A.*triphylla.* Materials and methods: The EO were obtained by hydrodistillation of vegetal from La Paz (Cba), analyzed by gas chromatography and mass spectrometry (GC-MS). The strain used was *S.aureus* ATCC25212. The effect of the inoculumm on the minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC), cell lysis by OD and microbial death as a function of time was analyzed. Results: Limonene (2.9%), neral(20%), geranial(29.2%), espathulenol(8.9%) and caryophyllene oxide(7%) were identified. For initial cell concentration (ICC) of 9.2x 10^6cfu/ml, MIC was 1.84µg/µl and for an ICC of 4.6x 10^4cfu/ml the MIC was 0.23µg/µl. The MBC was 56.25µg/µl. The EO did not produce cell lysis. The time killing effect was at 2 min for twice the MBC (112.5µg/µl), at 4 min for the MBC (56.25µg/µl) and at 15 min for half the MBC (28.125µg/µl). Conclusions: The effect "cide" was reached in short periods of time. This EO could be an effective chemotherapeutic agent against antibiotics multirresistant *S.aureus* responsible for human and animals diseases.

192.

PREDOMINANT BACTERIAL FLORA ISOLATED FROM THE TEAT CANAL OF DAIRY COWS OF THE CENTRAL REGION OF CÓRDOBA

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Bovine mastitis is the most important disease of dairy cattle. The teat canal, with its normal flora, represents the first barrier of defence against microorganisms. The study of this flora is important to determine its role in the animal's susceptibility to mastitis infection. The aim of this study was to investigate the predominant bacterial flora in the teat canal of healthy cows and cows with subclinical mastitis. The animals were sampled by scraping the teat canal with sterile swabs. The samples were plated on blood agar and TSA-Ca and the colonies were counted and identified. Fifty-three samples were obtained from healthy cows and 47 from cows with subclinical mastitis. Over a total of 18,400 colonies, the percentages of isolation in samples from healthy cows were: no enterobacteria 32%, *Enterococcus* 20.7%, coagulase negative *Staphylococcus* 20.5%, enterobacterias 17.7%, Gram (+) bacilli 8.8% and *Pseudomonas* 0.3%. From animals with subclinical mastitis: no enterobacteria 34.9%, enterobacterias 20.1%, coagulase negative *Staphylococcus* 19.5%, *Enterococcus* 18.1%, Gram (+) bacilli 7.3% and *Pseudomonas* 0.1%. Gram (-) bacilli were isolated in at least 3 quarters per cow. We concluded that the dominant flora in the teat canal was Gram (-) bacilli not belonging to the *Enterobactereaceae* family, independently of the health state of the cows.

193.

PRESENCE OF *Penicillium* spp IN RAW MATERIALS AND COMMERCIAL DOG FOODS OF DIFFERENT QUALITIES

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The aims of this work were to isolate the general mycobiota in dog foods and raw materials and to identify potentially toxigenic *Penicillium* species. Samples of raw materials and dog food from a factory located in Córdoba Province, and samples of commercial dog food were collected. Isolation of mycobiota was done by the surface spread method on medium: dichloran rose bengal chloranphenicol agar and dichloran 18% glycerol agar. In all analyzed samples, the fungal total counts ranged from 10^3 to 10^4 CFU/g. Standard puppy food showed highest counts. Several species varieties were identified from wheat pellet samples, *P. chrysogenum* being the most frequent (40%). In standard puppy and adult commercial dog food the highest diversity of *Penicillium* species was identified. *P. griseofulvum* and *P. janthinellum* were the most frequent (12 to 25%) on standard puppy dog food. Moreover, low percentages of other toxigenic species such as *P. roqueforti*, *P. chrysogenum* and *P. citrinum* were isolated. Some species isolated in this work are not only involved in food spoilage but also in the production of various secondary toxic metabolites. However, there is still little information concerning the toxicological effects of *Penicillium* mycotoxins in pets.

194.

