

**TUCUMAN BIOLOGY SOCIETY**  
**(Asociación de Biología de Tucumán)**

**Abstracts from de**  
**XXII Annual Scientific Meeting**

**October, 27-29, 2005**  
**Tafí del Valle, Tucumán**  
**ARGENTINA**



## Miguel Lillo Lecture

### L. 1.

#### ROLE OF NEUROTRANSMITTERS IN THE CONTROL OF TESTICULAR FUNCTION.

*Ricardo S. Calandra*

Male infertility has been attributed to alterations in the hypothalamus-hypophyseal-gonadal axis (H-H-G) in a reduced number of cases (Bartlett *et al.*, *Int.J.Androl.*, 1989). Furthermore, physiological intratesticular or potential factors are involved in the regulation of the testicular function at paracrine level.

GABA is a powerful neurotransmitter (N-T) of the Central Nervous System that takes part in neuron proliferation and in the modulation of neurosteroids production. GABA has been identified in rat testis (Ritta *et al.*, *Adv.Biochem.Psychopharm.*, 1986); Rs-GABA in rat Leydig cells (Ritta *et al.*, *J.Neurochem.*, 1991), Rs-GABA-A/B in testis Leydig cells from different species, including humans (Geigerseder *et al.*, *Neuroendo-crinology* 2003), GABA-glutamate-decarboxylase enzyme (GAD65 and/or 67) and the expression of the vesicular inhibitory aminoacid transporter (VIAAT / VGAT). The presence of Rs-GABA-A-  $\alpha$ 1 subunit in rat Leydig cells has been confirmed by laser microdissection and RT-PCR. Our studies and other research groups have reported that human testis mastocytes are localized in the interstitial compartment and in the seminiferous tubules walls. Thus, testicular biopsies and immunohistochemical techniques revealed a significant increase of mastocyte population in samples from patients with Sertoli Cell and Germinal Arrest Syndrome (Meineke *et al.*, *Fert.Steril.*, 2000). Testicular mastocytes were also found to contain serine triptase protease (Frungieri *et al.*, *PNAS USA*, 2002). On the other hand, triptase exerts a fiber-proliferative action involving the receptor activation by proteases 2 (PAR2), an increase in the expression of cyclooxygenase 2 (COX2, essential for prostaglandins -PGs- biosynthesis) enzyme, and the binding of 15-deoxy- $\Delta$ 12,14-PGJ2 (15d-PGJ2) to its nuclear receptors PPAR $\gamma$ . Since PAR2-COX2-15d-PGJ2- PPAR $\gamma$  triptase system components are present in the human testis, an increase in mastocyte population could be involved in the peritubular fibrosis of pathologies described.

Other authors (Izzo *et al.*, *J.Exp.Biol.*, 2004) suggest that Melatonin (Mel) regulates the number of testicular mastocytes. Our studies in hamsters revealed an increase in the number of testicular mastocytes and Mel levels when animals were exposed to short photoperiods (8h light/day) (Frungieri *et al.*, *Neuroendocrinology*, 2002). Mel effect on the H-H axis of photosensitive species is already well-known. We have previously mentioned the interaction of the serotonergic, catecholaminergic and CRF systems in hamster Leydig cells (Frungieri *et al.*, *Neuroendocrinology*, 2002). Serotonin N-acetyltransferase expression, essential for Mel synthesis, has been recently described for these cells. We have recently described Rs-Mel<sub>1a</sub>, inhibition of AMP<sub>c</sub> / androgen production post-hCG and also the StAR expression and related enzymes (Frungieri *et al.*, *Endocrinology*, 2005). Briefly, the new findings on the testicular regulation of steroidogenesis suggest the importance of a "fine tuning" of local components which could be significant for the understanding of Idiopathic Syndromes at cell level.

## Opening Lecture

### L. 2.

#### GEOLOGICAL TIME AND PALEONTOLOGY

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Geological time is measured in millions of years and has been represented by means of tables in successive approximations, that have allowed the age of the planet and the beginning and later development of life in the world to be established. At first, the different degrees of evolution of the organic beings preserved on the terrestrial surface, which were called fossils, were used to segment the time represented by the enormous deposits of sedimentary rocks. That is how innumerable fossil remains were found among the strata, which were classified according to their morphological characteristics, recognizing in them most of the fila living at present, and their ancestors. This allowed for a frame of the evolution to be conformed, which served as a basis for the first tables in which geological time was divided.

More recently the methodology of the absolute ages was developed, also measured in millions of years but on the basis of the radiation of certain elements present in the sedimentites or in the magmatic rocks, which transform into isotopes of the same element or into others. These measurements are based on the period of time that certain elements take to transform into others. A modern discipline based on research about magnetic paleopoles, and their displacement in the course of time, has also contributed to the knowledge of ages. This has allowed the position of poles in certain periods of time to be known, and, as a consequence, the paleolatitudes that the continents have had throughout time.

That is how the paleogeographical reconstructions of the different continents began to be established, especially Eurasia and Gondwana, which confirmed that during the Carboniferous, Eurasia was very close to the Equator, while Gondwana remained close to the Southern Pole.

The radiometric research practiced on rocks devoid of fossils allowed an age of 4600 MA for the planet, and 3200 MA for the first indication of life, occurred on the African continent, to be established: the discovery of a procariot fossil bacterium. However, the Phanerozoic Era in which the appearance of the major part of the living fila occurred, is placed in 550 MA in the Cambrian Period. Several important processes take place quickly during evolution: the passage to eucariotes, the conquest of the earth by vegetable plants, the apparition of multi-cellular organisms with the cellular specialization in the reproductive function and the later apparition of organs and tissues. An arguable datum was the concept of fossil, which is not given by its age, in other words a figure of thousands or millions of years since its demise, but by the time when it shows evidence of having been subjected to the processes of diagenesis suffered by the rock or stratum in which it is contained; that is to say since the recent sediment transforms into hard rock, or sedimentite. A first division of fossil organisms found on the terrestrial surface allows for the following disciplines or specializations to be recognized: Paleoinvertebrate, Paleovertebrate and Paleobotany. With the advent of the microscope another specialization began to be developed, micropaleontology, which included both vegetal and animal organisms and those of dubious system positioning.

In the Paleozoic Era sexual reproduction and a varied number of paleoinvertebrate appear, such as the brachiopods; among the paleovertebrate the armoured fish appear, as well as the eucariot plants like algae and primitive vascular plants and ferns, and towards the end of the era, the first gymnosperms. During the Mesozoic plants were dominated by gymnosperms and ferns and only towards the end of the era angiosperms make their explosive apparition. Among the paleovertebrate dinosaurs prevailed, and halfway through this era birds appeared. The Cenozoic had as a characteristic the dominance of plants with flowers and among the paleovertebrate, mammals were dominant.

**1. UTILIZATION OF INOCULANT IN CITRIC PLANT SEEDS: I- EFFECT OVER THE RADICLES OF GERMINATING SEEDS**

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The inoculation of seeds is a technique which gives important results on the yields of crops. It plays an important roll during the establishment of the plantules in the functioning of the cellular membranes of the radicles and in their capacity of importing reserve substances from specialized tissues of the seed. The objective of the present work was to determine the rhizogenic effect of the biologic-ecological inoculant applied on seeds of citric rootstock *Citrumelo Swingle*. Material came from La Quebrada Nursery. Before sowing, a lot of seeds on trays were inoculated, in camera with controlled temperature, humidity and continuous illumination. At fourteen days samples were taken. Once radicles were separated it was determined the conductivity of the cellular efflux and subsequently the dry weight. It was worked with three replications and ANOVA and Test of Tukey were applied. The radicles with the inoculant showed a 44% more of dry weight than the control ones. The results point out that the application of inoculant favors the stability of the cellular membranes of the radicles because of the electrolyte loss decreases and the migration of reserve substances towards them increases, benefiting the establishment of the plantules.

**2. GOATS' MILK LYSOZYME LEVELS OF A SEMI-INTENSIVE PRODUCTION SYSTEM**

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The lactoperoxidase (LPO), and lysozyme (LZ) systems are innate defense mechanisms of milk most studied in artiodactyls. In goats, LZ system has a low enzymatic activity. The aim of this work was to determinate its activity in a semi-intensive production system. It was carried out by the bacterial lytic method. Goats belong to Creole, Nubian races, and its cross-breeding. Results showed that obtained levels, which are very low, were neither influenced by the racial structure nor the seasons the samples were taken. There was not correlation between LZ levels and values of mayor compounds of milk. It was found that from the first month the values decreased until the fourth, increased a little at fifth and then decreased again until the seventh. Curve obtained from scattered points showed association between LZ and lactation months. Correlation has a  $r^2=0,235$ , with a  $p<0,01$ . This first month mayor levels behavior and sequence until the seventh month are similar to LPO activity. In fact these variables behaviors are accord to the role of innate defense systems against bacterial pathogens. The conclusions are: a) The LZ goats' milk levels of activity have independence respect to the racial conformation, the principal milk compounds, and the seasons of the year, b) LZ levels coincide through lactation with the LPO system, this similarity may be due to an adaptation to calf needs in its first period of life.

**3. GAMMA-GLUTAMYLTRANSPEPTIDASE ACTIVITY IN GUANACO (*Lama guanicoe*) MILK**

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Gamma-glutamyl-transpeptidase (GGT) is found as cell membrane-bound, and in plasma soluble forms. It is also found in milk, where we had observed its association with fat globule membrane in several domestic and wild species, including llama, vicugna and alpaca. The aim of present work was to determine, a) the activity of this enzyme in milk, caseins (Cn), fat globules (FG) and lactoserum (LS) of guanaco, and b) the Km of the membrane bound and the soluble form of GGT. Samples were obtained from Reserve C. Pellegrini and INTA-Bariloche. Results showed that enzymes' Km (40  $\mu$ M), from FG and LS origin were almost identical. Otherwise presence of triton X-100 does not affect GGT activity. It is worthy to mention that obtained Km was similar to those previously obtained from vicugna LS. Enzyme activity in guanaco LS was  $790 \pm 82$  U/L, and total milk one reached  $1880 \pm 195$  U/L. As was establish for other species, most part of activity is associated with Cn and FG. Comparatively, total milk GGT activity observed in guanaco milk is higher than corresponding to others South American camelids. It is interesting to point out that in vicugna and guanaco milk, the two wild species, GGT activity is greater than those found in llama and alpaca.

**4. USE OF INTRODUCTORY INTERDISCIPLINARY THEMES IN SPECIALTY SUBJECTS**

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The Career of Biological Sciences has five electives specialty subjects at the end of study courses. Its instrumentation may be strongly depending of the contents of the subjects and personal student's interest. Previously we had observed that a preceding statement about related another disciplines had attracted notoriously the student's attention. The aim of present work was to value results of formal implementation of this methodology where each theme contained an interdisciplinary introduction. The elected subject was Comparative Immunology, which had 80 hs classes, and promotional approval. Evaluation was carried out through a double qualification system: first corresponding to each class, and second to partial, integrative examination. Interdisciplinary introduction themes were: a) historic antecedents, b) biological evolution, c) physic anthropology, d) epidemic-epizootic events, e) migrations, f) molecular genetics, g) embryology and development, and h) globalization. All them were strongly bound to central theme of corresponding class. Results from employing this methodology were clearly seen through the student's answers. Comparison of two evaluation probes showed a significant correlation ( $p<0,01$ ). Mean general qualification of students was  $8,53 \pm 1,04$  (0 - 10 scale), and seminars were qualified as Good (25%) and Very Good (75%). All obtained data show a high makes use of transmitted knowledge, and understanding of biological process.

### 5. ISOTHERMAL MICROCALORIMETRY. A TOOL TO MONITORE SOIL QUALITY

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Due to the intensive cultivation nowadays it is of great importance to handle easy, fast and precise monitoring tools to evaluate soil quality. In this sense, isothermal calorimetry is used in our laboratory. In this work we present results obtained from a recently dismounted sandy loam soil planted with lemon trees in Tucumán, Argentina. Our aim is to monitor soil evolution due to frequent applications of 2,4-D herbicide. Samples were collected in June 2004 from 20 randomly chosen points down to 10 cm depth. After sieving (2 x 2 mm), water content (WC = 5.6%), field capacity humidity (FCH = 35.7%), pH=6.45 (soil-water, 1:1) and soil organic matter (MO = 5.5%) were determined. For calorimetric experiments 1g of soil at FCH amended with glucose or glucose - (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> mixtures were used to find the best working conditions to monitor soil quality. Results indicate that the higher microbial activity was achieved with a 2.5 : 2.5 mg glucose - (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> mixture with a glucose degradation of 52% in 15 h. When soil was amended with 5 or 10 mg of glucose, only 25% was degraded in 35h.

### 6. POSSIBLE ROLE OR THE ARACHIDONIC ACID CASCADE IN THE PROGESTERONE ACTION MECHANISM

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There is little information concerning the participation of the arachidonic acid (AA) cascade and the role of prostaglandins (PGs) in the oocyte maturation process. That is why the aim of this work is to analyze the role of cyclooxygenase (COX) through the use of its inhibitors, the non-steroidal anti-inflammatory (NSAI) drugs, in the mechanism through which progesterone induces germinal vesicle breakdown (GVBD) in *Bufo arenarum* oocytes.

Two types of NSAI drugs, indomethacin and rofecoxib, which are cyclooxygenase inhibitors, were used in denuded *Bufo arenarum* oocytes (competent and incompetent to undergo spontaneous maturation) and in follicles. Maturation was induced by progesterone or defolliculation.

The preliminary results obtained indicate that both NSAI drugs used inhibited GVBD in the progesterone treated oocytes and follicles and in competent oocytes. A 100 µM dose of indomethacin was required to inhibit GVBD while in the case of treatment with rofecoxib a 400 µM dose was necessary.

These results suggest that the AA metabolites resulting from the action of COX would be involved in the mechanism through which progesterone induces maturation in *Bufo arenarum* oocytes.

### 7. PARTICIPATION OF G<sub>i/o</sub> PROTEIN IN THE PROGESTERONE ACTION MECHANISM

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In previous works we demonstrated that in *Bufo arenarum* oocytes progesterone induces germinal vesicle breakdown (GVBD) through the activation of a cascade of second messengers. This work studies in greater depth the progesterone action mechanism in the oocytes of this species, analyzing: 1- The participation of G<sub>i/o</sub> proteins. 2- The effect of the activation of adenylyl cyclase (AC).

Denuded oocytes, both competent and incompetent to undergo spontaneous maturation, were used in this study. The participation of G-proteins was analyzed using Mas-7, an activator of G<sub>i</sub>-proteins. To determine the effect of G<sub>i/o</sub> activation on AC, oocytes were treated with db-cAMP. The role of AC was studied by incubating the oocytes with different doses of forskolin, an AC activator.

The results indicate that Mas-7 induces GVBD in a dose-dependent manner. A short exposure of the oocytes to Mas-7 was sufficient to cause GVBD after 6 h, in a similar way to progesterone. The activation of AC with forskolin inhibits GVBD in a dose-dependent manner when maturation is induced with progesterone or Mas-7. In the same way, co-incubation of the oocytes with db-cAMP and both types of activators inhibits meiosis resumption. These results allow us to suggest that in *Bufo arenarum* oocytes progesterone exerts a biological effect on meiosis resumption through a rapid non-genomic action mechanism requiring the activation of a G<sub>i/o</sub> protein that participates in the inhibition of adenylyl cyclase.

### 8. ANNUAL CYCLE OF GLYCOCONJUGATES IN THE INTESTINAL TRACT OF ATHERINE IN CAMOATI LACUNA

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The atherine is disseminated in lacunas and reservoir and actually its considered an autochthonic specie. The objective of this work it's to demonstrate the presence of glycoconjugates in the intestinal tract in an annual cycle. It taked samples of the intestinal tract of specimens in Camoati lacuna and fixed in buffered formaldehyde and embedded in paraffin, then were subjected to the lectin histochemistry techniques to determinate mannose/glucose; N-acetylgalactosamine/D-galactose. The analisis of fact showed the next results: presence of mannose/glucose in brush border and enterocytes during spring-summer; in autumn was negative while in winter just only there was a brush border reaction. In reference to N-acetyl galactosamine was positive in brush border, enterocytes and goblet cells along the annual cycle with differents degree of reactivity. Respect to D-galactose/N-acetylgalactosamine there was more predominance in brush border and goblet cells in the same period. It is concluded that the glycoconjugates analized manifested with a great incidence during spring/summer season. The middle region of intestinal tract was evident the greatest presence of mannose/glucose and N-acetyl galactosamine while in the anterior region showed predominance of D-galactose/N acetyl galactosamine.

**9. N-ACETYL GALACTOSAMINE/D-GALACTOSE IDENTIFICATION IN THE INTESTINAL TRACT OF HORSE FOETUS IN DIFFERENT AGES**

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Like a productive unity the horse have a great income-producing impact. One of the aspects is the digestive system, therefore the gastrointestinal hormones and the glycoconjugates involved in the alimentary process. The objective was to identify N-acetyl galactosamine/D-galactose in the intestinal tract of horse foetus during different development stages. Taked out samples from intestinal tract and fixed in formaldehyde buffered and embedded in paraffin. PNA, DBA and PNA lectins were used. The results showed in foetus of 210 gestation days the presence of N-acetyl galactosamine in brush border of intestinal tract and goblet cells of duodenum and caecum. D-galactose in brush border of whole intestinal tract and goblet cells of caecum. In foetus of 120 gestation days identified N-acetyl galactosamine/D-galactose in brush border of intestinal tract and goblet cells of yeyunum and caecum. In foetus of 90 gestation days it detected N-acetyl galactosamine in brush border of duodenum and goblet cells of duodenum and yeyunum-ileum. D-galactose expressed in brush border of duodenum and goblet cells of yeyunum. It conclude that in horse foetus of different stages of gestation detected the presence of N-acetyl galactosamine/D-galactose with a pattern of distribution that vary along the intestinal tract.

**10. VIP (VASOACTIVE INTESTINAL PEPTIDE) DETERMINATION IN DIFFERENTS TISSUES AND STRUCTURES OF THE SNAIL *Helix aspersa M.***

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VIP is a peptide with 28 amino acid pertaining to the secretin family jointly with gastric inhibitor peptide (GIP) and glucagon. Its characteristics is vasodilating property and the activity over the peripheric nervous system. *Helix aspersa* known like "garden snail" is an edible specie with great possibilities of exportation principally to Europe. Heliciculture it's in complete expansion in our country, been a fertile place for the investigation. The objective of this work its to demonstrate the VIP in differents tissues and structures of the snail. It obtained adults samples from breeding place of Río Cuarto and the region, fixed in formaldehyde 10% and embedded in paraffin, cut around 3 micras and subdue immunohistochemistry techniques. Primary antibody against the VIP were used and revealed subsequently employing the universal complex avidin/biotin peroxidase (ABC) and peroxidase diaminobenzidine (DAB) respectively. In the histologics sections were observed VIP positive cells in the connective tissue of foot and intestine; in the nervous plexus of salivary glands; in the smooth muscle tissue and in the adventitia of blood vessels. It conclude that in differents tissues and structures it detect the presence of VIP in the snail.

**11. A RAPID AND NONDESTRUCTIVE METHOD FOR ESTIMATING LEAF AREA OF *Gossypium hirsutum* CULTIVAR GUAZUNCHO II INTA**

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The development of mathematical models from linear leaf measurements for predicting total leaf area has been shown to be a useful tool in studying plant growth and development. The objective of this study was to develop and evaluate linear regression models that would accurately predict *Gossypium hirsutum* (cotton) cultivar Guazuncho II INTA leaf area, using nondestructive and simple linear leaf measurements. One hundred leaves were chosen at random from plants growing in solution culture under greenhouse condition. The methods of linear measurement used were: length of the central main vein (L), squared length of the central main vein (L<sup>2</sup>), width of the tips of the two main veins (W), squared width (W<sup>2</sup>) and (L . W). L and W were measured with a millimetrical ruler and leaf area was measured in an area meter. Relationships were analyzed through regressions. Evaluation of the coefficient of determination (R<sup>2</sup>), the F ratio and the error mean square for each calculated regression indicated that the best regression equation to predict cotton leaf area was:  $y = 0,7261 (L.W)$ . These results demonstrate that cotton leaf area can be predicted using simple linear linear measurements.