INFLUENCE OF THE PELLETING PROCESS ON MYCOBIOTA AND CINTRININ INCIDENCE OF POULTRY FEED

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Citrinin is not carcinogenic; however, it enhances kidney cancer produced by ochratoxin when present in poultry feed. Fifty samples of poultry feed were analyzed. *Penicillium* spp. were identified. *P. citrinum* strains were evaluated for their ability to produce citrinin *in vitro* by HPLC. Incidence of natural citrinin contamination of the samples was detected by TLC. Mean total mold counts on DRBC and DG18 media were around 1 x 10^3 UFC/g. Eight filamentous fungal genera and yeasts were isolated from feed samples. *Aspergillus* spp. and *Eurotium* spp. were isolated from 100% of pelletized feed samples. *Fusarium* spp. was isolated from 100% of not-pelletized feed samples. *Penicillium decumbens* (60%) prevailed in pelletized feed, whereas *P. citrinum* (25%) prevailed in not-pelletized feed. Thirty-three percent of *P. citrinum* isolates produced citrinin *in vitro* with a mean level of 1570 ± 0 ng/g. 57% of pelleted food samples were contaminated with citrinin at levels ranging from 12.5 to 25 ng / g.

195.

ISOLATION AND CHARACTERIZATION OF REGIONAL KERATINOPHILIC FUNGI

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Fungi are the organisms with major keratinolytic activity. Soil constitutes an excellent habitat for many keratinophilic and/or keratinolytic species. They are able to use substances with keratin or keratin degradation products. Many species produce keratinases and keratinolysis and industrial use of their enzymes is well-documented. Keratinases are especially applied at various stages of softening, hair removal and conditioning of skins in the fur industry, hair treatment and restoration in the cosmetic industry and in bioconversion of agroindustrial residues such as feather processing to obtain flour or meal for animal feed. The present study examined the keratinophilic mycobiota in soil from Jujuy and Tucumán provinces (Argentina) in order to isolate and identify regional keratinophilic strains. At a later stage, quantification of their action will be carried out to determine the feasibility of biotechnological application. Eight surface soil samples were processed. Isolation was carried out according to Vanbreuseghem's technique. Strains were obtained after incubation from the support hairs on Sabouraud-agar cultures. Identification was carried out using macro and micro morphological studies and their reproduction mechanisms. The results revealed the presence of *Chrysosporium, Aspergillus, Penicillium* and *Scopulariopsis* genera in Jujuy samples and *Chrysosporium, Penicillium* and *Aspergillus* genera in Tucumán samples. The soil of the region contains a great variety of keratinophilic species that should be further studied in order to determine their possible application to biotechnological processes.

196.

EPIDEMIOLOGY OF INFECTION AS A CONSEQUENCE OF HTLV-1/2 IN A PEDIATRIC POPULATION IN TUCUMÁN

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The HTLV - 1/2 epidemiology is characterized by an ethnical-geographical restriction. The aim of this work was to estimate the presence of HTLV 1/2 in an outpatient pediatric population of the Public Pediatric Hospital - Tucumán- August / December - 2005. 812 blood samples were analized by ELISA (Bioelisa HTLV-I+II (r), Biokit) and by agglutination of AP gelatin particles (Serodia Fujirebio, Japón). The reagent samples were verified by WB (HTLV BLOT 2.4) and in the non-defined cases, we made a nested PCR to detect *tax-pol* genes of both viruses. Out of the 812 samples, 0.7% were reagent by ELISA; 0.1% by ELISA and AP. Out of the 6 reagent samples, 2 were negative and 4 non-determined by WB. The result of these ones was negative by nested PCR. Acording to this data, Tucuman would not be an endemic area for HTLV 1/2. Further studies of this infection would be necessary in other areas to confirm the above data.

197.

STUDY OF THE SENSITIVITY OF FUNGI *IN VITRO* TO ENVIRONMENTAL DISINFECTANTS

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Cleaning and disinfection process of packaging is very important to control environmental pollution and avoid losses caused by diseases of post-harvest. The objective of this work was to study the effect *in vitro* of disinfectants against environmental fungi isolated from a strawberries and blueberries packing in Tucuman. We studied the ability of inhibition, taking into account growth rate, CIM and CFM (fungicide minimum inhibitory concentration, respectively) of three commercial detergents (Topac 56, 32 and 66), chlorine and quaternary ammonium in two strains identified as *Aspergillus spp.* and *Penicillium spp.* All disinfectants tested showed fungicidal ability on both strains to a decimal dilution within fifteen days of trial, except *Aspergillus spp.* which showed levels of CIM and CFM significantly higher for the quaternary ammonium compound until the three days of testing. The data obtained will serve to implement models of primary survival of fungi and select the most suitable for the construction of a dynamic model for predicting risk of environmental contamination.

198.

EVALUATION OF PHOSPHATE SOLUBILIZING BACTERIA AS INOCULANTS IN MAIZE

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Plant-growth promoting rhizobacteria (PGPR) have the ability to solubilize mineral phosphate in soil and to produce phytohormones, antibiotics and siderophores. The application of soil microbes that promote nutrition and development of plants provides new alternatives for increasing the yield of major agricultural crops. Three phosphate solubilizing bacteria were isolated from Puna (NOA) using as selection criteria P-solubilizing activity, growth in phosphorus limited concentration and siderophores production. They were identified as *Serratia marcescens* EV1*, Pseudomonas tolaasii* IEXb and *Pseudomonas sp. SP28* (access number FM202483, FM202487, FM202488 respectively). The growth-promoter effect was determined by inoculating bacteria on maize plants grown under controlled conditions in glasshouses. *Pseudomonas tolaasii* IEXb was the strain with the greatest capability to promote root and shoot development. Results from these experiments suggest that inoculation of PGPR with different beneficial properties such as P-solubilization should be the future trend in bio-fertilizer application for sustainable crop production.

199.

ACTION OF *Xenophyllum Poposum* AT DIFFERENT STAGES OF GROWTH OF *Candida Albicans* ATCC 3153

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Preventive treatment for caries consists in mechanical and chemical methods. The WHO accepts the use of plants for the treatment of diverse affections. The aim of our work was to study the inhibitory effect *in vitro* of *Xenophylum poposum* (Xp) at different growth stages on a reference strain of *Candida albicans* (Ca) (ATCC 3153).The Ca strain was sown in BHI broth. This medium with the inoculum was confronted with the ethanolic extract (EE) of Xp at a concentration of 54.7 mg/ml. The experiment was carried out at 0, 2, 5, 20, 24 and 48 h to determine at which stage of development Ca was sensitive to the EE. Growth control of Ca was also made without the phytotherapeutic product. For colony counts, the inoculum was sown in Saboreaud Glucose Agar and incubated at 37ºC in aerobiosis.
Results: there was no fungicide action on Ca when the EE was added at time 0. 2) the death of Ca occured 2 h after growth. With 54.7 mg/ml of the EE the microorganism is inhibited between 2 and 5 h of growth. That is why Xp could be applied as a colutory for the prevention of dental caries.
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200.

PREVALENT DISEASES OF THE ORAL CAVITY. KNOWLEDGE OF PREVENTIVE MEASURES

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Objective: Exploration of the knowledge of school teachers of EGB 1° and 2° level in relation to the measures to prevent the diseases of the oral cavity. **Material and Method:** The study was carried out in San Miguel of Tucumán in 2008. A questionnaire with 28 items was administered to 26 teachers that belong to state schools of urban and urban-marginal public administration. The questions considered knowledge in relation to the measures to prevent oral cavity diseases. The procedures used were elaboration and calculation of absolute and relative frequencies. **Results:** Almost the entire population considers it necessary to visit the dentist every six months; however, only half of them (58%) have done so during the present year. Fifty-eight % admits not visiting the dentist regularly , 35% of the teachers claimed that brushing could prevent gum bleeding, 54% stated that the first visit to the dentist should be carried out when the first tooth appered. Most of them (73%) were ignorant of the benefits of pit and fissure sealing. As to preventive strategies, the teachers stated that fluorine protects teeth from caries (85%). **Conclusion:** The teachers had notions on certain forms of promoting buccal care. Since teachers spend a great part of the day with students, it would be important to reinforce knowledge of measures to prevent oral cavity disease.

201.
WORK AS A RESEARCH TOOL FOR SIGNIFICANT LEARNING AND EVALUATION OF KNOWLEDGE
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When learning is considered as an active process of constructing knowledge, we can say that education will aim at guiding the construction process of learning. Students attending the course General and Cell Biology at the Faculty of Engineering belong to the 2nd year of the Bachelor of Food Technology and the Agreement with the School of Biochemistry, Chemistry and Pharmacy, National University of Tucumán. The teaching staff of the Department implemented a didactic proposal that developed a number of aspects to be considered in the direction of learning and knowledge building from problematic situations, where students can relate their activities to a scientific paper at the time to address the problems. This proposal highlights: a) The selection among a group of items on the agenda of the subject, b) Production of experiments by students to better understand a phenomenon, c) Design of tools or models, d) Improvement or adaptation of a previously existing design, e) Computational simulation of principles or biological experiments, f) Conducting experiments in real time. The results showed: greater student participation in the development of laboratories and a significant increase in the number of regular students compared to previous school cycles (2004-2005-2006-2007). The students demonstrated responsibility, scientific curiosity, reasoning, critical thinking, while using the mechanisms of scientific endeavor, joining research groups at the University. Research as a learning process is based on exploration and the ability for rational thinking, as well as the fundamental characteristics of scientific endeavor.