**12. PREVALENCIA OF DISEASES APÍCOLAS IN TUCUMÁN'S PROVINCE: VARROA, NOSEMOSIS, AND LOQUE AMERICANA**

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The province of Tucumán displays particular characteristics being important a receiving one of beehives at certain time of the year for the early multiplication of alive material. This from the point of view epidemiologist constitutes an infection risk that requires of information updated for the implementation of an apicultural sanitary plan.

The evaluated apicultural diseases were: varroasis, nosemosis, Foulbrood, and the exotic diseases *Tropilaelaps* sp. and *Aethina tumida*. The objective was to evaluate the prevalence of this diseases in our country and to develop an apicultural sanitary map of de province. The work was divided in two phases: Phase of Field and Phase of Laboratory. In the samplings to field, five different zones were considered, sampling 3.2% of the existing bee-hive in each one. Phase of Laboratory: for varroasis the modified David de Jong method was used. For American Loque the test of hanging drop. For Nosemosis count in camera of Newbauer according to the method of Cantwell was used.

In consequence: Varroasis is an endemic disease for the Province of Tucumán. The presence of Nosemosis could affect the infestación levels in the next productive cycle. It is free of Foulbrood, of *Tropilaelaps* sp. and *Aethina tumida*.

**13. THE ARTICULATION BETWEEN THE HIGH SCHOOL AND THE UNIVERSITY. A LOOK FROM BIOLOGICAL AREAS AT THE NORTHWEST UNIVERSITIES (ARGENTINA)**

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The aim of this paper is to inquire some strategies to articulate University with high school from the University Biological area point of view. This paper is part of a bigger project of CIUNT RE 301. The data were analyzed with a descriptive exploratory access (Sampieri, 1998), from the observation and the comparative constant method, and quantitative logical methodology (Glasser, 1967; Sirvent, 1999). Semi-structured interview were made to General Botany, Agricultural Botany and Vascular Plant Morphology's teachers from six Colleges at the northwest of Argentina (UNJu; UNSa; UNT; UNCa y UNSE). Some of the recurrent were: curricular contents, matter planned, objectives, teaching methods, bibliography and the evaluation process. The main difficulties on all of the NW Universities were related with the Laboratories equipment and library, and the student's desertion (40% to 55%). This is due to a scarcity vocational process previous and in the other hand due to the deficiency in text comprehension and self production (40% to 70%). It is very urgent to use education innovate strategies in order to help new ways to learn, practice the reasoning and the knowledge integration.

**14. PRODUCTION OF FRUCTOOLIGOSACCHARIDES BY *Aureobasidium sp.* ATCC 20524 IN STIRRED TANK REACTOR**

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**Introduction.** Fructooligosaccharides (FOS) are considered both alimentary additives and nutraceuticals. Several studies have demonstrated that prebiotic properties of these sugars favor the normal functioning of the digestive system.

**Objective.** The objective of this work was to produce FOS by *Aureobasidium sp.* ATCC 20524 in submerged culture on bioreactor using saccharose as carbon source. Kinetics parameters of growth, fructosyltransferasa enzymatic activity, and synthesis of FOS were studied.

**Materials and Methods.** The bioproduction was carried out in a stirred tank reactor, on a volume of 1 liter. The sugars were determined by HPLC and the enzymatic activity was carried out by the method of Glucose-oxidase.

**Results and Conclusions.** Maximum values of enzymatic activity (202.27 U/mL) and specific enzymatic activity (1.88 U/mL) were obtained on the fifth day. Maximum values of produced FOS were: 51.8 g/L for 1-kestose and 74.6 g/L for nystose. The values of enzymatic activity were higher than the ones found in the bibliography.

**15. ANALYSES OF SCIENCE TEXTS READING COMPREHENSION TEACHING STRATEGIES IN THE PLURALMODAL CLASS ROOM**

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Students finishing the pluralmodal level should be able to read complex texts with autonomy and critical judgment. Comprehensible reading is a practice demanding peculiar teaching and learning strategies.

The objective is to analyze the teaching strategies for comprehensible reading of science texts in pluralmodal level and to implement actions in order to train teachers.

A poll was applied to Biology teachers to analyze the teaching strategies used in comprehensible reading. Ciapuscio and Kuguel's tipology was used in workshops including biology and Spanish teachers.

The most widely used strategies were: guidance to students, hierarchizing ideas, glossaries including technical vocabulary and determination of thematic progression.

The training actions developed emphasized a consensus in order to favor the comprehensible reading of texts transmitting disciplinary knowledge.

Because of the important fact that language is transversal in the learning process, comprehensible reading should be understood as a daily practice in every educational level.

**16. CURRICULAR SENSE AND MEANING OF AGRO-TECHNICAL EDUCATION IN THE ARTICULATION OF SECONDARY SCHOOL WITH UNIVERSITY**

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The *objective* is to inquire about the curricular sense and meaning of agrotechnical education in the articulation secondary school – university, from the student's perspective.

A poll was applied to 70 students coursing the first year of Agronomic and Zootechnics Engineering (UNT) coming from private and public agrotechnical schools. 75% of students considered that new courses should not be incorporated and that it is essential to deepen contents, to include reading comprehension (9%) and study methodology (7%). 9% was of that opinion that the number of courses is sufficient, the most useful ones being: Mathematics, Chemistry and Biology. The least useful were Humanities and Social Sciences, because they did not have any relation with the career chosen. Students considered that contents are complex in relation to those ones in the secondary school.

A break exists in the functional interdependence between the contents learnt in the secondary school and those ones demanded by the university because of the independent growth of each educational level.

Students in the first year of studies are the casualties of this situation.

**17. CASEIN MICELLES ASSOCIATED PROTEINS: COMPARATIVES ASPECTS**

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The casein micelles structure is highly determined by the need of maintain itself in suspension.  $\beta$ -Cn and both  $\alpha$ -Cns types are hydrophobic enough to precipitate when associated hydrophilic molecules are absent. Among these,  $\kappa$ -Cn is recognized for this function. The aim of present work was assess the presence of non-caseinic proteins among the micelles components in six mammalian species milk: tapir, armadillo, llama, alpaca, and "cai" monkey. For doing that, different condition PAGE electrophoresis was carried out on exhaustively washed casein samples. Gels bands were scanned, digitalized, and its protein content calculated. Results showed that all studied species have additional proteins others that Cn. Those proteins, a) are different in distinct species, b) their MW were found between 20 and 120 kDa, c) are in different concentration, and not proportional to Cn, in distinct species, d) have some hydrophobicity, e) are distinct from caseins polymers, f) related species showed similar pattern. It is compatible with a structural model in which these proteins would play an additional role in maintaining micelles solubility. Extant models accept that hydrophobic micelle sites are accessible to water, in consequence to soluble proteins like observed. Such characteristic would constitutes a trait with a favorable selection pressure.

**18. THE PLANTS OF THE GOSPELS**

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The objective of this work is to investigate in versicles of Gospels, about the plants that are mentioned, to locate them taxonomically and to discover the reasons for which they are included in sacred texts. A search was carried out through the 89 chapters of Gospels. 87 mentions of plants were detected, of which 68 belongs to 23 species, are located in 16 botanical families. Some plants are named in several versicles. They appear like this: Moráceas: higuera *Ficus carica* L. (8 m.); sicómoro *Ficus sycomorus* (1); morera *Morus nigra* L. (1); Menispermáceas: zarza *Cissampelos pareira* L. (2); Brassicáceas: mostaza *Brassica nigra* L. (5); Lináceas: lino *Linum usitatissimum* L. (1); Rutáceas: ruda *Ruta chalepensis* L. (1); Burseráceas: mirra *Commiphora myrrha* (1); inciense *Boswellia* sp (1); Vitáceas: vid *Vitis vinifera* L. (12); Apiáceas: hinojo *Foeniculum vulgare* Mill. (1); comino *Cuminum cyminum* L. (1); Oleáceas: olivo *Olea europea* L.(8); Lamiáceas: menta *Mentha longifolia* L. (2); Cucurbitáceas: esponja *Luffa cylindrica* (L.) Roem. (2); Asteráceas: cardo *Cynara cardunculus* L. (1); Poáceas: trigo *Triticum aestivum* L. (9); cebada *Hordeum vulgare* L. (2); cizaña *Lolium temulentum* L. (1); caña tacuara *Arundo donax* L. (3); Palmáceas: palmera *Phoenix dactylifera* L. (1); Liliáceas: lirio *Lilium candidum* L. (2); aloe *Aloevulgaris* Lam. (1); Amarilidáceas: nardo *Polianthes tuberosa* L. (1). This contribution for botanical studies, has been obtained through the testimony of the stories of four Gospels.

**19. HISTOMORPHOLOGY AND HISTOCHEMISTRY OF THE SALIVARY GLANDS IN THE APPLE SNAIL *Pomacea canaliculata***

Catalán M, Cruz ME, Bertrand L, Canelada C, Avila A.

*P.canaliculata* is an amphibious gastropod mainly phytophagous used in aquatic weed control. This work analyzes the histological and histochemical characteristics of the salivary glands in relation to their function. Samples were processed following the routine technique for light microscopy and stained with histochemical stains for carbohydrates. The salivary glands drain through ducts into the mouth cavity. The secretory cells of the acinus have a basal nucleus and a basophilic foamy cytoplasm. These cells are mostly alcianophilic pH 2.5, ortochromatic and, to a lesser degree, PAS-Schiff reactive. There are two secretory cell varieties: light cells with large vacuoles and basal nuclei, and dark cells with smaller vacuoles and mid-basal nuclei. There are also a few acidophilic cells. The stroma consists of a thin capsule of dense connective tissue and strands of loose vascular connective tissue. The tributary ducts have a single epithelium with acidophilic ciliated cylindrical cells and metachromatic goblet secretory cells. The larger ducts also present a muscle-connective layer. The salivary gland secretions, formed mainly by acidic glycoconjugates, would favor food swallowing and transit. The basophilic secretory cell varieties would correspond to different functional states of the same cell type. The ductal secretory cells would provide sulphated mucines to the primary saliva. The cilia and muscle fibers would favor the movilization of the secretions toward the mouth cavity.

**20. REFERENCE VALUES OF SERUM SIALIC ACID (SA) DETERMINED BY COLORIMETRIC METHOD OF MODIFIED WARREN**

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The SA could contribute in the diagnosis and follow-up of the patients with cancer. The aim of this work was to determine the reference values (RV) of serum SA in healthy people employing the colorimetric method of modified Warren. There were 53 donors, 24 women and 29 men studied who did not consume alcohol, whitout cardiac, pulmonary, hepatic diseases, of from genito-urinary tract, nor diabetes, nor took medicines at least a month before the study. The average age of the women was of  $40,85 \pm 14,54$  and for the men was  $54,17 \pm 11,22$  years. The serum SA was measured with a slightly modified Warren method. The average concentration  $\pm$  standard deviation (SD) was of  $658,5 \pm 133,7$  mg/L for women and  $655,2 \pm 141,9$  mg/L for men. The normal maximum value calculated with the percentile 95% was of 899,2 mg/L for women and 910,6 mg/L for men. If we took the complete group average  $\pm$  SD was  $656,5 \pm 137,2$  mg/L with a normal maximum value of 903,5 mg/L. The donors were divided in three groups according to the age, minors of 40, 41-50 and greater of 50 years and the average values  $\pm$  SD found were  $675,55 \pm 117,9$  mg/L;  $616,25 \pm 119,4$  mg/L and  $653,2 \pm 148,8$  mg/L respectively. The obtained results would demonstrate that the RV of SA calculated from healthy population would be not modified by sex or age.

**21. ACTIVITY OF SERUM LYSOSOMAL ENZYMES (LE) IN PATIENTS WITH PROSTATIC PATHOLOGIES**

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The aim of this work was to determine the activity of LE B-galactosidasa (B-Gal) and Hexosaminidasa (Hex) together to Prostatic Specific Antigen (PSA) to evaluate the diagnosis of the prostate cancer (PC). There were studied 156 men to those whom determined the PSA and the activity of LE. Group A n= 123, Group B n=18 and Group C n=15 patients with PSA levels <4,0 ng/ml, between 4,1 and 10 ng/ml and >10 ng/ml respectively. The 91% of patients of the group A did not present prostatic pathologies. The pathological values of B-Gal and Hex were in 11,6% and 0% respectively. The 9% of patients of this group were diagnosis with prostatitis being that 27,3% and 9,1% presented pathological values of the B-Gal and Hex. When there was evaluated the clinical state of the patients of group B, 61% were diagnosing with benign prostatic hiperplasia (BPH) and 39% with PC in early stages. In the patients with BHP were found pathological levels of B-GAL and Hex in 82% and 54% and in the patients with PC in 71% and 0% respectively. The patients of group C were diagnosed with PC in advanced stages and determined pathological levels in 53% and 20% for B-Gal and Hex. These results suggest that the activity of LE overlap in patients with benign pathologies and PC indicating that it does not recommended as complementary tool for the PC's diagnosis.

**22. METALOPROTEINASAS'S DETERMINATION FOR ZIMOGRAPHIC ANALYSIS**

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Metalloproteinases (MMPs) participates with other proteolytic enzymes in the invasion processes and metastasis in patients with cancer. The aim of this work was to standardize the conditions of preparation of samples and analyze zimograms in healthy givers. We studied 19 samples of healthy givers. The euglobinas were prepared in fresh and analyzed by electroforesis in gel of poliacrilamida-SDS to 9% in absence of reducing agents that contains 0.2% of gelatin. Zimograms was made with the Mini-Protean III system (Bio-Rad Laboratories, CA) to 100 volts. When it corresponds the gelatinolitics bands were analyzed in the presence of EDTA or PMSF (Phenylmethanesulfonyl Fluoride). Zimograms were marked with Coomassie Brilliant Blue R-250. The location and expression of the proteolytic activity were determined evaluating the bands nonmarked. The M.W. was determined using a M.W. marker (Prestained SDS-PAGE Standards, Broad Range). The analysis of zimograms revealed the presence of two main bands of gelatinolitic activity that migrate approximately to 70 KDa and 90 KDa. In the presence of EDTA, a selective inhibitor of MMP, both bands disappear; when PMSF (inhibite of serin proteases) is added the gelatinolitic activity is not modified. These data suggest that the bands detected by zimografic analysis of the preparation of euglobinas of serum as of plasm of healthy givers correspond to MMP-2 (72 KDa) and MMP-9 (92 KDa).

**23. SULFUR FERTILIZATION EFFECTS ON PROTEIN AND DRY MATTER CONTENTS IN SOYBEAN GRAIN (*Glycine max* (L) Merr)**

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The actual economy tendency requires higher costs efficiency in order to be competent for international markets. The objective of this work was to determine if minimum dosis of sulfur fertilizers would increase the protein and dry matter contents in soybean grain. The study was carried out in Garmendia, Tucuman (R.A.), and it was used one treatment in a dosis of 12 kg of Sulfur pellets 98% /ha, with five repetitions in an experimental design totally randomized. The results revealed significant differences for the protein contents and no significant differences for dry matter.

We can conclude that the sulfure fertilization in a 12 kg of sulfur / ha dosis produces a significative increase for the protein contents in soybean grain.

**24. NATURAL MOLLUSCICIDES: AN ALTERNATIVE IN THE CONTROL OF SCHISTOSOMIASIS**

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Schistosomiasis, commonly known as bilharzia, is endemic to about 75 countries throughout South America, Africa and the Far East. About 250 million people are annually infected. It is caused by parasitic flatworms of the genus *Schistosoma* and some snails, particularly of the genus *Biomphalaria*, are directly implicated in the transmission of the disease. Incidence of schistosomiasis is increasing as a result of the construction of dams and irrigating schemes, which inadvertently provided ideal breeding sites for the snail vectors. Chemotherapy is one way of controlling this disease, though a disadvantage of the method is the high cost of the drugs and the possibility of re-infection. The intermediate host, the mollusc, constitutes the weakest link in the cycle of transmission and thus is the logical point of attack to control the disease with molluscicidal agents interrupting the parasite's life cycle and preventing infection of human in contact with water in high-risk areas. The World Health Organization has given plant molluscicides a high priority as tools for the integrated control of schistosomiasis because their low cost and rapid biodegradability. In previous investigations, we identified groups of germacranolides that displayed molluscicidal effects in preliminary bioassays. We carried out the isolation of the bioactive sesquiterpenoids from native plants. Our results indicated that some structure-activity relationships can be derived. Active compounds are shown below.

**25. BIOCHEMICAL CHARACTERIZATION OF A RECOMBINANT  $\alpha$ -GALACTOSIDASE FROM *Lactobacillus fermentum* CRL 722**

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

The goal of this study was to characterize the  $\alpha$ -Gal of *Lb. fermentum* CRL722 produced by *E. coli*.

The  $\alpha$ -Gal gene was amplified using degenerate primers, sequenced and cloned into *E. coli*. The recombinant enzyme was purified and compared to the  $\alpha$ -Gal from the original strain (CRL722), both being active in a wide range of pH and temperatures and in the presence of various ions.

The complete gene will now be amplified and inserted in probiotic microorganisms which would then be able to degrade  $\alpha$ -GOS *in situ* in the gastrointestinal tract or use to produce novel fermented foods.

**26. INFLUENCE OF YOGURT CONSUMPTION ON IMMUNE RESPONSE TO *Streptococcus pneumoniae* INFECTION**

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*Streptococcus pneumoniae* (*Sp*) may result in asymptomatic carriage, mucosal or invasive disease. Recent studies have given support that yogurt consumption may indeed be beneficial to health and it has been suggested that it may increase pathogen clearance and reduce lung injury. The aim of this work was to examine the influence of yogurt consumption on local immune response of mice infected with *Sp*. Conventional balance diet of swiss-albino adult mice was supplemented for 5 consecutive days with yogurt (5dy). The local immune response was evaluated before and after challenged with *Sp* ( $10^6$  CFU ml<sup>-1</sup> mouse<sup>-1</sup>) during 15 days postinfection (dpi): Total and differential blood (B) and broncho alveolar (BAL) leukocyte counts; Mieloperoxidase (MPO) activity in B and lung homogenate (LH); % of Nitro blue tetrazolium (NBT)+ phagocytic cells from BAL and IgA+ producing cells in BALT (bronchus associate lymphoid tissue) by IF. The 5dy group showed increase of the number of BAL leukocytes at 1dpi. ( $p < 0.05$ ). A significant increase of MPO activity in B and LH, and NBT+cells % in early time postinfection was observed in this group ( $p < 0.05$ ). Moreover, there was a significant increase of IgA+ cells in BALT on 10 and 15 dpi in mice treated ( $p < 0.05$ ). Yogurt consumption showed an important influence on the local immune response to *S. pneumoniae* infection, which would be related with a higher clearance of pathogen and reduced lung injury observed in a previous work.

**27. *Lactobacillus casei* ADDITION TO A REPLETION DIET INDUCE MODIFICATIONS ON SPLEEN AND BONE MARROW CELL POPULATIONS**

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The addition of *Lactobacillus casei* (Lc) to a repletion diet, induce proliferation and differentiation of bone marrow (BM) myeloid and lymphoid series, in malnourished mice (UM). Lc administration accelerates the clearance of pneumococci during a respiratory infection in UM. **Aim:** To study comparatively cell populations of spleen and BM, during the repletion with or without Lc; and to analyze cellular mobilization in order to explain the possible mechanisms involved in the pathogen clearance. UM were fed 7, 14 or 21 days with: balanced diet (BD) or BD with supplemental Lc on the last 2 days of each repletion period (BD+Lc). After treatments, we determined: body weight (bw) increase, spleen and thymus weight, hemograma, % of reticulocytes, % of peroxidase positive cells (P+) in peripheral blood (PB) and BM, CD4+, CD8+ and CD19+ cells in spleen and BM. **Results:** All diet increased the bw, spleen and thymus weight in UM. Leukocyte counts were normalized with 21d of both diets. Malnutrition induced an important decrease in the % of reticulocytes in PB. At 7d, both diets increase this parameter which was higher with BD+Lc. The % CD19+ cells in spleen and BM were normalized with 7d BD+Lc and 14d BD. CD8+ cells in spleen and BM reached the normal values with 14d BD and 14d BD+Lc. BM CD4+ cells were normalized at 7d with both diets, but in spleen the normalization happened at 7d just with BD+Lc, while with BD was normalized at 14d. **Conclusion:** The addition of *L. casei* to the repletion diet, accelerates the normalization of cellular populations in the spleen and BM. The increase of peroxidase activity and the number of lymphoid cells in the spleen, would explain the more efficient cellular mobilization in the presence of the infection.