202.
BELIEFS AND KNOWLEDGE IN RELATION TO DENTAL CARIES IN A GROUP OF PARENTS OF STUDENTS OF PUBLIC SCHOOLS IN SAN MIGUEL DE TUCUMÁN
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At present, the distribution and severity the caries is strongly associated with sociocultural, economic, environmental and behavioral factors. **Objective:** To identify knowledge and beliefs in relation to the caries in a group of parents of students attending two schools of the city of San Miguel de Tucumán. **Material and methods:** This is a transversal study carried out in 2008 with students' parents. An anonymous survey with 27 questions was used dealing with knowledge and beliefs related to caries. **Results:** Forty-nine parents were were included in the study, out of which 93% considered caries as a disease. For 62% it was contagious. 60% considered caries as related to lack of dental hygiene. 70% of the parents had caries themselves and almost all of them (97%) considered it to be a problem. Mosst of them believed that pregnancy affected dental health and that visits to the dentist and regular brushing were required to prevent caries. **Conclusion:** The profile obtained in this population will be used to design, develop and strengthen preventive action against caries and to promote buccal health.

203.
INSIGHTS FROM STUDENTS OF KINESIOLOGY OF THE ADMISSION COURSE AND OF THEIR FIRST YEAR AT UNIVERSITY
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Introduction: Kinesiology trains professionals within interdisciplinary teams to face health problems affecting motor skills. A compulsory course is required before sitting for an admission exam. **Objective:** to know the students' opinion on the admission course and their career. **Methods and Materials:** A semi-structured survey was carried out among 60% of the students. We considered students' profit; need of remedial teachers, influence of high school training; appraisal of classes and students' previous expectations, in a range from: a lot, some and a little. **Results:** For 72% the course helped students pass the exam and keep up with career requirements; For 26% the course was helpful; 89% did not need remedial teachers; for 78% their high school was not helpful; 67% resorted to tutors because of the PBL method, among other problems; 33% changed their opinion. Some students reinforced their career choice, found their classes helpful; others hesitated over their choice. **Conclusion:** students got academic knowledge; adapted themselves to the new context; valued their classes and information about their career opportunities, interdisciplinary work and academic contents; regretted the lack of organization, distance, academic demands and the complexity of some subjects. The differences between the traditional method and independent learning could be an obstacle for students. For others, the latter is interesting and innovative.

204.
EVALUATION OF A PREVENTIVE PROGRAM IN A SCHOOL OF LOW SOCIOECONOMIC LEVEL
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FOUNT.

The aim of this work was to evaluate a program of integral dental treatment with high resolution and evaluate the nutritional level in children attending the 1º year of the EGB 1. **Material and methods:** Twenty-nine students of both sexes, average age 6 years, from low socioeconomic levels, participated in this program. A clinical exam of 25 students was made: only 21 received dental treatment with high resolution level. The clinical diagnosis was carried out following PAHO/WHO guidelines by educational investigators of FOUNT previously gauged. It was registered CPOD/CPOS- ceod/ceos, O´Leary Plaque Index, brushing frequency and attendance to the dentist. The data were kept in clinical records for later statistical analysis. **Results:** the sampling included 21 students. The average of teeth and surfaces raised was 21.8 and 109 respectively. The dental state: D+d=141; S+s= 328. The mode in the brushing frequency was of 2. Only 3 children (14.28%) did not have caries; 3 visited the dentist a few times and 12 had a toothbrush. When applying the preventive program 21 high basics were obtained, with a strong decrease in C component and plaque index, and an increase in brushing frequency. **Conclusion:** although the group of students evidenced caries levels higher that those aimed at by the WHO, the implementation of programs at school level showed that they improve oral health through prevention, facilitating access to dental treatment and informing about dental needs.

205.

EDUCATIVE EVOLUTION ANALYSIS BY MEANS OF THE APPLICATION OF A NEW WORK SYSTEM TO OPTIMIZE THE LEARNING-TEACHING PROCESS

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The Chair of the Course Garantia de Calidad de Drogas y Medicamentos of the Pharmacy Career has implemented different changes to improve student- teacher relationship and the education-learning quality.
In this work modifications were assessed, verifying the information acquired by the students about professional practice and comparing teacher performance in different periods. Anonymous questions to be answered by the students of 6 th of Pharmacy Currents were set out. Concepts, procedure, attitudes, and aptitudes in problematic cases were evaluated.
In the 1st period, the teaching of only one theoretical class was assessed in which all the theoretical terms to be developed during the course were considered.
In the 2nd and 3rd period, the theoretical class was divided into 4 sections. In 2008 weekly and obligatory theoretical classes were designed.
The changes implemented improved the actualization of the teaching-learning process.
The student-education relatioship as well as the educational quality must be subjected to continuous modifications to reach the desired improvements and obtain excellent professionals.