**28. INFLAMMATORY RESPONSE MODULATION BY *Lactobacillus casei* IN AN EXPERIMENTAL MODEL OF PNEUMONIA**

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We studied the effect of *Lactobacillus casei* (Lc) on the inflammatory process induced by *Streptococcus pneumoniae* (*Sp*) respiratory infection, in a malnutrition model. Swiss-albino mice were malnourished (M) with protein free diet. Animals were re-nourished for 7d with balanced conventional diet, with (B+Lc) or without (B) Lc supplementation ( $10^9$  UFC/day). Replete groups, M controls and well-nourished mice (W) were infected intranasally with the pathogen ( $10^3$  UFC/mouse) in order to obtain an inflammatory state. During 10d post-infection (dpi) we performed: **a)** Albumin (Ab) concentration and lactate dehydrogenase activity (LDH) in bronchoalveolar lavages (BAL) **b)** lungs histological examination **c)** TNF $\alpha$ , IL1 $\beta$  and IL10 concentrations in BAL **d)** Fibrinogen (fg) and **e)** Fibrinogen deposition in lungs by immunohistochemistry. Lung injury was significantly higher in M than W, as seen by Ab, LDH and histological examination. M had lower levels of cytokines and fg, and higher fg deposition in lungs than W. B+Lc group showed reduced lung injuries and normal cytokine levels. Parameters studied were higher in B compared with M, but did not reach levels of W. This data suggests that Lc modulates beneficially the inflammatory response against pneumococci in malnourished mice by inducing different cytokine profiles.

**29. PREVENTIVE ADMINISTRATION OF LACTIC ACID BACTERIA IN *Streptococcus pneumoniae* INFECTION MODEL. POTENTIAL USE AS VACCINE VECTORS**

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We studied the adjuvant effect of *Lactococcus lactis* NZ9000 (Ll) and *Lactobacillus plantarum* 37A (Lp), orally administered, in a *Streptococcus pneumoniae* (Sp) respiratory infection. Swiss-albino adult mice were treated with Ll or Lp ( $10^7$ ,  $10^8$  or  $10^9$  UFC/day) for 2, 5 and 7 days (d). At the end of each treatment mice were infected intranasally with Sp ( $10^6$  UFC per mouse) and during 15 d post-infection we performed: **A)** Bacterial cells counts in lung and blood samples, **B)** Hematocrit and haemoglobin, **C)** Total and differential leucocytes counts in blood and bronco-alveolar lavages (BAL). **Results:** Only Ll administered for 5d in a dose of  $10^8$  (Ll5d8) was able to reduce significantly the pathogen counts in lung and blood samples. The number of leucocytes and neutrophils in blood and BAL increased significantly in all groups after the challenge, but mice treated with Ll5d8 showed higher levels than the controls. Lp failed to improve resistance against Sp. **Conclusion:** The oral administration of Ll in the appropriate dose, improves the resistance against Sp, by inducing a stronger recruitment of inflammatory cells. This immunoadjuvant effect and their ability to be easily transformed made Ll a good candidate as delivery system for mucosal vaccination.

**30. EFFECT OF LACTOBACILLUS CASEI ADMINISTRATION ON D-GALACTOSAMINE HEPATOTOXICITY: ROLE OF KÜPFER CELLS**

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We have demonstrated that *Lactobacillus casei* (Lc) administration prevents the bacterial translocation (BT) from the gut in acute liver injury induced by D-Galactosamine (D-Gal) in BALB-c mice. The Küpffer cells (KC) are hepatic macrophages and their increase would be an important event in the D-Gal hepatotoxicity. Because the bacterial endotoxin activates KC, we want to study its participation in D-Gal hepatotoxicity and to determine the effect of Lc administration on KC. Adults BALB-c mice were injected with D-Gal (DG) another group were orally fed with Lc during 2 days previous to D-Gal injection (Lc+DG). Control mice with and without Lc, (Lc) and (NC) respectively, were inoculated with saline solution. Every group was injected with china ink and afterward liver was taken for biopsy to count the KC. Liver injury was tested by serum GPT and tissue damage. The hepatic architecture was normal in every group. However, the GPT and CK were increased in DG and Lc+DG groups respect to the NC and Lc groups ( $p < 0,05$ ). Conclusion: the Lc administration doesn't avoid the increase of KC and GPT; probably would be necessary to try other Lc dose.

**31. ANTIBACTERIAL PROPERTIES OF WINE PHENOLIC COMPOUNDS AGAINST PATHOGENIC BACTERIA**

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The antimicrobial properties of pure phenolic compounds, non-flavonoids gallic, protocatechuic, vanillic and caffeic acids; flavonoids, rutin, quercetin and catechin and total polyphenols of different argentinean wines, Cabernet Sauvignon, Malbec and Merlot against *Escherichia coli* ATCC 35218 and 25922, *Staphylococcus aureus* ATCC 25923 and 29213 and *Pseudomonas aeruginosa* ATCC 27853 were investigated. The *Staph. aureus* 25923 strain was resistant to all pure non-flavonoid compounds and *E. coli* ATCC 35218 and 25922 strains were inhibited by all of them. Caffeic acid was the most effective nonflavonoid compound.

*Ps. aeruginosa* ATCC 27853 was the most sensitive to flavonoid compounds and *E. coli* ATCC 25922 was the most resistant. Quercetin was the only flavonoid which exhibited antibacterial effect against all bacteria assayed.

All wine samples showed antimicrobial properties and the inhibition increased when the polyphenols concentration increased. The lowest antimicrobial activity observed with Cabernet Sauvignon wine could be related with its lower phenolic concentration. Clarified wines were inactive against all bacteria, indicating that polyphenolic compounds present in red wines, are responsible for the antimicrobial effects observed.

**32. QAC ACTION AGAINST GRAM (-) BACTERIA**

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Surface disinfection can control the dissemination of pathogens in the food industry. Quaternary ammonium compounds (QAC) are widely used as chemical disinfectant. The objective of this work is to study the effect of different concentrations of commercial QAC in the development of *Escherichia coli* and *Pseudomonas aeruginosa*. The assayed QAC concentrations in Luria culture media pH 4.9 and 7.0 were in v/v: 1/10000; 1/2000; 1/1000 and 1/500. Cell growth was determined spectrophotometrically at 560nm and quantitatively by cfu/ml determination. The lowest concentration that inhibits both bacterial growths (MIC) was 1/2000 at pH 4.9. At pH 7.0, the MIC is 1/10000 for *E. coli* and 1/2000 for *P. aeruginosa*. When plated out, after the disinfection test, there are three possible microbial states: **active cells**, developed colonies at the same time than the control media (AC); **inactivated cells**, colonies are not observed (IC) and **cells with a reversible injury**, colonies were formed after prolonged storage (RI). The MIC of QAC at both pH values after 48 h incubation produces RI state in both microorganisms. The IC state was achieved with the maximal QAC concentration. *P. aeruginosa* was more resistant than *E. coli*. It's important to consider the presence of RI cells after the disinfection practices in order to avoid false negative results in the food industry.

**33. CLINICAL ALTERNATIVE TO REESTABLISH BIOLOGICAL SPACE. PRELIMINARY CLINICAL STUDY**

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Biological conditions represent the key factor for the clinical treatments of periodontitis. Several authors reported non-surgical and surgical treatments. **Objectives:** preliminary information about a non-invasive procedure, preserving a normal area which allows the reinsertion of collagen and the adhesion of the epithelium union, thus re-establishing the biological space in a new position. **Materials and Methods:** seven single permanent roots were selected, in which forceps were used for their luxation and supragingival removal; then they were splinted in a semi-rigid way. Clinical records were taken in relation to the gingival margins of neighbour teeth. The radiographic measures registered the distance between alveolar bone crest and the enamel-cement limit in mesial and distal relation to the neighbour teeth. **Results:** with Friedman test ( $p > 0.05$ ) no significant changes were seen. Radiographic analysis (two-way ANOVA), didn't show changes between groups neither ( $p > 0.05$ ). The mobility variable doesn't show any change after 60 days. **Conclusions:** this technique preserves aesthetics, biology, and can be performed by the general dentist.

Subsidized by C.I.U.N.T. (Investigation Center of the National University of Tucumán).

**34. REPRODUCTION IN MARSUPIAL FROG *Gastrotheca christiani* (Amphibia, Anura)**

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*Gastrotheca christiani* has a particular reproductive mode, his eggs are carried in a female dorsal incubatory pouch, form by a skin fold. This paper is the histomorphological and histochemical study of the ovary, oviducts, and the embryo development in the pouch; in order compared with other species of the *Gastrotheca*. The ovary, oviducts and embryos are fixed in Stieve and were colored with H-E, TB pH5,6; AB pH 2,5 and 0,5 combined with PA-Schiff. In the ovary are oocytes in different states. The stroma is abundant with dense connective tissues, collagen fibers and follicles in different stages of vitelogenic development; vascular-nervous packages and theca. Between the oocytes are MEC of proteins with some lipidic vacuoles and oocytes in degeneration. Beside that we can find proteins liquidated component. It was observed only one atresic follicle and a luteum corpora. Folds with metacromatic-globed cells form the oviducts with sulphated groups. Under the epithelium we can find a dense and highly vascularized connective tissue with a few mucosae glands. The incubatory pouch is vascularized thin skin fold with a stratified epithelium and mucosae glands. The embryos are in different development stages. It was observed; notochord, cartilage, muscles and some organs of the digestive. Also we can observe great quantity of yolk in order to achieve the embryos development to a mature stage; because this specie has a direct development they will born as juvenile individuals. **Conclusions:** There are a few oocytes in the pouch. Ovaries and oviducts are different to species with other ovipositions modes.

**35. INHIBITION OF PATHOGENS ASSOCIATED WITH RED-LEG SYNDROME BY *Enterococcus faecium* STRAINS**

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The commercial trade of *Rana catesbeiana* could be influenced with epizootic such as red-leg syndrome (RLS) which causes mortality in hatcheries. The utilization of probiotics represents an alternative to the use of antibiotics and vaccines. In previous works we studied the beneficial properties of *Lactobacillus* isolated from different areas of a hatchery. The aim of this work was to study the inhibitory properties of *Enterococcus faecium* strains against pathogens related with RLS: *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Citrobacter freundii*, *Listeria monocytogenes*, and *Salmonella enteritidis* were included as meat spoilage. Inhibitory properties were performed by the well diffusion method by using supernatants of overnight *Enterococcus* cultures at 37°C. *E. faecium* MCH 18a and MCH 22c isolated in september from healthy animals inhibited all pathogens associated with RLS and *L. monocytogenes* while one strain isolated from non-healthy animals inhibited *Ps. aeruginosa*, pattern observed also in a strain from freshwater samples. From 27 strains isolated in december, only *E. faecium* GST 38 (isolated from balanced feed) inhibited RLS-related pathogens and *L. monocytogenes*. The lost of inhibition observed after neutralization of the supernatants as well as the low pH values indicated that the inhibition was produced by acidity. However, *L. monocytogenes* was also inhibited by hydrogen peroxide. In these work we select a group of *E. faecium* strains to study other beneficial properties in order to design a probiotic for aquaculture.

**36. NEUTROPHILS WITH TOXIC GRANULATIONS IN NORMAL PREGNANT WOMAN**

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The toxic or coarser granulation (TG) is the word that describe the increase of density and possibly in the number of primary granulations of neutrophils, that becomes a great staining with the Giemsa reactive. They can appear in infections, inflammation or intoxication. Aim: to study the presence of TG in normal pregnant woman in different periods of gestation. We realized micro-hematocrit determination, the total and differential count of leukocytes (40x) and the search of TG by optic microscope (100x), in 50 pregnant patients. Three groups of 10 patients were chosen in aleatory way, corresponding to 1°, 2° y 3° trimester of pregnancy, with an average of age from 20 to 42 years old. **Results:** Hto (%): T1°=39,8±3,9; 2°=37,6±3,8; 3°=39,1±4,4. **Leukocytes (10<sup>9</sup>/l):** T1°=7,68±1,1; 2°=9,35±2,07 y 3°=10,42±2,26.

**Neutrophil(%):** T1°=68±4; 2°=68%±9; 3°=69±9. **TG:** 4/10, 6/10 y 7/10 pregnant woman of 1°, 2° and 3° trimester respectively, presented TG. It could see an important association ( $p < 0,05$ ) between TG and the trimester of pregnancy. No association was found among age, leukocytes, neutrophils and TG. **Conclusions:** The find of TG, related with the trimester of pregnancy, in normal pregnant woman need to be investigated in order to know the real import, of their finding in different pathologies of obstetric origin.

37.

**RELATION OF PLASMA D-DIMER (Di-D) WITH METALOPROTEINASE-9 (MMP-9), AND CA 15-3 IN PATIENTS WITH BREAST CANCER**

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The aim of this work was to analyze the relationship between seric levels of the MMP-9, Di-D and the circulating levels of score board tumour CA 15-3 in patients with breast cancer (BC) with or without response to the treatment. There were studied 32 patients and separated in two groups: A) 21 patients with BC in stage I or II that were put under surgical therapy and response favorably to the treatment and B) 11 patients with primary BC without treatment or with progressive disease after the therapy. The MMP-9 was determined using a technique of ELISA. The levels of Di-D were determined using a technique with microparticles of latex. The seric determination of CA 15-3 took place using the autoanalyzer. The values of reference for MMP-9, Di-D, CA 15-3 were: 705 ng/ml, 0,4 mg/ml, 22 U/ml respectively. The averages values of the group A were of 328 (DS=123,3) ng/ml, 0,9 (DS=0,52) mg/ml, 13,3 (DS=9,53) U/ml and of group B were of 929,1 (DS= 103,9) ng/ml, 1,08 (DS=0,30) mg/ml, 28,0 (DS=20,7) U/ml for MMP-9, Di-D, CA 15-3 respectively. The results suggest an association between MMP-9 and CA 15-3 and clinical state of the patients with BC by what they can be used as score board of progression. Nevertheless, Di-D although is high in this patients would not be related with other score board tumour.

38.

**DETERMINATION OF THE BACTERIOLITIC EFFECTS OF ACANTHOSPERMAL B BY ELECTRON MICROSCOPY**

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Our recent investigations indicated that many sesquiterpene lactones present in several Argentine native plants exhibited selective antibacterial activity against pathogenic strains but resulted inactive on beneficial species of Lactobacilli. Particularly, Acanthospermal B (AB) isolated as the major sesquiterpene lactone from our collection of the indigenous herb *Acanthospermum hispidum* D.C., displayed moderate antibacterial action against *Staphylococcus aureus* F 7 (methicilin resistant strain).

In order to establish the antibacterial mode of action of AB, a suspension of *S. aureus*, in Müller Hinton (MH) liquid media, was exposed to AB during 45 min, 75 min, 2h and 4h. The concentration of the mentioned LS, in the liquid media was 1.25 mg/mL. A MH suspension of the microorganism was taken as control. After the cited periods of exposition, aliquots of treatment and control were separated from the media and processed for transmission electron microscopy. Comparison of the ultrastructural morphology between control and treated bacteria showed that AB is adsorbed on the cell wall after 45 min of treatment, beginning a lytic process on the cell wall after 75 min that finished after 2 h with total fragmentation of the cells. After 4 h no full cells or cell rests were observed. Therefore our results suggest that Acanthospermal B is a bacteriolitic agent.

39.

**INTAKE OF MACRONUTRIENTS, GROWTH AND CHEMICAL INDICATORS IN SCHOOLCHILDREN FROM SAN MIGUEL DE TUCUMAN**

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**Objectives:** to study in schoolchildren the effect of contents of macronutrients in the diet during the growth and to detect nutritional hazards by biochemical indicators. **Materials and methods:** 38 boys in two groups, G1: n=15, from low economical background (7,3±0,6 years old); G2: n=23, from middle class (7,5±0,6 years old). Weight (W) and height (H) was recorded. An eating habit survey was carried out in 5 days. Biochemical check up in urine samples (2<sup>nd</sup> in the morning in fast) to determine the relationship Calcium/ Creatinine (Ca/Crea) and Nitrogen Ureic/Creatinine (NU/Crea). **Results:** G1 showed shorter H than G2 (p<0.002), 53% of boys with low H/age; W/H was normal. G2 recorded H/age between 50 and 75 percentils, with cases of overweight. **Calcium intake (ICa):** G1: 240±119 mg/d; G2: 578±183 mg/d (p<0,0001). **Energetic intake: Kcal/d:** G1: 1430±251; G2: 1727±372 (p<0,05); **Kcal/K/d:** G1: 63±9; G2: 62±14 (ns). **Protein intake:** was smaller in G1 (p<0,05) with the predominance of vegetal protein, and animal protein in G2. **% lipid calories:** G1: 18,0±4,1; G2: 26,6±3,2 (p<0,0001). **Ca/Crea:** G1: 0,08±0,05; G2: 0,13±0,09 (p<0,05). **NU/Crea:** in nomogram of reference G1 did not cover the protein needs, but G2 did. **Conclusion:** the nutritional failures in G1 affected their H. The low values of Ca/Crea urinary in G1 and its correlation with ICa confirm the usefulness in the index of study to detect low ICa and implement correction.

40.

**INNOVATIONS IN THE TEACHING OF "CELL BIOLOGY AND EMBRYOLOGY" IN THE FIRST YEAR COURSE OF VETERINARY MEDICINE**

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"Cell Biology and General Embryology" is a subjects offered to around 600 first year students of Veterinary Medicine in the National University of Río Cuarto. The objectives of the pedagogical innovations effected during 2004 were: 1. To promote interactions between students, professors and subject contents of the classes, and 2. To motivate intrinsically the students interest in the subject. In place of magistral lectures, workshop type classes were carried out, and autonomous study method, oriented by twelve written guides, was proposed. In each guide, texts on topics of veterinary interest related to the subject contents, were incorporated. To evaluate the results of these innovations, students to tool the subject for the first time (FS, n=140) and repeating students (RS, n=76) were given a questionnaire. 66% of FS and 89% of RS recognized that workshops contributed to the understanding and learning of the subject topic. More than 74% of FS and more than 80% of RS related to have interacted with their classmates, with their professors and with the study materials of the workshops, and 80% of FS and 85% of RS expressed that the texts increased their interest to learn the subject. These results reveal that the innovations are positively valued by the students, and on this ground its implementation with be advanced in the 2005 cohort.

**41. INCREASE OF ANTIOXIDANT ENZYMES IN THE PLACENTA OF STRESSED RATS**

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The placenta is a fundamental organ to maintain the homeostasis of the maternal-fetal phase, and it is able to reflect any anomaly in the maternal environment, for example, an increment in the stress. The maternal stress is translated in an alteration in the profile oxidative placentary. Reactivate oxygen species (ROS), (hydrogen peroxide, superoxide anions and hydroxyl radicals) are oxidants of molecules that integrate the cells, damaging them. Superoxide Dismutase (SOD), eliminates the superoxide anions and Catalase (CAT) decompose the hydrogen peroxide. Our objective was to evaluate the impact of the maternal stress on the activity of SOD and CAT under controlled conditions of laboratory in placentas of controls (C) and stressed chronically (S) Wistar rats of 12, 17 and 21 days of pregnancy. The chronic stress was achieved by immobilization during 45 min. /3 times per week. The enzymatic activities of SOD (Yamanaka's technique) and of CAT (Kankofer's technique) were determined in placentary homogenates. Our results show that SOD and CAT were increased in 17 and 21 days of pregnancy in S rats with statistical significant differences ( $p < 0.05$  and  $p < 0.01$  respectively). We conclude that the high levels of ROS induce a compensatory increment in the activity of these enzymes. The absence of impact oxidative by the middle of the pregnancy is probably due to the proliferation of the placentary labyrinth zone during the advanced pregnancy, which little developed in the day 12. This proliferation accompanies of angiogenesis and vasculo-genesis, processes in turn characterized by an increment of ROS that is accentuated in the placentas of stressed mothers. Probably, stress activates placentary angiogenic growth factors.

**42. EVALUATION OF MUTAGENICITY OF ACETOGENINS ISOLATED FROM ANNONA CHERIMOLIA (ANNONACEAE)**

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*Annona cherimolia* Mill. (Annonaceae) is a South American plant, with edible fruits. In a previous work, we have isolated and purified by RP-HPLC two annonaceous acetogenins (Acg) from its seeds. The Acg are potent inhibitors of the mitochondrial complex I, insecticides, pesticides, antiparasitics and have antimicrobial activity against human pathogenic Gram positive and Gram negative bacteria. In this work, we evaluated the toxic and mutagenic effects of squamocine (1) and itrabine (2), both natural products by using a short-term test. The assay using *Salmonella typhimurium* TA 98 and TA 100 was performed in presence of 4-nitro o-phenylenediamine (NPD) as mutagenic substance. The Acgs showed no toxicity to assayed strains at concentrations that have antimicrobial activity (0.25-2.5 µg/ml). The Acg 1 and Acg 2 showed MR (mutagenicity relation) values below 2, which indicate that does not exert mutagenic effects.

**43. EFFECTS OF ANNONACEOUS ACETOGENINS ON MEDITERRANEAN FRUIT FLY (CERATITIS CAPITATA)**

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*Annona cherimolia* (Annonaceae), is a tree cultivated in the north-west of Argentina. Our investigation of a methanol extract from the seeds yielded a group of annonaceous acetogenins (Acg), seven of which could be identified as molvizarin, itrabine, almuñequin squamocin, cherimolin -1, cherimolin -2 and tucumanin by spectroscopic methods (HR-MS and mono and bidimensional NMR). The use of them by the native population as an insecticide encouraged us to evaluate the effects produced by Acg on the preference of sites for oviposition, adult mortality, oviposition capacity, and viability of the offspring of the Mediterranean fruit fly. Our results indicated that the oviposition capacity was severely altered in females that fed on diets with 250 ppm of the acetogenins tested. In addition, significant differences were detected in the preference of oviposition sites when the acetogenin itrabine was spread on the surface of artificial fruits at doses of 30 µg/cm<sup>2</sup>.

**44. ASSESSMENT OF THE INCIDENCE OF COMPUTER SCIENCES IN THE FORMATION OF STUDENTS OF THE CAREER OF AGRONOMY AT THE COLLEGE OF AGRONOMY AND ZOOTECNICS - NATIONAL UNIVERSITY OF TUCUMAN. (FAZ-UNT)**

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Benbenaste supplies an innovating proposal highlighting the contribution of informatics to the construction of scientific knowledge. He places the learner in the computer era, naming him "computational subject". The aim of this work was to assess the incidence of informatics in the formation of the students at the professional cycle of the career of Agronomy at the FAZ - UNT on this basis. Questionnaires were presented about ten main topics during May, 2005 to a sample of 50 students, randomly chosen, from the professional cycle (4° and 5° years of the career). Answers show: a close relation with computers to access to internet to obtain and exchange information; membership to groups within the academic institution to e-mail information about study subjects, for fun and for organizing lectures about different issues; appraisal of availability of informatic devices to carry out their activities at the FAZ; need of remedial classes and help from teachers through e-mail; recognition of the value of informatics in the development of understanding and reasoning. We conclude that most of the students at the FAZ fit into the concept of "computational subjects".

**45. EFFECT OF GALLIC ACID AND CATECHIN ON *Escherichia coli* GROWTH PARAMETERS**

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Phenolic compounds are categorized into subgroups, flavonols, non-flavonols and tannins. They have attracted much interest recently because many studies suggest that they have a variety of beneficial biological properties, which may play an important role in the maintenance of human health. The aim of this work was to investigate the effect of two phenolic compounds; the non flavonoid gallic acid and the flavonoid catechin on the growth of *Escherichia coli* ATCC 35218, a bacterium that may cause human infections. Growth experiments were performed in nutrient broth and agar medium. Phenolic compounds were added to the medium to obtain a final concentration of 25, 50, 100, 200 and 500 mg/l. At 25 mg/l, gallic acid and catechin produced 19 and 33% of inhibition on the growth rate, and 11 and 22% inhibition on final cell density, respectively. Gallic acid and catechin decreased the number of viable cells 44 and 72%, respectively. The bacterium growth inhibition increased with the concentration of phenolic compounds. Catechin was the inhibitoriest phenolic compounds. This phenolic compound could be considered as a potential natural inhibitor of this pathogenic bacterium.

**46. INFLUENCE OF CONVENTIONAL AND CONSERVATION CULTURE SYSTEMS ON THE EMERGENCE OF *Digitaria sanguinalis* (L.) Scop. IN SUGAR CANE**

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The objective was to determine the influence of different cultivation systems on the emergence of *D. sanguinalis* (L.) Scop. in sugar cane. A randomized complete block design was used with five treatments: T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> with 10, 20 and 30 tn ha<sup>-1</sup> of harvest residues added; T<sub>4</sub>: weedy control and T<sub>5</sub> conventional management with burnt harvest residues and mechanical tillage. Weeds presence / absence and frequency / abundance were determined.

Weeds showed a frequency of 1 to 25% and 1 to 10% abundance in the treatment with 10 tn ha<sup>-1</sup> of harvest residues. Levels of 20 and 30 tn ha<sup>-1</sup> impeded emergency. In conventional management (T<sub>5</sub>) frequency and abundance were 26 to 50% since tillage allowed the exposition of seeds to light and thermal factors which contributed to seeds germination. The weedy control (T<sub>4</sub>) allowed to estimate the potentiality of the seeds bank as far as *D. sanguinalis* concerns. This potentiality coincided with the one in the conventional treatment. Results showed that the tillage system and weights of harvest residues added influence emergency of *D. sanguinalis*.

**47. PRESENCE OF *Rottboellia cochinchinensis* (Lour.) Clayton IN SUGAR CANE IN TUCUMAN PROVINCE**

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*Rottboellia cochinchinensis* (Lour.) Clayton is cited as being one of the world worst weeds. It was not spread out in Tucumán so far but it has been recently reported in Famailla and Lules Departments. The objective of this paper was to verify the presence of *R. cochinchinensis* in sugar cane fields under different culture systems in Tucumán province.

Treatments in the trial were: conventional management with burnt harvest residues and soil tillage; several weights (10, 20 and 30 tn ha<sup>-1</sup>) of harvest residues and a weedy control. Weeds presence / absence and frequency / abundance were determined.

The presence of *R. cochinchinensis* was verified in every treatment. Frequency, in a 0 to 4 scale turned out to be 1 (1 to 25) in every case considered. Abundance, in a 0 to 6 scale was 1 (1 to 10%) in conventional management and treatments with 20 and 30 tn ha<sup>-1</sup>. Abundance scale was 2 (11 to 25%) in the treatment with 10 tn ha<sup>-1</sup> and the control.

The fact that *R. cochinchinensis* is present makes necessary to divulge studies about its morphology, biology and control and prevention methods.

**48. EVALUATION OF HEMATOLOGICAL PARAMETERS IN AN INFANT-JUVENILE POPULATION WITH TYPE 1 DIABETES**

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At present, Diabetes constitutes an authentic world epidemic. This chronic and multifactorial disease, along its evolution promotes several complications, which determinate its high degree of morbidity and mortality. The objective of this work was evaluate haematological parameters in an infant-juvenile population with type 1 diabetes (D1) and their relation with the glycemetic control. Fifty-nine D1 patients (33 girls, 26 boys), age 5-15 yr, evolution time of disease 3.8±3.1 yr, that was compared with a control group. The glycemetic state was evaluated by fasting blood glucose, glycosylated haemoglobin (A1c) and fructosamine. The haematological parameters evaluated were: erythrocytes (RBC), leucocytes (WBC), haematocrit (Hct), haemoglobin (Hgb), medium corpuscular volume (VCM), medium corpuscular Hgb (MCH), medium corpuscular Hgb concentration (MCHC), platelets (Plt) and globular sedimentation speed (GSS).

D1 patients present higher levels statistic significant of RBC (p<0.006); Hct (p=0.000001); Hgb (p=0.0008) and Plt (p<0.05) respect to controls. When diabetic patients were classified according glycemetic state in diabetics with good glycemetic control (DGGC, A1c<8%) and diabetics with poor glycemetic control (DPGC, A1c ≥8%), significant differences were not found between both groups. The higher values in diabetic patients could be on account of the hemoconcentration by the osmotic diuresis motivated by the chronic hyperglycaemia state.

**49. MICROALBUMINURIA AND NON-HDL CHOLESTEROL (NHDH) IN TYPE 1 DIABETES PATIENTS**

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Microalbuminuria (MI) is a nephropathy precursor and a potent predictor of cardiovascular disease (ECV). The disease duration, the increase of haemoglobin A1c (A1c), dyslipidemia and visceral obesity, are associated to atherosclerotic damage in patients with type 1 diabetes (D1). The NHDH calculation is considered a sensible marker of ECV, according with ATP III recommendations, that permits evaluate all atherogenic lipoproteins. The aim of this study was to relate the presence of MI and NHDH levels in infant-juvenile patients with D1.

Fifty-eight patients, medium age  $11.3 \pm 2.6$  yr and evolution time of disease  $3.8 \pm 3.1$  yr were studied. The parameters evaluated were fasting blood glucose, A1c, total cholesterol (TC), HDL-cholesterol (HDL-C), triglycerides (TG), and NHDH and Body Mass Index (BMI) were calculated.

The patients were grouped in i) Diabetics with MI (DWM, n=15) and ii) Diabetics with normoalbuminuria. When both groups were compared, DWM patients (25.8%) presented higher evolution time of disease ( $p=0.003$ ), TC and NHDH levels, but in the two latter, the differences were not significant. DWM group showed good correlation between A1c and NHDH ( $r=0.50$ ), and MI and HDL-C were negatively related ( $r=-0.50$ ).

These results suggested that it is important evaluate either glycaemic control and NHDH and MI presence in children with D1, to prevent or delay the CVD.

**50. EPIDERMICAL DIFFERENCES IN TWO SUBTROPICAL PASTURES**

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*Panicum maximum* and *Cenchrus ciliaris* are subtropical forages adapted to climate conditions of Santiago del Estero province, Argentina. Different parts of the plants (leaf, sheath and stem) selected by the animals, can be identified through epidermal characteristics. Epidermal characteristics were identified in leaf, sheath and stem, and also the differences among them, using microhistological technique. Samples of the different parts were collected and oven dried at 60°C, milled, and sieved with 1mm mesh. They were digested with Na hypochlorite at 60%, clarified with chloral hydrate, and mounted in glycerin gelatin. Observations were made at 400x. *P. maximum* leaf shows unicellular long hairs with acuminate apex and cushion base; in the intercostal zone there are little prickles with quadrangular base and triangular subsidiary cells. There are no hairs in *C. ciliaris*, prickles are little with rounded base and stomata with spherical-arched subsidiary cells. In the sheath, *P. maximum* have two kinds of hairs, ones short unicellular with simple base and others long with cushion base; papillae can be observed. In *C. ciliaris* there are no hairs or papillae, but bulliform cells can be observed. In the stem, *P. maximum* does not have hairs; instead, *C. ciliaris* do have unicellular hairs. So, there are conspicuous differences between both grasses. Leaf, sheath and stem epidermis, in both grasses show characteristics that let the establishment of differences between them.

**51. WEEDS OF THE MULCHING OF SUGARCANE (LOLITA NORTE-TUCUMAN-ARGENTINA)**

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Soil cover with sugarcane harvest rests constitutes a good weed management technique with innumerable benefits. Normal populations of this study zone are altered and very few species are adapted to the new conditions. The objective of this work was to know these species, their characteristics and incidence on the future sugarcane yield for establishing adequate management strategies. This work was realized in Lolita Norte (Cruz Alta, Tucumán) on sugarcane cultivar LCP 85-384 harvested with integral machine with multiple ore separator. Twenty 10 m long per 4 furrows wide plots (64 m<sup>2</sup>) were randomly marked in 50 sugarcane crop ha. Inside each plot three 1m<sup>2</sup> mulching samples were weighted. In October, November and December each plot was passed over and the present species were identified comparing their apparition with the control sugarcane crop in the same area. The harvest rests average found was 12.73 tn/ha. Species were: *Nierenbergia hipománica*, *Cyperus rotundus*, *Sorghum halepense*, *Portulaca oleracea*, *Talinum paniculatum*, *Oxalis corniculata*, *Cynodon dactylon*, *Nicotiana longiflora*, *Amaranthus quitensis*, *Verbena bonariensis*, *Digitaria sanguinalis*, *Cardus sp.*, *Cucurbitella asperata*. The weeds that appear in the mulching of Lolita sugarcane crops are closed entailed to the cultivar vegetative composition, agroecological study area, watering management, culture and harvest systems.

**52. SPATIAL AGGRESSIVENESS INDEX (Iea) OF *Flaveria bidentis* (L.) O. Kuntze FOR SUGARCANE CROPS OF THREE TUCUMAN (ARGENTINA) LOCALITIES**

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Spatial aggressiveness index (Iea) is a weed distribution bioecological parameter since it comes to area and its progress in colonization or competence. The objective of this work was to determine Iea for three sugarcane localities and to compare population behavior. It was worked between September 2004-January 2005 in three Tucumán Eastern localities (El Naranjito, Favorina, La Tala) on cultivar 2-3 year ratoon LCP 85-384. For *F. bidentis* index calculus a model that interrelates following components was used: principal plant height and dry biomass, plant number that invade study area around this, average dry biomass, average height. Surface was of 600 m<sup>2</sup> for all localities. ANOVA, Tukey 5% were made. Statistical analysis show that El Naranjito Iea has significant differences with La Favorina and La Tala, but there were no differences between last two. When surface increases Iea will increase. Principal plant height will cause variations and Iea will increase. At great plant height, great seed dispersion. When increase the number, height and average biomass of neighboring plants, Iea will decrease. A low index indicates that numerous plants grow around the principal one. Species index is not the same for different localities. At same surface invaded by one species, index can be different for different localities.

**53.**  
**“CSR” STRATEGIES IN THE BEHAVIOR OF THE SPECIES**  
*Eupatorium laevigatum*, *Flaveria bidentis* and *Wedelia glauca*  
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CSR strategies or Grime Triangle graphically represent species function into habitat and equilibrium situations among competitor plants, stress tolerance in a generalized disturbance situation. The objective of this work was to make a practical adaptation of Grime concepts for *Eupatorium laevigatum*, *Flaveria bidentis* and *Wedelia glauca*. In Tucumán sugarcane zone, information of three weed species behavior during 2002, 2003 and 2004 was collected. Information was about density, cover, seed production, viability, aggressiveness, association with other species, survival, dispersion, losses, adaptation, fire treatment survival, garbage collector preference, establishment phase, among others. Competitor, ruderal and stress tolerant were analyzed on 10 characteristics evaluated on 20 points for high (10), intermediate (6), low (4) y null (0) values. Then it was diagrammed over an equilateral triangle divided in 100 equal parts or cells. *Eupatorium laevigatum* has CSR of 54-24-18 being inferior. *Flaveria bidentis* has CSR of 60-40-20 being intermediate. *Wedelia glauca* is a dangerous weed. It has the greatest values as competitor, ruderal and stress tolerant with CSR of 72-60-82. The three studied species have CSR strategies reflected in the scale. Only one of them (*Wedelia glauca*) has high values en the three strategies.

**54.**  
**PROPOSAL FOR THE STUDY OF THE CSR STRATEGIES**  
**IN THE WEED SPECIES QUALIFICATION**  
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CSR strategies and Grime triangle (1974) represent competitor (C), ruderal (R) or stress tolerant (S) strategies in function of vegetative and reproductive characteristics, adjustments to diverse capacities to stress conditions, disturbance or factor combinations. The objective of this work was to adapt CSR Grime strategies and to establish determined characteristics for defining the interrelations and interference with crop capacities. First, CSR characteristics evaluation is made. Once the species and the representative area are chosen, 30 qualitative and quantitative characteristics in a number of 10 for each case are valued; 20 points for each one expressed as big (10), intermediate (6), low (4) and null (0). Second, an equilateral triangle divided at 100 equal parts is made (each cell is=1). At superior angle comes C, at left inferior angle comes R, at right inferior angle comes S. Result permits to establish numerically if the species are mainly Competitor, Ruderal or Stress tolerant, to make comparisons and to define their potential. An example in a weed species for C strategy predominance can be 80-10-10, for R 5-90-5 and for S 15-15-70. Determination of weed CSR characteristics and graphics with triangles and symbols will permit a rapid sight of aggressiveness characteristics and invading potentialities of the problem species inside the crops.

**55.**  
**ALLOMETRY IN SPECIES OF THE FUSCUS GROUP OF**  
**GENUS LEPTODACTYLUS (ANURA, LEPTODACTYLIDAE)**  
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Allometry, relations between size and shape of particular structures provides data for assessing heterochronic morphological events. In some small species of the *fuscus* group of genus *Leptodactylus*, some osteological characters showed patterns of heterochrony. Using bivariate and multivariate morphometric analyses was tested the hypothesis that in the *fuscus* group of genus *Leptodactylus*, the species with heterochronic characters should have allometric growth. Twenty-one osteological variables were measured in five species of the *fuscus* group. Regression slope indicate that in *L. latinasus*, structures scaled with negative allometry; in *L. fuscus* and *L. mystacinus* with positive; in *L. spixi* with a mixture of both, and in *L. elenae* were isometric. Significant differences ( $p < 0.05$ ) of multivariate isometric growth were founded only in *L. latinasus*. This is expected because this specie presents characters that suggest heterochronic patterns. In general, a direct relationship between the kind of allometry present in the characters and the size of the species was evident.

**56.**  
**EFFECT OF THE POPULATIONS OF APHIS GOSSYPHII**  
**GLOVER ON THE YIELD OF COTTON**  
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The cotton aphid, *Aphis gossypii* G. is present during all the cotton crop. In Argentine, is indicated like critical period the phase that elapses from emergency to first square. However, other studies indicate that the aphids present in the periods of squaring and flowering are potentially the ones that can to cause greater damages due to that compete with the development of squares and bolls by the photosyntates limited. The objectives of this study were to know the susceptible phase of the cotton crop to the presence of aphids and their implications on the yield. The design utilised was blocks with four repetitions. The treatments were: T1 without presence of aphids during all crop life, T2 Presence of aphids from emergency to first square, T3 Presence of aphids since first square to the end effective flowering, and T4 presence of aphids during all crop life. The aphids were monitored weekly in the fifth leaf of the main stem situated from the apex. The predatory species were monitored in a meter of row. The results showed that *Eriopis connexa* G. was the most abundant one of the predatory species found in the crop. During the phase vegetative they were not registered aphids, while densities among 60–120 aphids per leaf were presented during the period of flowering. These densities found did not cause decrease in the yield, not being found you differentiate significant among the treatment evaluated.

**57. EFICACY OF INSECTICIDES FOLIAR IN CONTROL THE APHIS GOSSYPPI GLOVER IN COTTON, SANTIAGO DEL ESTERO**

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The aphids were present along the entire cotton crop, but the highest populations were observed at the emergence of the first square at the end of effective flowering. In this stage the efficiency and residual of different foliar insecticides were evaluated in controlling the *Aphis gossypii* in cotton crops. The trials were conducted during the agricultural season 2002-03 and 2003-04 in the experimental field of La Maria (EEA Santiago del Estero). The design was block at random with 4 repetitions and the following active principles: Thiametoxan GW 25, oxidemeton metil CE. 25, oxidemeton metil CE. 25, Clorpirifos CE.48, Dimetoato CE 50 and untreated control. Four samplings was determined one previous to the applications and the rest to two, seven and twenty days later to applications. The counts of the aphids by leaf were in made in the fifth leaf of the main stem situated from the apex. The treatments began with an average density of 40-120 aphids/leaf with a uniform distribution in the test area. The results show to a significant difference between the untreated control and the different evaluated active principles. The Thiometoxam and metil Oxidemeton applied to the foliage significantly reduce to the population of aphids in the crop until the twenty days later to the treatments, providing levels of control over 70%.

**58. DETECTION AND PREVALENCE OF BACTERIAL VAGINOSIS IN FERTILE WOMEN**

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Bacterial vaginosis (BV) is one of the most frequent reasons of consultation by fertile and pregnant women. The normally lactobacilli are replaced by a polymicrobial flora with abundant short and curved bacilli, usually Gram-negative or variable (*Gardnerella*, *Mobiluncus* and anaerobic morphology). One hundred sexually active women, aged between 15 and 66 and treated at the Maternity in Tucumán, Argentina, were examined (35 of them were pregnant). From each patient samples were taken (cervix), carrying out a microscopy study. Gram staining was applied to study bacterial morphology using the Nugent scale, based on a semi-quantitative microscopy analysis of the vaginal flora, and Giemsa staining and a PAP test. In 96% of the cases fewer than 7 PMN per microscopic field were observed. Prevalence of BV was 23% and an intermediate stage was observed in 37%. 30% of the women under study were between 21 and 30 years of age, 26% between 31 and 40, 22% between 41 and 50 and 22% under 20, 37% of the patients manifesting the disease were pregnant. Analyzing associations with BV *Trichomonas vaginalis* was found in 17% and yeast in 9%. Only in 2 pregnant patients without BV coilocyte and virocyte type cells were detected. The typical microscopy findings allow differentiation between normal and infectious secretions. Detection of coilocytes and virocytes is important, because they predict the presence of Papilloma virus.