206.

IMPLEMENTATION OF A SCHOOL-STRATEGY LEARNING (BASED ON TEACHING SKILLS-EBC) IN THE PRACTICE OF THE PROFESSIONAL CAREER OF PHARMACY. PART ONE

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In 2007 a school strategy learning practice was implemented in the course of the Career Practicanato Professional Pharmacy in UNLaR, as part of the practical training of future pharmacy professionals trained to respond to the demands of society. The course was compulsory for students who had finished the career. Objective: To initiate the student of the Career of Pharmacy in the professional practice developed in Official Pharmacy (OF). Methodology: students are assigned to OFs under the guidance of a Tutor Pharmacist (TP). The nine capacities to assess both the initial and final stage were considered as a combination of skills, abilities, skills and cognitive processes which describe the level or degree of preparation, sufficiency and responsibility with which the student is able to perform his/her duties. The profile of skills at the beginning and end of the supervised practice were analyzed based on indicators of achievement and turns on a scale of standard practices (ENP) and an evolution plot. The results allowed the TP to determine their skills as well as the training needs. Results: Taking into account the guiding principles of this assessment, 90% of our students proved to be more competent in matters relating to the role of the pharmacist as a health professional.

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207.

LYSOZYME ACTIVITY IN TURTLE SERUM

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Lysozyme, a bacteriolytic enzyme that breaks Gram (+) bacteria cell walls, is found in the secretion of several animals. In present work we show results concerning the activity of this enzyme in the blood serum of the turtle *Testudo chilensis*, a subject on which there is no information. Lysis activity was carried out on *M. lysodeikticus* using mammalian lysozyme as a reference. Controls for inhibition of the Complement system were included with addition of Ca/Mg chelating agents. Trails were also carried out with the inclusion of chitin, a lysozyme inhibitor. Results evidenced the presence of bacteriolytic activity that was altered by chitin; otherwise turtle lysozyme remained active in the absence of Ca/Mg. The kinetics of turtle lysozyme was different from the bacteriolytic activity present in the human milk. In the latter, lysis activity is rapid and pronounced during the first few minutes, reaching a plateau in less than fifteen minutes, whereas turtle bacteriolytic effects were slower and long-lasting. In conditions of similar initial rate, activity curves were slightly different. A consequence of these and other differences is the fact that activity in turtle serum showed a greater bacteriolytic effect compared with that from human milk, including measured samples with similar initial activity. Some of the activity differences are based on the general intrinsic properties of this enzyme, which are described in other works of this volume, while others corresponds to species variation.

208.

CHARACTERIZATION OF PROBIOTIC FERMENTED GOAT MILK. NUTRITIONAL QUALITY

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We studied the physical, chemical and microbiological features of a probiotic goat milk fermented (GMF) with *Lactobacillus casei* CRL1505, in order to evaluate its nutritional input and the Recommended Daily Dose (RDD) for 1- to 8-year-old children. Goat milk was pasteurized and fermented with *Streptococcus thermophilus* CRL806, CRL728 and *L.casei* CRL1505 (4h-42°C). During storage (15d-4°C) the total and differential count of lactic acid bacteria (LAB), diacetyl+acetoine production, syneresis, chemical analysis and % of RDD were determined. GMF presented 9.83±0.07 logUFC/ml of LAB and 6.21±0.01 logUFC/ml of *L.casei* CRL1505. The product had good flavor, lack of syneresis, and appropriate consistency and texture. The pH and acidity (significance level of 5%), viability of *L.casei* CRL1505 and the rheological characteristics of the product were constant during storage. Its chemical composition was: 3.89 g% protein, 4.15 g% fat, 79.93 g% humidity and 0.91 g% ashes. Micronutrient content was: 147.05 mg% Ca, 45.89 mg% Na and 146.03 mg% P. Two-hundred ml of GMF cover the energy, protein, Ca and P DDR of 1- to 8-year-old children, with appropriate ratio Ca:P (1:0,7). GMF with *L.casei* CRL 1505 is a dairy product with a high nutritional quality, especially for young children.