**59. METABOLIC SYNDROME IN CHILDREN AND ADOLESCENT POPULATION**

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**Introduction:** The overweight in children and adolescents is associated to metabolic alterations known as metabolic syndrome (MS). It is related to a significant increase of diabetes type 2 (DT2) and cardiovascular disease (CVD) risk.

**Objective:** to determine risk factors (RF) for MS in children and adolescents in scholar population.

**Materials and methods:** 157 students aged 11-16 yr were evaluated. Parameters of weight (W), height (H), waist circumference (WC), Blood Pressure (BP) and Body Mass Index (BMI) were determined in all subjects. After known the presence of one or more RF, the study was completed with the biochemical analyses and the nutritional survey.

**Results:** from the 157 evaluated students, 25,5% have one or more RF for MS. 17,8% have overweight, 5,7% obesity, 10,2% with WC >90 percentile, 5,1% with high BP, and 3,2% have lipids profile alterations. One student presents Glucose greater than 110 mg/dl (0,6%), and 7 students have high HOMA Index (4,5%). This indicates Insulin Resistance Syndrome. From the 14 subjects tested in the laboratory, 7 present 3 or more RF for MS (4,5%).

**Conclusions:** we suggest the importance of the valuation in children and adolescents of the RF that constitute the MS to prevent the complications like DT2 and CVD.

**60. TAXONOMIC STATUS OF *JENYNISIA* CF. *ALTERNIMACULATA* (CYPRINODONTIFORMES: ANABLEPIDAE) FROM THE RÍO ARENALES BASIN, SALTA, ARGENTINA**

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The family Anablepidae is composed by 3 genera. Among them, *Jenynsia*, is the most diverse. Ghedotti (1998) analyze the phylogenetic relationships of the family. In Salta, Argentina, two species of *Jenynsia* are present, *J. maculata* and *J. alternimaculata*. The latter is very similar to the specimens found in Río Arenales. As the type locality of *Jenynsia alternimaculata* is in the Río Bermejo Basin and the Río Arenales do not belong to it, the taxonomic status of the specimens of the latter river is tested in this work. A re-analysis of the Ghedotti's (1998) matrix was performed with TNT, by using implicit enumeration under equal and implied weighting. The specimens from Río Arenales are separated in all the analysis from *J. alternimaculata*, possibly conforming two different species.

**61. MALE GAMETE MORPHOLOGY OF OLIGO-CHAETA AND GASTROPODA: IMPLICATIONS IN BIOLOGICAL FERTILIZATION AND PHY-LOGENY**

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The objective of the present work was to determine sperm morphology implications of two terrestrial species: *Amyntas hawayanus* (Rosa, 1891) (Oligochaeta, Megascolecidae) and *Sarasinula linguaeformis* (Semper, 1885) (Gastropoda, Veronicellidae). Both of them undergo a reproductive pattern involving direct transfer sperm during a copulatory process. The 114 specimens of *A. hawayanus* and 58 of *S. linguaeiformes* employed were collected in Tucumán, Argentina. Samples, carried out using air-drying technique, modified for terrestrial oligochaeta and gastropoda, were stained with Giemsa pH 7 for 15 minutes. Results indicated that *A. hawayanus* spermatozoon exhibited an elongated nucleus with the acrosome and a long flagellum about 120 $\mu$  to 145 $\mu$ . On the other hand, *S. linguaeiformis* exhibited a spherical or conical nucleus and a large flagellum about 350 $\mu$ . It could be concluded that male cell morphology of *A. hawayanus* correlated to fertilization biology and to phylogenetic relations; nevertheless, spermatozoon morphology of *S. linguaeiformis* was concerned to phylogenetic relations. This last fact concurred with chromosomal, structural and ultra structural morphological studies, which allowed to propose hypothesis about new taxonomic classifications of Veronicellidae (Alderete de Majo, 1996).

**62. PHYSIOLOGICAL BASIS OF PHENOLICS PHYTOTOXICITY FROM SUGARCANE STRAW**

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Postharvest sugarcane residues can inhibit weed growth. Previous studies showed that this material contains phenolics as vanillic (VA), ferulic (FA) and syringic (SA) acids. The aim of this work was to evaluate the effect of these compounds on the growth of *Lactuca sativa* L. and four weeds. The effect of these compounds on physiological processes of *L. sativa* was also determined. Phenolics inhibited root growth of the test plants. These compounds increased membrane permeability and reduced dehydrogenase activity of the root cells of *L. sativa*. They also reduced chlorophyll content of the cotyledons. VA and FA inhibited cell division while SA stimulated it. Scanning electron microscopy of root tips indicated that VA increased root hair density and reduced cell expansion. Root cell membrane would be the first phenolics action site. The loss of organic and inorganic compounds from root cells could change cell expansion and reduce the energetic metabolism leading to a reduction in cell division. Changes in root cells would produce other modifications such as the inhibition in chlorophyll synthesis. More studies are in progress to establish the impact of phenolics in sugarcane agroecosystem.

**63. LIGHT STRESS IN *OCTOBLEPHARUM* (Octoblepharaceae, Musci) IN COSTA RICA**

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The genus *Octoblepharum* (Octoblepharaceae) is comprised of 15 pantropical and 9 neotropical species. Of these species, *Octoblepharum albidum* is perhaps one of the most widespread species. It can be found growing terrestrially in the dark understory and epiphytically in the most exposed parts of the canopy. Species with such dramatic ecological ranges are unusual and provide an interesting system in which to study local adaptations to different light regimes. The goal of this study was to better understand how the natural distribution of *Octoblepharum albidum*, along a gradient of light intensity, is linked to this species ability to recover from the effects of high light stress. This study took place at Biological Station La Selva, Costa Rica where we collected samples from various populations along a natural light gradient. Initially, we measured chlorophyll fluorescence (Fv/Fm) after 15 minutes dark adaptation. Individuals were then exposed to a 2 hour average light stress of 1350.50  $\mu\text{mol m}^{-2}\text{sec}^{-1}$ . We then measured the rate of recovery of Fv/Fm and related this to the individual's natural light regime. We found that species that naturally occurred in high light environments exhibited significantly higher recovery rates relative to those from low light environments. The data from this study further support the notion that species stress tolerance is linked to distribution.

**64. ANTIMICROBIAL ACTIVITY OF ESSENTIAL OILS EXTRACTED FROM *Schimus areira***

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Plants provide a great variety of chemical compounds, some of them show *in vitro* activity comparable to clinically used antibiotics. The objective of this study was to examine the antimicrobial activity of essential oils (EO) from *Schimus areira*, extracted from different parts of the tree, and their variability during the different seasons. 45 EO samples from leaves, twigs and fruits, gathered during the four seasons. Susceptibility to EO was examined with the following pathogens ATCC: *S. aureus* (25923 and 29213), *Ps. aeruginosa* (27853), *E. faecalis* (29212) and *E. coli* (35218 and 25922) and two strains isolated from patients *S. enteritidis* and *Sh. sonnei*. Antimicrobial activity assaying was carried out according to NCCLS. Ethanol 96° was used in all cases as solvent due to oils's insolubility. Plates were prepared with MH agar, supplemented with the EO at the following final concentrations: 0.01, 0.1, 1, 10 and 50  $\mu\text{l/ml}$ . The minimum concentration (MIC) for each EO against assayed strains was determined. Most of the 45 EO assayed against both ATCC *S.aureus* strains presented a MIC  $\leq$ 10  $\mu\text{l/ml}$ , except for 3, showing a MIC of 50  $\mu\text{l/ml}$  for strain 29213. All EO inhibited *S. enteritidis* and 35 *E. faecalis* with a MIC  $\leq$ 50  $\mu\text{l/ml}$ . The MIC's value against *Sh. sonnei* and *E. coli* was  $\leq$ 50  $\mu\text{l/ml}$ , except for 3 which showed a MIC  $>$ 50  $\mu\text{l/ml}$ . *P. aeruginosa* was the most resistant strain: 31 EO showed a MIC of 50  $\mu\text{l/ml}$  and 4 inhibited at a MIC  $>$ 50  $\mu\text{l/ml}$ . EOs extracted demonstrated higher antimicrobial activity during spring and summer.

**65. GENETIC DIVERSITY OF METHICILLIN-RESISTANT *Staphylococcus haemolyticus* AT A HEMODIALYSIS CLINIC**  
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Methicillin-resistant coagulase-negative staphylococci (CNS) represent worldwide a severe clinical and epidemiological problem. During the last years *S. haemolyticus* has shown a relevant increase as hospital-acquired pathogen. Macrorestriction analysis of SmaI-digested chromosomal DNA, using pulsed-field gel electrophoresis (PFGE) is a highly sensitive sub-typifying method that allows differentiation between closely related strains and establishing an epidemiological relationship among them. In 2001 80 CNS strains were isolated from urine samples from patients that attended a hemodialysis clinic. From 28 *S. haemolyticus*, 12 were oxacillin-resistant and *mecA* gene (+). The **objective** of the present paper was to establish the clonal relationship between methicillin-resistant seven *S. haemolyticus mecA* (+). The molecular typifying technique applied was PFGE using a CHEF-DRIII equipment. SmaI was used as restriction enzyme. It was determined that the 7 isolates belonged to 6 types of different clones: A, B, C, D, E, and F. Only two isolates belonged to the A-type and seemed to be genetically related. Analysis of macro-restriction fragments showed a great genetic diversity among the strains, during the short period of time that lasted this study.

**66. LIFE CYCLE OF *STAUORHECTUS LONGICORNIS* GIGLIO-TOS 1897 (Acrididae: Gomphocerinae), A VORACIOUS SPECIES IN TUCUMÁN, ARGENTINA**

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Severe damage in crops and pastures are sometimes produced by *Staurorhectus longicornis* G.-Tos. Careful biological studies of this species had not been undertaken yet. This paper deals with the results of laboratory rearings and observations carried out in the "chaco" of Tucumán province: typical flora of the region and behaviour of several generations of the pest are included. Egg pods, diapause, and nymph development were analyzed in the laboratory. A variety of species of grasshoppers is present in the herb layer but *Dichroplus* and *Staurorhectus* are dominant. *S. longicornis* has only one generation per year, egg-pods are 37,5 mm long and the eggs are distributed in 4 ranks. Male nymphs go through 6 stages: 6 or 7 were registered in females. The species feeds on grasses: periodic high populations damage pastures. Adults are controlled (but previous ovipositions are the species reservoirs). As direct sowing do not destroy the eggs, early control of nymphs is suggested in order to preserve the plant biomass and prevent oviposition.

**67. CHRONIC ENDEMIC REGIONAL HIDROARSENICISM (CERH): AN AVOIDABLE PROBLEM**

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Chronic arsenic (As) toxicity due to drinking arsenic-contaminated water has been one of the worst environmental health hazards. The aim of this work was to investigate if in the system of health there exist in the operative level systematical search and patient's captation of risk, as likewise mechanisms of reference and contrareference. With this purpose different activities were realized: analysis of six works of epidemiological investigation on CERH developed by pupils of the rural internship. Construction and application of questionnaire for members of the community to analyze the level of knowledge of the population in risk. In 100% of the works evaluated was an inverse relation between the depth of the well and the concentration of As, and a direct relation between the exposure time, the exposure level of As and the frequency of signs of arseniasis. Of the epidemiological analyzed studies realized in zones with high levels of As it is possible to suggest that there is necessary the training of the health care professional for the systematical search of cutaneous and extracutaneous signs and symptoms of arsenicism. Besides, offer to the community in general the information brings over of the harmful effects of the As in the water of consumption. It is urgent: the incorporation of the CERH in the pathologies of obligatory denunciation and the sanitary assistance of the members of the exposed community.

**68. DEMOGRAPHIC CHARACTERIZATION AND CLINICAL FEATURES OF A POPULATION EXPOSED TO HIGH ARSENIC LEVELS IN THE DRINK WATER**

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The aim of this work were to analyze the clinical characteristics of resident in east part of Tucumán, where previous studies demonstrated of arsenic-contaminated water and to determined the level of knowledge of the community on the toxic effects of the presence of arsenic (As) in drinking water. We conducted a study with 51 participants who lived in areas where then drinking water contained As. They had to be at least 50 years of age and live in the zone of risk for the previous 15 years. The analysis of the surveys demonstrated that alone 17,6% of the people presented signs related to arsenicism, of which 9,8% was hiperkeratosis in the palm or sole and 1,9% leucomelanoderma more hepatomegaly, the 7,8% had hepatomegaly, of which 75% declared not to have alcoholism antecedents. The 82,4% of the people expressed not to know about the toxic effects. The 35% referred that in some opportunity they collected water samples for the analysis of the same one, but they had not been informed about the results. Conclusions: the affected populations must be informed about the toxic effects of the As. It is necessary to make: advanced training courses destined health care professionals and students and adjust the survey in order to obtain major information about the situation of the exposed people.

**69. ANIMAL WELFARE IN A PIG HERD . REPRODUCTIVE BEHAVIOR DIFFERENCIES WITH INTENSIVE AGAINST. FREE RANGE SYSTEM**

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The studies of animal welfare carried out in England in sixties showed its incidence in the animal production and the importance to consider free range system as a way to reduce the stress animal. In this research the reproductive behaviour was evaluated during the gestation period under two breeding systems: Intensive (in farrowing pens) and free range system. The trials carried out in Tucuman during November 2004 to May 2005. It worked during gestational period with 23 sows Landrace by Yorkshire cross, by each system. In one of the farm, the sows were in cement floor farrowing pens with 3m<sup>2</sup> surface by animal. In a free range system the surface by sows were of 30m<sup>2</sup>. The results were: the following: **Intensive system** (farrowing pens): 1) Farrow: 23; 2) Birth piglets: 221; 3) Weaned piglets: 187; 4) Weight weaned: 11,5. **Free range system**: 1) Farrow: 23; 2) Birth piglets: 219; 3) Weaned piglets: 198; 4) Weight weaned: 12,6. The nutritional and sanitary care were the same for two groups. The major weights achieved by the sows under free range system could be attributed to its better corporal conditions as well its milky production rate than the animals under intensive systems.

**70. ORGANIZATION AND DYNAMICS OF ANIMAL DIVERSITY I SIGNATURE: 2001-2004 ACADEMIC PERIODS**

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Animal Diversity I is a signature of basic cycle in the careers of Biological Sciences. It aims at the acquisition of introductory knowledge about Invertebrates (excluding Artropoda). This paper aims at assaying the pedagogical methodology used, related to an investigation model, and the results achieved for the 2001 – 2004 academic periods. The interactive classes and workshops for a medial number of 108 students, consisted of theoretical – practical classes which the different topics taught were approached according to a guiding questionnaire and supplemented with the observation of biological material and photonic and electronic microphotography. Evaluations were performed by objective and traditional methods. Group oral evaluations were employed in partial and final examinations. On analysing the achieved results for the cited academic periods, it could be concluded that: 1- Regular students average was 81,06% and irregular 18,94%. 2- Regular students average who approved final examinations was 97,5% and who disapproved was 2,5%; irregular students average who approved final examinations was 100%. 3- The pedagogical strategy used facilitated the acquisition of knowledge, technical and specific vocabulary, increasing student's motivation and participation, while encouraging the development of critical-reflexive attitudes and the acquisition of critical tools and methods to generate scientific knowledge.

**71. DENTISTRY STUDENT'S EVALUATION OF THE READING AND WRITING CAPABILITIES AS SOCIAL AND ACADEMIC EXCLUSION FACTORS**

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According to Giner *et al.*, (1998, cited by M. Rubio and S. Monteros, 2002:21) social exclusion is a social process of separation of a person or a group from work, economic, political and cultural possibilities available to other persons. Writing, oral expression and reading problems could be factors that will exclude people from society insertion, since these capabilities are essential for an academic and professional activity. In this regard, new students at the University will need these tools during their studies and later on in their professional activity. However, at the UNT Dentistry Faculty, is not available any space to develop these skills.

The aim of this work is to analyze the Spanish language reading, writing and oral expression values of the new students at the UNT Dentistry Faculty and their importance as academic and social exclusion factors.

It was found that 86% of the 66 students consulted, consider that a good orthography is necessary, 83% consider that a dentist should read properly and 79% agree with the fact that a dentist should read other texts. They suggest that the Faculty should offer orthography and oral expression courses. In summary, they will be benefit in their professional life by a program including development of speech, writing and reading skills.

**72. ISOLATION AND CHARACTERIZATION OF *Butyrivibrio fibrisolvens* FROM BOVINE RUMINAL CONTENT**

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The goal of this study was to isolate and identify native strains of *Butyrivibrio fibrisolvens* from bovine rumen. The samples were collected by manual extraction from two bovine provided with a permanent ruminal cannula. The samples were inoculated in a prerduced non-selective media using the isolation method for strict anaerobic bacteria (roll tube). Eighty colonies were isolated from 10<sup>-7</sup> and 10<sup>-8</sup> dilutions, and then all colonies were studied to identify them. We isolated two strains putatively identified as *B. fibrisolvens*. The bacteria developed only in a strict anaerobic environment at 39°C: They showed a curved rod morphology, motile, Gram-negative, and they fermented diverse carbohydrates being butyric acid the main product of fermentation. By PCR, the two strains amplified a DNA fragment corresponding in size to *Butyrivibrio spp* (480pb amplicon) and *B. fibrisolvens* (160pb amplicon). A phylogenetic analysis using the DNA sequence of these two amplicons confirmed the identification of these strains as *Butyrivibrio fibrisolvens*. The importance of this isolation is due to the production of CLA (conjugated linoleic acid) by this bacteria which is very important because of its nutraceutic properties. These native strains will be used for the isolation of genes encoding the linoleate isomerase (the enzyme that synthesizes CLA).

**73. ACROSOME REACTION IS MODULATED BY SPERMINE IN SPERMATOZOA FROM HAMSTER EPIDIDYMIS**

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The present study demonstrates that spermine (Sp) regulates the acrosome reaction (AR) in spermatozoa (Stz) from cauda epididymis of adult hamsters through two different mechanisms: 1) Sp exhibits an inhibitory action on AR. This effect was reverted by okadaic acid (OK) and sodium pervanadate. These results suggest that Sp would regulate phosphatase activity preventing a premature AR of Stz during storage in the epididymis; 2) Sp failed to inhibit the stimulatory effect of ionomycin (INM), a calcium channel activator, although it stimulated the AR in the presence of NMDA (agonist glutamatergic receptor) and glycine, regardless of the occurrence of OK. Then, it is feasible to speculate that when Stz reach the female genital tract, Sp participates in the activation of NMDA receptor and in the events leading to AR.

**74. WATERFOWL ASSEMBLAGE IN AN ANNUAL CYCLE IN LA ANGOSTURA RESERVOIR, TAFÍ DEL VALLE, TUCUMÁN**

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The concept of bird community is important because it presents attributes such as composition, structure and function, that can be studied and describes, being these attributes exclusive of this organization level. A very used concept in the communities studies is the concept of assemblage or functional groups, which are defined as a conjunct of species with a clear taxonomic position and similar ecologic features. Our aim is to study the structure in assemblage of waterfowl in La Angostura reservoir (26°55' S 65°41' W). The study was carried out between August 2004 and August 2005 and 42 species of waterbirds were registered. The species were assembled in three functional groups over the base of how and where they search (tactics & microhabitats) and what they feed on: 1- Birds that look for food over swimming on the surface (18 sp.), 2- Birds that look for food diving or plunging (5 sp.), 3- Birds that look for food walking on beaches and shallow waters (19 sp.). The resources availability along the year, show as that this wetland is capable to support very different functional groups regarding to reproductive and food requirements.

**75. FORMATION OF THE ODONTOLOGY STUDENT THAT ENTERS TO THE CLINICAL CYCLE**

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The aim of this study was to release the knowledge about some subjects necessary for the attendance of Pharmacology at Dentistry UNT, and to investigate on important topics like citizens. Before beginning the inaugural class of 2005 was made an anonymous test to all students at 4<sup>th</sup> form. The test consisted of 15 structured items about Histology and Chemistry (1<sup>st</sup> year), Physiology (2<sup>nd</sup> year) and of General Culture. From the test the correct answering frequencies were analyzed and related to the other variables such as: a) years of permanence in the career, b) sex, c) age and d) if it attends or not all the subjects of the year. The group was constituted by 85 students, with an average of 24,1 years. The average of years of permanence in the career was 6,5 years. 76% (n=65) were attending all the subjects at 4<sup>th</sup> form. The frequency of students according to the degree of knowledge in the different studied areas was: Histology (67%), Biological Chemistry (20%), Physiology (2%) and General Culture (20%). Sufficient evidence does not exist to assure that the degree of knowledge in all the areas is associated to the sex or the cause that attends or not all the subjects. Sufficient Evidence exists to assure that students who obtained a good level of knowledge in General Culture are younger than those that obtained a regular level, and these are not significantly different from whom obtained a lower level (ANOVA p=0.05). **The student population revealed having a good level of knowledge in Histology in relation to the other subjects, whereas the level in General Culture was regulate.**

**76. BIOLOGY TEST FOR THE CAREER OF MEDICINE ADMISSION SYSTEM AND SIGNIFICATIVE LEARNING ASSESSMENT**

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Significative learning is essential to a Medicine student for it allows him to relate new knowledge with the one already acquired through the recovery of long-term memory information. The aim of this work is to prove whether the learning for the School of Medicine Admission Test in the subject Biology was significative or memorized. For this study, 50 2nd-year students of Medicine participated voluntarily, taking the same Biology test they had in the 2004 admission. The contents evaluated were: cytology, genetics, embryology, histology, physiology, anatomy and public health. Some of these contents are included in 1st year subjects, so students have seen and reviewed them (reviewed contents). Other contents are included in future subjects (unreviewed). The data were analyzed with the t Test. Out of the 25 items in the test, 11 belonged to reviewed contents. Results indicate that the average correct answers for these items was 6.8 in 2004 vs. 8.4 in 2005 (p<0.0001); and for the unreviewed items it was 9.1 in 2004 vs. 10.3 in 2005 (p<0.0002). It would seem that the learning for the Biology test is significative acquisition, which is fundamental as the processes that are automatically constructive require active involvement so as to locate and retrieve it in the necessary context.

**77. APPLICANTS' SELECTION ACCORDING TO THEIR PROFILE TO THE CAREER OF MEDICINE**

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The School of Medicine has implemented for years a carefully regulated Admission System. With an Admission Test, it is tried to select those with a profile according to the one proposed by this academic institution. The aims of this work are: 1) To analyze the efficacy of the Admission Test 2) To apply psychometrical indicators to evaluate the quality of the Test according to the cognitive complex capacities required. The factors analyzed are linked to the efficacy of the Test carried out in the year 2005: Reliability of the test (reliability coefficient c), Grade of difficulty (index of difficulty p) Items discrimination (biserial punctual coefficient rpbis) according to the cognitive capacities involved. It is also considered the objectivity of the grades and how it reflects its goals when elaborating the evaluation. The analysis was applied to all the applicants (n = 978). The results indicate that the Test had a high grade of reliability (c = 0,93) to evaluate cognitive complex capacities: to select, to analyze and to synthesize information, to solve problems and to interpret texts. The items had in general an Average level of difficulty (p = 0,60) and a power of Excellent discrimination (rpbis = 0,43). It is concluded that the Admission Test is valid and reliable for a suitable applicant selection and guarantees the entrance of those that possess certain cognitive complex capacities specified in the medicine school profile.

**78. SALIVA BUFFERS IN CAVITY PROPHYLAXIS**

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Cavities are produced when bacteria ferment carbohydrates, thus producing acids which dissolve hydroxiapatita crystals that form 98% of the enamel composition. Salivary flow with its capacity, consistency and composition decisively influence on the speed of the attack and the organism defence against the cavity. The objectives of this work were firstly, to state the saliva protective effect against cavity formation, and secondly, to determine the buffering power of the saliva buffers in cavity prophylaxis. 47 school students between 6 to 13 years old from 365 School, Piedra Grande, Alpachiri, Tucumán, Argentina were chosen for this work. A quite meticulous buco-dental test was carried out in order to determine the plaque rate (O'Leary) and the Cavity rate (Cyc). The salivary secretion was stimulated for 10 minutes on a piece of rubber one hour after breakfast and after mouth hygiene. The saliva was put in graded sterile glasses and later put on ice. The Salivary Flow Determination Test and Dreizen Test were done on the cooled samples. The results showed that in those cases with more C+c component, more drops of lactic acid were needed for having a 5 pH. In both variables a test was done by the Chi Square Test with Yates correction (p 0.05) and no important differences were found whatsoever. This means independence from them. We can conclude by saying that the results are apparently opposed to Dreizen Theory since the saliva with much buffering power shows a high number of cavities. It is important to take into account that the complete deficiency in mouth hygiene could have modified what was preestablished.

**79. SOYMILK ASSOCIATED TO AN HIPOPROTEIC DIET. THE ROL IN THE GROWTH AND JAW DEVELOPMENT**

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The purpose of this study is to determine for histological and biochemical methods, the roll of the soymilk in mandibular growth and development in an experimental model of protein malnutrition during 30 days. The osteoblastic activity (OBA) and the osteoclastic activity (OCA) was determined in % of the total bone activity. In malnourished animals it was observed that the OBA arriving to  $10 \pm 3\%$  with inverse values in the OCA ( $90 \pm 4\%$ ) (NV: OBA:  $80 \pm 3\%$ ; OCA:  $20 \pm 4\%$ ). The animals fed on protein free diet and water, the histology reveals quali and quantitative changes in the jaw cellular population, with predominance of osteoclasts. In the soymilk diet, OBA as well as OCA stay in values near to the controls (AOB:  $74 \pm 9\%$  AOC:  $26 \pm 8\%$ ). The indicators of bone activity shows an increase in the population of osteoblast, osteoide, osteoclast and lining cell. The rol of the soymilk asociated with protein free diet contributes to: 1- To prevent the effects of the undernourishment. 2- To allow the grow and development for increase of osteoblastics activity. 3- To fix the Ca contributed by the diet.

**80. ANTIFUNGAL COMPOUNDS IN EXTRACTS FROM PHORADENDRON LIGA (VISCACEAE FAMILY)**

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Some hemiparasitic plants of the region, were used by its benefic effects in popular medicine. Preliminar researchs show that *Phoradendron liga* has interesting properties. For this, it could be used in the development of agronomic formulas as pesticides. Our purpose is to detect antifungal activity of its leaves alcoholic extracts against phytopathogenic and xylophagous fungi. Biological activity was detected using bioautographic method and radial inhibition on plates. By the last method we proved that 0.3 mg phenolic compounds/ml of extract inhibits strongly the growing of *Aspergills niger* (96%) and *Fusarium sp* (88%), whereas the *Macrophomina sp* (35,1%) and *Phomopsis sp* (52,03%) show less sensibility. The results obtained are particularly encouraging because the *in vitro* antifungal activity found on the *Phoradendron liga* extracts lets us to suggest its possible use in plants protection from fungi attack that may cause different plagues. Natural products obtained from regional plant may be used to the development of pharmaceutical and agricultural formulas.

**81. LEAF EPIDERMIS OF *CHUSQUEA* AND *RHIPIDOCLADUM* (POACEAE, BAMBUSEAE) FROM TUCUMAN PROVINCE**

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*Chusquea* Kunth and *Rhipidocladum* McClure are American genus of shrubby bamboos. Both of them are represented in Tucumán Province including one species each, *Chusquea lorentziana* Griseb. and *Rhipidocladum neumannii* Sulekic, Rugolo & L. G. Clark. The objectives of this paper are: to describe the abaxial and adaxial leaf epidermis of *Chusquea lorentziana* Griseb. and *Rhipidocladum neumannii* Sulekic, Rugolo & L. G. Clark. and also to determine the micromorphologic characters of taxonomic value to differentiate both entities. Observations were accomplished by means of optical and scanning electron microscopy. The following elements are described on the abaxial and adaxial epidermises: costal and intercostal zones, long cells, short cells, stomata, macro-hairs, micro-hairs, prickles and papillae. The diagnosis micromorphologic characters are the differentiation of costal and intercostal zones, stomata and macro-hairs. The analysis of the epidermises in surface view of both species revealed that differentiation characters do exist for identification.

**82. *RAPHANUS SATIVUS* L. (nabón), A WEED WITH FUNGITOXIC ACTIVITY**

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The search of new substances with antifungal activity to be applied to protect plants and to preserve food and feed is an important task. The aim of our work was the search of fungitoxic principles present in *Raphanus sativus* L. (nabón). *R. Sativus* L. is a weed that spontaneously grows in the northwest of Argentina. The used phytopathogenic and xylophagous fungi and yeasts were isolated, identified and conserved in the Cát. de Fitoquímica, Fac. de Bioq., Qca. y Fcia., UNT. Ethanolic and aqueous extracts were prepared from dry flowers. The biological activity was determined by bioautography, radial growth tests and growth zonal inhibition. The tincture was the most active preparation. Bioautographic assays showed different degrees of growth inhibition on the outlined fungi. Radial growth of xylophagous fungi was inhibited between 30-92% with 0,15 mg of phenolic compounds/mL in the culture medium. The behavior of phytopathogenic fungi and yeasts was variable (21-100% of inhibition). Fungal zonal inhibition showed that the tincture extract has a high inhibition on *Aspergillus nomius* VSC 23 and *Aspergillus flavus*. Our results revealed the presence of biomolecules with activity in the ethanolic extracts of *Raphanus sativus* L. (nabón).

**83. PREVAILING OF NON-LIPIDIC CARDIOVASCULAR RISK FACTORS IN A POPULATION OF STUDENTS**

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**Introduction:** Cardiovascular disease is the main cause of death in industrialized countries.

**Objective:** To know prevailing of nonlipidic cardiovascular risk factors in a population of students of both sexes between 19 and 25 years.

**Materials and methods:** The population was of 195 women and 66 men. Corporal mass index, a questionnaire to register familiar antecedents of cardiovascular morbidity-mortality, arterial pressure and heart rate in 3 opportunities were registered. **Results:** a significant difference for values of systolic, diastolic, mean arterial pressure, and corporal mass index ( $p < .01$ ) was registered.

**Conclusion:** Results show a high index of risk factors and hypertension.

**84. EVALUATION OF COMPREHENSION AND LEARNING PROCESSES OF PHYSIOLOGY STUDENTS FROM THE FACULTY OF ODONTOLOGY OF THE U.N.T. (FOUNT)**

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Some inconveniences such as *independent study*, are observed in Physiology students. The lack of adequate strategies for a proper learning is a problem to be solved if we want to improve mechanized studies. In order to investigate this problem, the objective of this paper was to learn about the Learning Strategies of the students. An anonymous survey elaborated by the Instituto Coordinador de Programas de Capacitación (ICPC) was carried out on 126 students which were coursing the subject in the year 2004. As to reading comprehension, 82% of the students related the information with other topics, 69% compared the information with other authors, 54% classified the information. 69% of the students made summaries, 37% synthesis, 86% diagrams, 17% files, 28% charts, 44% comparative diagrams. Once the information was organized and elaborated, 32% apprehended, 43% made diagrams, 15% practices and 9.5% carried out other techniques. If the pupils recognized their own processes, selected strategies for a constructive learning and verified the ones they are using, they would have the essential tools for college time.

**85. PREVIOUS KNOWLEDGE OF BIOPHYSICS IN STUDENTS FROM THE FACULTY OF ODONTOLOGY OF THE U.N.T.**  
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One of the problems found in college education is the low performance of the students in the subjects which they regularized or passed in previous years. The objective of this paper is to assess the previous knowledge of Biophysics in students who are about to course physiology. The population was composed by 184 students in the second year of the Physiology Department of the FOUNT. A diagnostic anonymous evaluation was carried out. The questionnaire consisted of twenty six structured, comprehension and application questions, about topics related to both subjects. The maximum score was predetermined in twenty six. Scores from 0 to 16 with an average of 6.7 were obtain. 50% of the students obtain 6 or a lower score. The scores increased significantly ( $p < 0.001$ ) over the recent years in which the students entered the FOUNT and they passed Biophysics. Conclusion: the non significant learning and the time passed since they joined the university have a mayor influence on the low previous knowledge needed to generate new concepts. Better articulation between the two subjects is needed.

**86. INHIBITORY ACTIVITY OF PLANT EXTRACTS FROM ARGENTINIAN NORTHWEST ON THE MEMBRANE LIPID PEROXIDATION**  
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Free radicals are non-stable species that react with biomolecules (e.g. proteins, nucleic acids, lipids). When the target are the membrane lipids, they start a chain reaction, known as lipid peroxidation, with serious consequences as the decrease membrane fluidity, increase phospholipid exchange between monolayers, increase leakiness, loss of membrane protein function and eventual loss of integrity becoming the cellular lysis. Antioxidants are substances that can avoid these effects by neutralizing free radicals. The aim of this work was the measurement of the inhibitory activity of 12 plant extracts on the lipid peroxidation. The assay determinates the ability of a substance to prevent the generation of malondialdehyde (a compound produced by lipid hydroperoxide decomposition). Our results showed *T. acutifolius* (tincture) and *P. cuneifolius* (infusion and tincture) as the most active extracts. These findings turn the mentioned species as interesting natural sources of antioxidant substances.

**87. OSMOPROTECTIVE METABOLITES IN *PROSOPIS CHILENSIS* (Mol) Stuntz. PLANTS UNDER OSMOTIC PRIMING**  
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In the arid regions, plants growth is limited by hydric deficit and salinization. Under these conditions, plants produce osmoregulating substances (proline, betaine, glicilbetaine and carbohydrates), which contribute to maintain both hydric and osmotic potential. Priming techniques improve abiotic stress tolerance in *P. chilensis* seeds and plants. This work objective was to determine whether sucrose and proline would be involved in the tolerance mechanism to *P. chilensis* salinity. Unprimed and primed seeds with NaCl 1M were incubated in NaCl 0, 150 or 300 mM solutions. Sucrose and proline were determined in roots and cotyledons by spectrophotometry. Results showed a differential response in both analyzed organs. Under NaCl 150 mM, sucrose and proline levels were increased in roots, while in cotyledons it was only observed a proline increase. In primed plants, under NaCl 300 mM both metabolites were increased. In unprimed plants a grant increased in sucrose content was observed. This response will be associated to early senescence.

**88. SUBCLASS IIa BACTERIOCINS PURIFICATION AND OVEREXPRESSION STRATEGIES**  
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The bacteriocins secreted by Lactic Acid Bacteria (LAB) have a promisorious future as biopreservatives in food industry. Class IIa bacteriocins have demonstrated strong antilisterial activity and a consensus YGNGV amino acid motif near the N terminus. These peptides act by pore formation in the cellular membrane and consecutive dissipation of the proton motive force. Enterocin CRL35 is a 43-aa peptide produced by *Enterococcus mundtii* CRL35. The complete biosynthetic cluster of this peptide was successfully cloned, sequenced and expressed in *Escherichia coli*. The aim of this work was to obtained large amounts of purified bacteriocins. Specific primers were designed to amplified the coding region for the mature peptide of enterocin CRL35. This ORF was cloned using pET28b(+), pGEX4T-3 y pBAD24, and transformed in *E. coli* BL21(DE3). Also enterocin A, divercin V41 and enterocin CRL35 were purified from the culture supernatant by precipitation with ammonium sulfate and by solid phase extraction chromatography C18. The purified extracts are being used for structure/activity assays to plan the future application strategies in a food model.

**89. ANTIMICROBIAL EFFECT OF XENOPHYLLUM POPOSUM ON ACTINOMYCES NAESLUNDII**

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The control of dental caries involves the mechanic elimination of dental plaque with the use of antimicrobial agents. The inhibition of *Actinomyces naeslundii*, associated to this disease, due to ethanolic extract of *Xenophyllum poposum* was demonstrated by our laboratory. The aim of this work was to determine the Minimum Inhibitory Concentration (MIC) and Minimum Bactericide Concentration (MBC) of the ethanolic extract of *X. poposum* on *A. naeslundii*. Dilutions of 1%, 5%, 10% and 20% of extract were assayed.  $DO_{560\text{nm}}$  at 0, 24 and 72 h was determined and the count of colonies in Thioglycolate Agar was made to determine MBC. All the tests were made by duplicate.

Results: 1) The MIC of the extract in study was 10%. 2) The MBC was 10%.

Conclusions: The determination of MIC and MBC of the ethanolic extract in study is important to control of *A. naeslundii*. Alternative therapies must keep in mind the ecological aspects of oral cavity to maintain the balance of the total microbiota in mouth.

*Subsidized by the Research Council of UNT and Laboratory NAF*

**90. EVALUATION OF INFECTION CONTROL IN STUDENTS OF FAC. OF DENTISTRY. UNT**

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It is necessary to standardize the preventive measures inside the Program of Infection Control in Faculty of Dentistry. The objective of this work was to evaluate through questionnaires to students of Fac. of Dentistry-UNT, on knowledge and application of the norms of infection control.

It was compared to students' groups according to time of coursed in Microbiology. A multiple and anonymous survey of questions was designed. Results: 53% is immunized for HVB; 93% uses physical barriers; 86% make a correct sterilization; 67% recognizes the importance of the handwashing; 87% assumes that the all healthcare is responsible in the prevention of cross-infections. We empathize the percentage of negative answers: 73% doesn't carry out disinfection of surfaces; 76% doesn't purge the pipes of the dental water lines; and 50% not know the measures in postexposure accidents.

Conclusions: The students know the risks to those that are exposed in the clinic. It should be carried out monitoring and surveillance in the clinical practices, immunization for HVB and to insist in the Prevention Postexposure.

*Supported by CIUNT.*

**91. COMPARATIVE STUDY BETWEEN PLANT EXTRACTS (CAESALPINIA PARAGUARIENSIS) WITH ANTIBACTERIAL ACTIVITY AND SYNTHETIC ANTIBIOTICS OF FREQUENT APPLICATION IN ANTIINFECTION THERAPY**

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The aim of this study was the evaluation of the *in vitro* antibacterial activity of *Caesalpinia paraguariensis* extracts (Infusion, Decoction and Tincture) against 22 bacteria. This activity was compared with that of synthetic antibiotics. Synthetic drugs: Amoxicillin and Ciprofloxacin, were chosen taking into consideration their antibacterial spectrum, action mode and mechanisms, theirs frequency of use as therapeutic indication. Streptomycin sulphate, an ample spectrum antibiotic, was employed to compare the plant pathogenic action. We determined MICs and MBCs by broth microdilution method, and agar dilution method respectively (Muller Hinton medium). Although plant extracts and synthetic drug MICs and MBCs are not comparable from a quantitative point of view, some strains were sensible to the assayed extracts and simultaneously resistant to synthetic antibiotics. Moreover, we will use them as reference in the bioactivity-guided purification process.

**92. ANTIBACTERIAL ACTIVITY OF CAESALPINIA PARAGUARIENSIS EXTRACTS**

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The ethnomedicinal use of plants reveals their importance as source of bioactive compounds and orients us toward the search of new substances with potential therapeutic applications. The objective of this study was to validate the antibacterial (AB) activity of extracts of a native species of Argentinean North, used in popular medicine as vulnerary. Guayacán (*Fabaceae*) bark extracts (Infusion (I), Decoction (D) and Tincture (T)), according Argentine Pharmacopoeia VI Ed., were assayed against 22 bacteria: Gram (+) and Gram (-) isolated from superficial wounds, ATCC and plant pathogenic bacteria (CECT). Broth microdilution and agar macrodilution techniques were employed in Muller Hinton (MH) medium. MIC and MBC values were determined. All tests were performed by quadruplicate. The extracts have a wide antibacterial activity, showing an evident growth inhibition and bacterial death on all the assayed strains. MIC values of I and D were 20-300 and 24,9-398,7 µg. Extracted Material / 100 µl, respectively, that are higher than T AB activity (20-650). MBC values were coincident or higher than MIC values.

**93. FUNGITOXIC SUBSTANCES FROM ETHANOLIC EXTRACTS OF *GEOFFROEA DECORTICANS***

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Plants are exposed to adverse environmental conditions and to pathogen invasion by fungi and bacteria. In answer to these problems they can produce many compounds to protect themselves.

In this work we studied the fungitoxic effect of ethanolic extracts of aerial parts of *Goffroea decorticans* (chañar), tree widely distributed in the center and north of Argentina. It can inhibit the growth *in vitro* of various phytopathogenic fungi isolated from infected plants of the region. By solvent partition in *batch* we can separate a bioactive fraction with ethyl-acetate. From the comparison of Minimal Inhibitory Concentration (MICs) we showed that the bio-cidal activity occurs as follows: synthetic compounds > ascorbic acid > ethyl-acetate fraction > whole extract.

In conclusion, the fungitoxic activity exerted by isolated substances of *G. decorticans* suggests many interesting perspectives for the use of biological control methods on plant protection against phytopathogenic fungi, minimizing environmental impact and reducing dependency on chemicals. With the development of pesticide-resistant strains, the replacement of chemicals by alternative natural products is of considerable interest in the agriculture.

**94. ANALYSIS OF GENOTOXICITY OF ARGENTINIAN NORTHWEST PLANT EXTRACTS**

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Genotoxicity is a substance ability to bound DNA specific sites. Some bioactive drugs show genotoxic effect under certain conditions. This research's aim was to evaluate the genotoxicity of argentinian northwest plant extracts used in folk medicine. Microplate *Bacillus subtilis* "rec assay", based on the differential growth of two *B. subtilis* strains (called rec+ and rec-) against a genotoxic substance was used. The enclosed area between the survival curves of both strains was calculated (S-probit) for each extract to evaluate the genotoxicity. *T. acutifolius*, *P. cuneifolius* and *J. rhombifolia* tinctures showed strong genotoxic response (S-probit > 0.593), while *L. sibiricus* tincture showed no genotoxic response (S-probit between -0.123 and 0.199). K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> and Dimethylsulfoxide were used as strong genotoxic and no genotoxic drugs (S-probit 2.95 and -0.302 respectively). *B. subtilis* "rec assay" proved to be a powerful tool for the genotoxicity evaluation of any substance.

**95. MICROPROPAGATION OF TWO NEW VARIETIES OF POTATO (*Solanum tuberosum*) AT THE ESTACIÓN EXPERIMENTAL AGROINDUSTRIAL OBISPO COLOMBRES (EEAOC)**

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EEAOC and INTA Balcarce have developed two new varieties of potato called "Churqui" and "Tafinista". Four viruses of significant importance affect this species (PVX, PVY, PRLV and PVS) and the meristem culture technique was used to eliminate them. Uninodal segments were disinfected by submerging in 70% ethanol for 1 minute, 2% sodium hypochlorite for 15 minutes and rinsing 3 times with distilled water. The meristems extraction (0,3- 0,5 mm) was made with the aid of a binocular magnifying glass. Ex-plants were incubated at 25°C, 2000 lux luminance intensity and 16-hours photoperiod. After 40 days, for Churqui variety and, 60 days for Tafinista, 5 cm plantlets were obtained, which multiplied by cutting stems in segments with a bud and transferred to multiplication medium. Subcultures were made every 30 days. Multiplication average rate was 8 for Churqui and 3 for Tafinista. The sanitary diagnosis will be made by using immunoenzymatic technique Enzyme Linked Immunoabsorbent Assay (ELISA) and will be propagated only those virus free lines.

**96. STUDIES OF THE METABOLISM OF A RICH DIET IN TRANS FATTY ACIDS**

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In this work the effect of a rich diet in *trans* fatty acids (from a commercial hydrogenated vegetal oil) in Wistar rats is studied. Commercial maize oil was used as *cis* fatty acid source and control sample. 32 Wistar rats, males, between 100-120 g, assigned in 2 groups of 16 animals each one, fed during eighty days with isoenergetic diets, were used in the tests. Different controls were made: dairy consumption and weight of the animals, triacylglycerol (TG) and cholesterol concentrations in extractions of blood samples by enzymatic methods. The collected data showed that triacylglycerol and cholesterol concentrations in blood samples were superior in the animals fed with hydrogenated vegetal oils, being the triacylglycerol level a 38% more and the cholesterol level a 9% more than in the control diet. In relation to the weight, the rats fed with the rich diet in *trans* fatty acids increased a 26% more than the ones fed with the rich diet in *cis* acids in the 40 first days, but at the end of the test the difference was only of 5% between both lots. Consumption was superior in a 23% in the first period, but there were no differences towards the end of the test. It can be concluded that the rich diet in *trans* fatty acids have a behavior similar to saturated fatty acids, showing an increase of cholesterol and triacylglycerol levels, but no significative differences were observed in terms of weight and consumption at the end of the test.

**97. EVALUATION OF THE DICTATION OF A ORIENTED ELECTIVE SUBJECT TO THE CONSERVATION OF THE ENVIRONMENTAL**

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The present work shows to the results of surveys, seminars and examinations obtained in the subject: «Residual Waters» as it forms to demonstrate the thematic impact produced in the environmental one with the dictation of this course. The subject, of a fourth month period of duration, consists of classes weekly 4 theoretical-practices of hours where problems applied to real cases of treatments of effluents are solved and be exposed by the students. The students attended it in group reduced just in the second year of their offer, regularizing and promoting all, As of that moment the number of new recruits took an important height and happened to be elevated, surpassing widely the expectations and extending the frame of the race: Chemical engineering, to summon students of other races and other academic units. Another profit that is possible to emphasize is that the subject managed to wake up in some students next to graduate a special treated interest in the thematic one. It is as well as some of them, at the moment for being received decided to decide on scholarships to specialize in environmental subjects and in individual in the design of plants of treatment of residual liquids, thus five withdrawn at the moment are in the outside making studies of fourth level in this subject.

**98. PECTIN EXTRACTION AND IDENTIFICATION FROM LEMON AND CAYOTE**

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Pectins are structural elements of the cellular system of plants. Their main component is the poligalacturonic acid partially esterified with methanol.

Raw material, lemon peel and cayote fibres mixed with shell and seeds, was dried and milled to increase the superficial contact area. The acid hydrolysis was done by hot extraction working at pH 2,5 during 90 minutes. The solution was filtered after resting 30 minutes. Ethylic alcohol was used for pectin precipitation. Pectin was filtered, washed and dried until constant weight. In order to homogenize particle size it was milled in a mortar.

The quantitative and qualitative determination of galacturonic acid was carried out by molecular absorption spectrophotometry. In all the cases the maximum absorbance was at 443 nm, which is the characteristic longitude of the acid.

It is possible to obtain a good powered pectin. Yellow pectin was obtained from lemon peel while a brilliant brown one from cayote fibres mixed with shell and seeds.

**99. INHIBITORY EFFECT OF LACTIC ACID BACTERIA AGAINST POULTRY INTESTINAL PATHOGENS**

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The objective proposed for the development of this work was to study the interaction of probiotic BAL poultry with intestinal pathogens. The isolation of indigenous intestinal pathogenic was carried out employing selective and differential media. For the study of the capacity of inhibition were employed two technical *in vitro*: i) diffusion in agar; ii) mixed cultures (the interaction was followed by measuring optical density and CFU/ml).

A high percentage of enteric bacteria were isolated from gastrointestinal tract of chicken (*E. coli*, *Salmonella*, *Shigella*). Poultry BAL showed inhibition effect against a few enteric strains, *Salmonella*, *E. coli*, *Shigella*; and this antibacterial activity was due to the effect of acid substances. Mixed culture studies indicated that selected BAL was able to inhibit the development of some intestinal pathogens (*Shigella* sp) as thus also an antibacterial effect on other intestinal pathogens (*E. coli*, *Salmonella*).

We can conclude that the poultry BAL presented beneficial effects al to inhibit and/or to kill poultry indigenous pathogens, and this effect due mainly to the effect of acid substances.

**100. VIABILITY OF ENCAPSULATED LACTIC ACID BACTERIA**

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Encapsulation is a process used to protect substances against oxidation, to improve their transport, etc.

There is a wide kind of coating materials: hydrogenated oils, starches and gums like sodium alginate.

The aim of this work was study the viability and survival in gastrointestinal conditions of probiotic lactic acid bacteria encapsulated in calcium alginate.

The optimal encapsulation process was achieved using same relation (v/v) of non fat milk cell suspension (20%) and sodium alginate (1,8%). It was also added EDTA (1%) This mixture was aseptically dropped in calcium chloride solution (0.1M) bringing up capsules.

The survival of encapsulated bacteria in simulated gastrointestinal conditions was studied

Electron microscopy was used to demonstrated shape and structure of capsules and also presence of viable cells inside them.

The results of this study indicated that calcium alginate encapsulation protects lactic acid bacteria of gastrointestinal conditions Our data demonstrated that calcium alginate capsules were able to keep viable cells inside them and therefore they could be used as a safe delivery vehicle for administering probiotic bacteria.

**101.**  
**OXIDATIVE BURST IN DEFENSE RESPONSE IN *Fragaria x ananassa* – *Colletotrichum* sp. INTERACTION**

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A rapid and transient generation of AOS (Active Oxygen Species) in *F. x ananassa* leaves challenged with an avirulent isolate of *Colletotrichum* sp. that produces an incompatible interaction, was observed. However, the latter phenomenon did not take place with fungal pathogens that produce compatible interactions. The aim of the present work was to demonstrate the importance of this “oxidative burst” in the establishment of defense response. In order to confirm this hypothesis, we have used the system glucose (2.5 mM)/glucose oxidase (2.5 U/mL) (G/GOD) to provide a sustained accumulation of H<sub>2</sub>O<sub>2</sub> on leaves to mimic the pathogen-induced oxidative burst. Our results showed that when the G/GOD system is applied simultaneously to the infection with the virulent pathogen that produces a compatible interaction, anthracnose symptoms were not observed in plants. However, when strawberry leaves were pretreated with the G/GOD system 1 h before the infection, the generation of H<sub>2</sub>O<sub>2</sub> was enough to abolish the disease symptoms in strawberry.

**102.**  
**ISOLATION AND CHARACTERIZATION OF RHIZOBIUM HEAVY METALS - RESISTANT STRAINS**

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Heavy metal soil contaminations from industrial activities such as mining, ore processing, smelting and metal plating can easily create local conditions of high metal concentrations which could lead to hazardous effects on humans, animals and environmental balances. One solution of these problems can find in the bioremediation of polluted soils using plants and microorganisms.

Four strains of *Rhizobium* were isolated from soil samples collected from arable camps with soya and alfalfa; and from nodules of legume plants of genus *Vicia* sp. 16S rDNA restriction digestion of 1,500 bp amplicon with *Cfo*I and *Hpa*II showed only two restriction pattern for all the strain. Qualitative and semi quantitative assays showed that all strains were resistant up to 1mM of CuSO<sub>4</sub> and up to 0.05 mM of CdCl<sub>2</sub>, however A1 and S1 were tolerant up to 0.27 mM of CdCl<sub>2</sub>.

The results of this work contribute to bear the hypothesis to use *Rhizobium* strains associate with legume plants in bioremediation of polluted soils with heavy metals.

**103.**  
**Cr (VI) DISMINUTION BY *Streptomyces* MC1 IN SOIL EXTRACT MEDIUM**

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Chromium is usually found in nature in its trivalent (III) and hexavalent (VI) state. Cr (VI) are 1,000-fold more toxic and mutagenic than Cr (III) compounds because are highly soluble in water, diffusion through biological membranes and subsequent interaction with intracellular proteins and nucleic acids. One alternative to this problem is metal reduction from Cr (VI) to Cr (III) by microorganisms. Actinomycetes are a group of bacteria, with high potential in bioremediation processes. *Streptomyces* MC1 strain was previously selected by its resistance to Cr (VI). To optimise the culture conditions, SE medium was inoculated with *Streptomyces* MC1, and it was tested different temperatures (25, 30 and 35°C) and pHs (5, 7 and 9). For study Cr (VI) resistance, *Streptomyces* MC1 have been grow in SE medium containing Cr (VI) 10 mg l<sup>-1</sup> under optimum conditions of growth for 4 days. Cr (VI) concentration was analyzed using diphenilcarbazide. The optimal conditions were at 30°C and pH 7. In SE medium in presence of Cr (VI), the major disappearance of metal was carried out into the firsts 24 hours of growth (40%) and then it kept a constant value. These results confirm that *Streptomyces* MC1 has a very high potential to be used in bioremediation soil process.

**104.**  
**CHARACTERIZATION OF THE COPPER ACUMULATING CAPACITY OF A BIOREMEDIATION POTENTIALLY USEFUL ACTINOMYCETE STRAIN**

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Actinomycete strain AB0 was isolated from sediments of a copper polluted drainage channel. This strain was capable of growing in copper supplemented synthetic media, soil extract and soil. In all cases, copper accumulation was demonstrated by a reduction of residual copper in the medium and by the presence of intracellular copper in subcellular fractioning assays. The aim of this work was to search proteins responsible for the cytosol copper accumulation observed in AB0 strain. On the other hand, a screening for plasmids was performed using different techniques, in order to determine if the nature of this copper accumulation capacity is chromosomal or plasmidic. Gel filtration chromatography coupled with atomic absorption spectrometry identified specific intracellular copper associated proteins. Plasmids were not detected in AB0 strain using alkaline lysis method for screening of regular plasmids and pulse field gel electrophoresis for megaplasmids. This could indicate that the copper accumulation related genes are chromosomally located.

**105. COMPARISON OF INTRAORAL RADIOGRAPH TECHNIQUE FOR LOWER THIRD MOLARS SURGERY: PRELIMINARY STUDY**

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The objective of this work was evaluate through different radiograph techniques (retro alveolar bisectal, parallaje and parallelism) all the information about lower third molars' root structure. Those techniques were performed to seven patients. Only one observer did the inform: total number of roots; number of mesials' roots; curvature of mesials' and distals' roots; and disposition; between all the Rx techniques previously named. The results show that with the bisectal and the orthoradial technique, 71,4% of the lower third molars observed had two roots; when modifying the horizontal angulations of the central ray, 42,9% of the roots were fusioned and the 57,1% were separated. With the orthoradial technique, and the one varied from mesial and distal, 28,6% of the roots were fusioned and 71.4% were separated. For mesials roots, with bisectal and Orthoradial technique, 57,1% had only one root, and the 42,9% left had two roots, but when modifying the angulations from mesial and distal, 85,7% had one root, and 14,3% had two roots. Conclusion: A higher percentage of cases where roots are separated is observed when modifying the angulations of the central ray in parallaje technique and it also improves the visualization of mesial's root curves, all very useful parameters to predict the kind of difficulties the surgeon could face during surgery.

**106. SOME ALOE GOODNESS**

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The Aloes had been used along the human history until our days in several sicknesses. The aim of this work is detach the aloe medicinal values and its popular uses, just as a first approximation to later chemistry and botany studies. A search on bibliography, the most common uses at folk belief was asked using semi structured interview at people, dermatology doctors about the way they prepare the aloe and the results obtained. The two principal products obtained from the Aloe are: the acíbar and the gel, which are very different between themselves, as chemical, pharmacology as therapeutic point of view. The most common Aloe preparations have a great medicinal value demonstrated by the tissue regeneration at dermal level results. People obtained excellent results in radiation cases, in skin dryness, allergies, insect's bites or nettle. The application of fresh leaves mitigate the irritation. Eating pieces of fresh leaves, calm the digestive acidity, at internal uses of Aloe, it is very difficult demonstrate its efficiency, like in asthma, rheumatic pain, anemia, kidney infections, cancer, etc. It is very efficient in digestive disorders and ulcer gastric. The problem in chronic or internal disease is that the patient does not use only Aloe therapy, but several at once. This is a first approximation about the Aloe uses in popular medicine.

**107. ANTAGONISTIC ACTION OF RHODOTORULA GLUTINIS AGAINST PATHOGENIC FUNGI OF LEMON**

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It was studied the antagonistic action between *Rhodotorula glutinis*, and pathogenic fungi of lemon: *G. candidum*, *F. moniliforme*, *A. clavatus*, *P. expansum* and *P. digitatum*. Were made solid assays to evaluate the existence of antagonistic action. A suspension of *R. glutinis* ( $1 \times 10^8$  UFC/ml) was dispersed all over the surface of Sabouraud plates, after 1 h at room temperature, was carry out in the center of the plate a hole, it was filled with 20 ul of phytopathogenic fungi ( $1 \times 10^4$  spores/ml). The plates were incubated during 5 days at 28°C, after this time the percentage of inhibition of phytopathogenic growth was evaluated. In presence of *R. glutinis* was observed a total inhibition of *G. candidum* growth, (sour rot). There was also a total inhibition of *F. moniliforme* growth (saprophytic fungi of lemon), that produced a cotton-like material and gave bad aspect to fruits. The growth of *A. clavatus*, *P. expansum* and *P. digitatum* (green mold) was inhibited among 75-80%. Our next objective will be determinate the mechanism of action of this biocontrol agent.

**108. IN VIVO STUDY OF ANTIFUNGIC ACTION OF BACILLUS SPP. METABOLITES**

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It was studied antifungic action of *Bacillus spp.* metabolites (BM) by *in vivo* assays. **Assay A:** We worked with 3 lots of lemons. The first lot had farmy lemons (without any treatment), second lot had lemons treated with  $\text{NaHCO}_3$ , hot water and synthetic antifungic agentes (SAA). In third lot were lemons treated with  $\text{NaHCO}_3$ , hot water and BM. **Assay B:** We worked with four lots of lemons. The first lot had lemons with  $\text{NaHCO}_3$ , hot water, SAA and wax. The second lot had lemons with  $\text{NaHCO}_3$ , hot water, SAA and wax. The third lot had farmy waxed lemons and in the last lot had lemons treated with BM and wax. All lemons were placed in boxes. All boxes were placed 3 weeks at 4°C and them one week at room temperature. The % disease was determinated at 7 – 30 days. In assay A the lemons treated with BM were infected 30% and the disease of farmy lemons were 100%. In assay B the lemons treated with BM were infected 20% while 90% disease of farmy lemons were observed. In both assays the % disease of lemons treated with SAA was 0-1%. It was demonstrated that wax have an protective effect, because the % disease saw in assay B was lower than the observed in assay A. These results are accord with the obtained, previously, *in vitro* assays.

**109. RADICAL SYSTEM OF VEGETABLE SPONGE (*Luffa cylindrica* (L.) Roem.) SEEDLINGS: THEIR MORPHOLOGY AND DEVELOPMENT**

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In the present paper, radical system of vegetable sponge (*Luffa cylindrica* (L.) Roem.) is characterized, during the first twenty days of its growth. Vegetable sponge seeds were sown in flower pots with a transparent flat face (50% soil and 50% sand). Root growth was been tracing every day. Average data obtained from the traces permitted characterize morphology and initial growth of radical system. The vegetable sponge radical system is typical, with a main axis and lateral ramifications. Principal root reached 32 cm of depth during the first 20 days of the experience. First order ramifications born in the third day from the sowing, when principal root reaches 8 cm of length. These ramifications are plenty in three zones, separated by scarce or void ramification sections. The most frequent angle formed by lateral roots with the main axis is 80°. The growth rate of the principal root varies between 1 and 2 cm per day, coinciding the smaller values with the stretching of the first order ramifications.

**110. USE OF SUSTAINABILITY INDICATORS IN WATER IN ORDER TO EVALUATE ANTHROPIC IMPACTS. TUCUMAN - ARGENTINA**

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The indicators are used in the management of the environmental resources, giving information of the state and intensity and direction of possible changes.

Objective of the work: elaborate and select water indicators that allow research the availability and quality water resource in terms or sustainability. The Marapa river was compared at 1- river basin high S27°37'26,8 "W65°44'21,2" with 2- low river basin S27°39'22.6 "W65°14'41" The samples were taken at April and May 2005. Variable analyzed and results: pH (method APHA QPT 35-23) diminution 13.16% April, increase 6.6% May; Electrical Conductivity (method APHA QPT 35-23) diminution 37% April, increase > 100% in May; Chemical Demand of Oxygen (method APHA QPT 35-23) increase > 100% both months; nitrite (by colorimetric method) without variations May and increase > 100% April; Total Coliform (by CAA QPT 40-51) increases in both, Faecals Coliform (by CAA QPT 40-66) equal previous; *Aeruginosa Pseudomona* (by modified APHA QPT 40-67), absent and *Salmonella spp* (by modified APHA QPT 40-68) present.

Conclusion: they are recommendable parameters like indicators, by its sensitivity.

**111. PARAMETER'S ANALYSIS OF SOIL QUALITY LIKE INDICATORS OF SUSTAINABILITY IN GRAIN CULTURES. TUCUMAN, ARGENTINA**

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In sustainable agriculture the management of agro-ecosystems requires of the use of indicators for the research of the tendency in the three pillars of the sustainability. Objective: establish if the parameters of soil quality can be used like indicators of sustainability in an ecosystem of the Chacopampeana plain, under production of grain cultures in direct sowing, in reference to the native forest. Analyzed parameters and results: Structural stability SS (Method of Leenher and Boodt) less 60%, Bulk Density BD (method of the cylinder) more 16%, pH (potenciometry) more 20%, total Nitrogen N (Kjeidal method) less 52%, and Organic Matter MO (method of Walkley and Black) less 49%. Made the statistical analysis (Test of comparison of averages) the differences were highly significant. In order to evaluate sensitivity like indicator of sustainability of the five studied parameters, each one were analyzed with respect to fourteen characters, assigning the value *one* to the positive answers and *zero* to the negatives, obtaining the following results: SS 10 (ten); BD 12 (twelve); pH 13 (thirteen); Total N and MO 14 (fourteen). Conclusions: the studied parameters can be recommended to be including in a set of indicators of sustainability in a system soybean - wheat in agroecosystems like the studied one.

**112. ANALYSIS OF THE RESISTANCE TO *Colletotrichum gloeosporioides* OF *Fragaria x ananassa* Duch. CULTIVARS AND WILD GENOTYPES RELATED TO CULTIVATED STRAWBERRY**

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Anthracois is one of the strawberry diseases that cause great losses in the crop. Three species of *Colletotrichum* are reported as casual agents of this disease: *C. acutatum*, *C. fragariae* and *C. gloeosporioides*. In this study the susceptibility of wild species (coming from different regions of the NOA and the world) and cultivated strawberries were evaluated with an isolated of *C. gloeosporioides*. The wild species used were: *Duchesnea indica* (Andrews) Focke, *Duchesnea indica* (Andrews) Focke f. *albocaput* Naruhashi, *Duchesnea crhyssantha* (Zoll & Moritz) Miq., and the commercial varieties were: Seascape, Milsei Tudla, Selva and Gaviota. Plant susceptibility was determined by evaluating the Disease Severity Rating (DSR) in petioles with a 1-5 scale. Plants were evaluated 50 days after the infection. Results indicated that wild species and the cv. Gaviota are resistant to this isolate, whereas Seascape, Milsei Tudla and Selva proved to be more susceptible to this fungal pathogen. These results also showed a strong cultivar/pathogen interaction, in which the cultivars react in a different way to the inoculation with the same isolate.

**113. PRESENCE OF FLAVONOIDS IN *POHLIA INTEGR* (BRYACEAE, MUSCI)**

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The aim of this work is to analyze the presence of flavonoids in *Pohlia integra* in order to contribute to the chemical knowledge of the bryological flora of subtropical Argentina. Up to now there are not phytochemical data of the genera in the bryological literature. The plants of *Pohlia* are easily recognized by the lax laminal cells of very shining yellowish color and numerous red rhizoidal tubers. These species characterize the environments of height. The flavonoids of *Pohlia integra* which is recorded for the first time for Argentina, are analyzed.

Like preliminary phytochemical study, in the bidimensional chromatography, *Pohlia integra* has shown, only one compound of low value of R<sub>f</sub> in AcOH 15% and high in TBA, dark brown coloration to the ultraviolet light in presence and absence of ammonia fumes and yellow with reactive NA (Naturstoffereagenz).

According to these results, and the spectral ultraviolet/visible data, it is inferred that the isolated compound belongs to the structural type of the biflavonoids, being the presence of these metabolites very common in bryophytes.

**114. PREVALENCE OF ORAL LESIONS ASSOCIATED TO THE INFECTION FOR HPV**

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The aim of the present work was to determine the prevalence and distribution by age, sex and location of oral lesions by HPV in the Estomatological Service FOUNT during the years 2001-2004. **Methodology:** the used methodology was the clinical Exam and the anatomopathological study of the lesions. The information gathered in clinical histories and protocols was summarized in charts of frequency of simple and double entrance.

**Results:** of the total of 1447, 173 patients presented virose illnesses. For the obtaining of the results the pathologies were grouped by virus type being of more prevalence those originated by SHV type I, 152 patients HPV 13 patients Varicella-Zoster 5 patients *Urtiano* virus 2 patients and *Paramixo virus* 1 patient.

The most frequent distribution for age in infections by HPV was understood between 11 and 24 years.

Related to the sex there was observed more frequency in masculine sex (61,53%) than in feminine (38,46%). The most frequent localization was lips (53,84%) followed by tongue (23,07%) commissure (15,38%) and Jugal mucous (7,69%). **Conclusions:** infections by HPV are factors of risk in Oral carcinogenesis that is why the dentist must Putemphasis in their prevention, precocious detection and treatment.

**115. CA(OH)<sub>2</sub> PASTES ON MICROHARDNESS AND ACTION ON THE SURFACE OF ROOT DENTIN**

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Ca(OH)<sub>2</sub> is very used in Endodontics as a topical medication during the treatment of necrotic teeth. Microhardness is a biomechanical property sensitive to changes of the surface and composition of the tooth. The aim of this work is to evaluate the action of the Ca(OH)<sub>2</sub> associated to distilled water (DW) and propilenglicol (PG) on the microhardness of root dentin and to microscopically evaluate the changes of the tooth surface. The root canal of 10 recently extracted human teeth was instrumented and 20 disks of 2 mm thickness were cut, included in acrylic resin and the surface was refined. Dentin disks were treated with Ca(OH)<sub>2</sub>+ DW and PG, and placed at 37°C. Microhardness was measured at times 0, 3, 7 and 14 d. A Vickers durometer was used, applying a 300 g force in 15 s; each disk received 5 indentations to 1 mm of the root canal. Observations were performed in a Metallographic Optic Microscope. Results were analyzed by ANOVA and T Test. With Ca(OH)<sub>2</sub>+PG a significant decrease of the microhardness was observed from 7 to 14 d with regard to the control. With Ca(OH)<sub>2</sub>+DW a decrease of the microhardness was observed at day 7 but not significant with regard to the control. Hardness decrease was significantly higher with Ca(OH)<sub>2</sub>+PG than with Ca(OH)<sub>2</sub>+DW. Microscopic changes were observed from the 7 d for the two pastes. Pastes of Ca(OH)<sub>2</sub> diminished the hardness and affected dentinal surface.

**116. INDUCTION OF CHRONIC GASTRITIS IN MURINE MODEL. PREVENTIVE EFFECT OF LACTIC BACTERIA**

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Exopolisaccharides (EPS) from lactic bacteria have been claimed to have immunostimulatory and anti-ulcer effects in the host. **Objective:** To evaluate the potential preventive effect of fermented milks with EPS-producing *Streptococcus thermophilus* (CRL1190: EPS<sup>+</sup>; capsule producer, CPS<sup>+</sup>; rosy, R<sup>+</sup>, and *S. thermophilus* CRL804: EPS<sup>+</sup>; CPS<sup>-</sup>; R<sup>-</sup>) in BALB/c mice displaying chronic gastritis induced by acetyl-salicylic acid. The inflammatory degree was determined through the histopathologic structure and cytokine-producing cells (IL-10<sup>+</sup> and INFγ<sup>r</sup>) of the gastric mucosae. **Results:** *S. thermophilus* CRL1190 produced a marked decrease of INFγ<sup>r</sup>, an increase of IL-10<sup>+</sup> and showed similar histological structure to the control. In contrast, *S. thermophilus* CRL804 did not show prophylactic effect on the gastric mucosae. **Conclusion:** oral administration of fermented milk with *S. thermophilus* CRL1190 could regulate the inflammatory gastritis process.

**117. VITAMIN B<sub>12</sub> DEFICIENT MURINE MODEL. CLINICAL STUDIES**

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Vitamin B<sub>12</sub> (Vit.B<sub>12</sub>) deficiency can cause specific (nerve degeneration) or non-specific symptoms (anemia). This deficiency is caused for strict vegetarian diets, or physiological states like pregnancy. The aim of this study was to develop a Vit.B<sub>12</sub> deficient murine model to evaluate enriched B<sub>12</sub>-functional foods. Clinical and hematological parameters were evaluated in different groups of BALB/c mice fed with a deficient Vit.B<sub>12</sub> commercial diet for different periods. The animals which presented characteristic symptoms of the Vit.B<sub>12</sub> deficiency in the shortest period (42 days) were selected as the optimum model.

**118. BIOCOMPATIBILITY FROM VARIOUS ENDODONTICS CEMENTS IMPLANTED IN SUBCUTANEOUS CELLULAR TISSUE**

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The purpose of this study was to evaluate the biological response of Mineral Trioxide Aggregate, MTA (ProRoot USA); Portland Cement, (CP-Arg.) and Calcium Hydroxide, Calen (SS White- Bz) at subcutaneous connective tissue in order to select a biocompatible endodontic cement. These materials were placed in silicone tubes and implanted into dorsal connective tissue of fifteen Wistar rats according to ISO/FDI 1994 standard regulations. The animals were euthanized at 7, 15 y 30 days. The implants and surrounding tissues were removed, fixed in 10% buffered formol solution, and processed in routine manner. The results demonstrated that CP was the material better tolerated (20%), whereas Calen presented a larger severe reactions (53%) and MTA showed important moderate reactions (46%). In the control group connective tissue was observed at 7 days, whereas at 15 and 30 days fibrous tissue were found. CP showed best biocompatibility, followed by MTA. However, Calen showed a poor biocompatibility response.

*Granted by C.I.U.N.T. and C.O.N.I.C.E.T.*

**119. PAMIDRONATE DISODIUM EFFECTS ON BONE CALVARIA THICKNESS**

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Bisphosphonates (BF) are osteoclastic resorption inhibitors, used in metabolic bone diseases. BF's effects on bone resorption are known. However, its action on bone formation remains confused. The main of this work was to evaluate their osteogenic action on rat parietal bone. Forty Sprague Dawley female rats (220 ± 20 gr) were sorted in experimental group EG (20n) and control group CG (20n). EG were intraperitoneal injected by BF PMD (1mg/kg/day) at 0, 24, and 48 hs respectively; and in CG (20n) by sterilized distilled water in the same manner. The animals were euthanized after one, two, three and four weeks treatment. The samples were fixed in formol buffered 10%, slowly decalcified, processed in routine manner and stained by H&E. Histological and morphometrical studies were performed by image analysis system (NIH Image 1.45). EG showed small amount of bone formation in contrast with CG. The data were statistically analysed and showed significant differences at one week (p < 0.009). It could be concluded that BF were not able to promote bone formation under these experimental conditions.

*Granted by C.O.N.I.C.E.T. and C.I.U.N.T.*

**120. NANDROLONE DECANOATE EFFECTS ON DENTIN-PULP COMPLEX. HISTOLOGICAL EVALUATION**

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The Nandrolone Decanoate (ND) is a synthetic anabolic androgenic steroid, used in high doses by body-builders with important action on protein synthesis. There are few studies related to his effects on dental tissues. The aim was to evaluate ND action on dentin-pulp complex in young rats. Twenty rats (five weeks old) were used. The animals were separated in Group A Experimental (10n) injected by via intramuscular (vi) by 10 mg/Kg/week of ND, and Group B Control (10n) injected with physiological solution by vi. The animals were euthanized after 1 and 6 weeks post-treatment. The samples were fixed with formol buffer 10%, slowly decalcified, processed in routine manner and stained by H&E. Histological and morphometrical studies were performed. GA showed increased amount of dentin and predentin formation in contrast with GB. The data were statistically analysed showed significant differences (p=0,012, p=0,0037 and p=0,031) for predentin thickness. It could be concluded that DN were able to promote dentin and predentin formation under these experimental conditions.

*Granted by C.O.N.I.C.E.T. and C.I.U.N.T.*

**121. ISOLATION OF *Candida* SPECIES FROM DIFFERENT NICHES OF ORAL CAVITY IN PERIODONTAL PATIENTS, AND ITS RELATIONSHIP WITH SYSTEMIC CONDITIONS**

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The aim of this work is to determine the prevalence of *Candida* species in different ecological niches of the mouth: periodontal pockets, saliva and oral mucosa, in periodontitis patients with and without systemic diseases. Thirty-three periodontitis patients between 19 and 76 years old were studied. Samples used for micological diagnosis were: subgingival plaque, mucosa of palate, cheek and tongue, and saliva. They were seeded in CRHOMagar for colony counts and species identification. From the total of patients, 4 had diabetes, 1 had a cardiovascular disease, 4 were hypertensive, and 7 were smokers. *Candida* was isolated from tongue in 45.5% of patients, from saliva in 39.4%, from cheek mucosa in 24.2%, from palate in 21.2% and from subgingival plaque in 18.2%. *C. albicans* was the most prevalent species in all ecological niches and the only species identified in periodontal pockets. *C. krusei* was isolated from saliva, tongue and palate; *C. tropicalis* in saliva and tongue, and *C. parapsilosis* only in tongue. Significant statistical differences ( $p=0.004$ ) between smokers and no smokers related with *Candida* isolation from saliva. There were not significant statistical differences between having or not other systemic diseases, except when diabetic condition and smoking were considered together ( $p=0.01$ ). Tongue is the ecological niche with higher diversity of *Candida* species, being the most prevalent *C. albicans*, and it was the only species isolated from periodontal pockets. Diabetic patients who are smokers had more risk to be colonized by yeast.

Supported by CIUNT.

**122. KNOWLEDGE OF GRADE AND POST GRADE DENTISTRY STUDENTS OF DENTAL ATTENTION OF PREGNANT WOMEN**

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The aim of this work was to evaluate grade and postgrade students' knowledge about dental practices in pregnant women. A qualitative-quantitative research was realized using an auto-administered questionnaire in a group of 28 dentistry students and 14 residents. The questionnaire considered: knowledge of the clinical pregnancy history, derivation to dental control during pregnancy control (PNC), aspect of mouth health during the pregnancy, dental treatments that can be realized without risk for the fetus, best moments for clinical therapy, etc. Mean age of students was  $24.7 \pm 2.7$  years old, 6 were males and 36 women. 69% does not know the clinical perinatal history, 59.5% knows derivation norms for dental surveillance during PNC, and 73.8% thought that written authorization of physician was need for any dental practice. 71.4% of the students considered gingival status as the main problem. About the main reason of dental complications, 90.5% of the students considered poor oral hygiene, 81% hormonal changes in pregnancy and 54.8% vomits of the first quarter. 88.1% considered that basic periodontal therapy does not represent risk for the fetus, and 47.6% believed that the second quarter was better for therapy. There were no significant differences in knowledges between grade and post-grade students. Knowledge demonstrated by dentistry students and residents about dental practices during pregnancy were insufficient.

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**123. RELATIONSHIP AMONG *Candida* SPECIES ISOLATED FROM ORAL CAVITY WITH CARIES AND PERIODONTAL DISEASE**

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It has been suggested that the use of broad spectrum antibiotics can promote superinfections with yeast in periodontal pockets. *Candida albicans* is considered among dental caries associated microorganisms. The aim of this work was to establish the relationship among *Candida* isolation and caries and periodontal disease, and to describe species distribution in both groups. Thirty-three patients of the Faculty of Dentistry, with periodontal disease (PD) and the same number with dental caries (C) were selected. A clinical examination recording the following parameters were done: sugar intake, plaque index and CPOD (number of teeth with caries, lost and obturated). At the same time saliva samples for micological studies were collected. Samples were seeded in CRHOMagar for colony counts and species identification. Plaque Index mean was:  $1.37 \pm 0.67$  (C) and  $1.66 \pm 0.60$  (PD), ( $p>0,05$ ). Saliva CFU/ml mean were:  $481.33 \pm 962.45$  (C) and  $249.70 \pm 896.64$  (PD) ( $p>0,05$ ). In the 66.7% (C) and 63.6% (PD) yeast species was not identified. 24.2% (C) and 30.3% (PD) were *C. albicans* and 3% of each group had *C. tropicalis*. *C. krusei* were isolated in only one periodontitis patient and *C. parapsilosis* in two caries patients. There was not difference in *Candida* isolation between the two oral diseases. *C. albicans* was the species most frequently isolated in the two groups.

Supported by CIUNT.

**124. RELATIONSHIP BETWEEN PROSTAGLANDIN E<sub>2</sub> AND ANTIGEN PRESENTING CELLS IN AN ANTITUMORAL IMMUNOTHERAPY EXPERIMENTAL MODEL**

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**Introduction:** Dendritic cells (DC) are of transcendental significance in the induction of antitumoral response. Prostaglandin E<sub>2</sub> (PGE<sub>2</sub>), and chemotherapeutic agents can inhibit the immune response. We analyze the relationship between splenic and plasmatic PGE<sub>2</sub>, with the generation of splenic DC in the context of mice breast cancer treated with chemotherapy and immunostimulation.

**Material and methods:** 12 Balb/c mice with M3 breast cancer where separated in four groups: Mice in *Group D* were inoculated with IV doxorubicin (D) 0.2 ml (150 ug/ml); *Group V* received 0,1 ml of IM Ribovac Vaccine (2,5 ug of bacterian RNA + 280 mg of proteoglycans/ml); *group DV* received D and after 24 h Ribovac Vaccine, while *group T* served as control. PGE<sub>2</sub> concentration and the presence of DC were determined.

**Results:** The concentration of PGE<sub>2</sub> was significantly higher in *group D* ( $460 \pm 57$  pg/ml) and *D+V* ( $480 \pm 67$  pg/ml)  $p < 0,05$ . The percentage of DC was also higher in *group V* ( $28 \pm 2,9$ ) when compared with *T* ( $18 \pm 2,2$   $p < 0,05$ ), *D* ( $13 \pm 1,2$ ) and *DV* ( $11 \pm 2,2$ )  $p < 0,01$ . D significantly diminished the percentage of DC in *group D* and *DV* in relation with *T* ( $p < 0,05$ ) and *V* ( $p < 0,01$ )

**Conclusions:** Treatment with doxorubicin and vaccine, whether they were being applied alone or combined, increase PGE<sub>2</sub> production. However, vaccine treatment does not revert DC depletion produced by doxorubicin.

**125. COMPARATIVE STUDY BETWEEN BARK AND LEAF LECTINS OF *Sambucus peruviana* KUNTH**

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Lectins are proteins that recognize and bind to the carbohydrate moiety of glycoprotein, glycolipids and to polysaccharides. Some of them are capable to inhibit the protein synthesis in an irreversible manner by an rRNA subunit depurination. The purpose of this work was to study the molecular and biochemical properties of bark and leaf lectins isolated and purified from *S. peruviana*. In bark we have isolated two lectins, one is an homodimer, its Mr is 150.000 Da with two identical subunits of 39.800 Da. The other produces an inhibition of protein synthesis (RIP). It has an Mr of 250.000 Da with two subunits of 36.000 Da and 26.000 Da. It was isolated as a tetrameric or dimeric form. Its IC<sub>50</sub> is 0,85 mg of protein/ml. In leaves we isolated a RIP. Its Mr is 65.000 Da, with two subunits of 31.700 Da. Its IC<sub>50</sub> 0,74 mg of protein/ml. In the three lectins the erythrocyte agglutination was inhibited by the same sugars. They have the same pH and temperature stability. The molecular and functional characteristics of lectins isolated from bark and leaves indicated that they have some different properties. It is important to continue with this work because of the possible biological applications.

**126. NATIVE PLANTS OF MEDICINAL USE FROM ARGENTINIAN NORTHWEST**

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The purpose of this work is the taxonomic, morphoanatomic and histochemical study of native plants used as medicinal in the argentinian northwest. These plants are used and sold as herbal remedies in the NOA. A check list of 53 native species from vascular plant families is given. For each one is pointed out their botanical family, scientific names, folk names, and main principles uses attributed to them. The morphoanatomic characters of three species were investigated: root of *Krameria lappacea* (Dombey) Burdet & Simpson, stem of *Aristolochia triangularis* Cham, leaves and rhizome of *Microgramma squamulosa* (Kaulf) Sota. The micrographic study determines different cellular types characteristics for each specie. We conclude that the morphologic, anatomic and micrographic studies on plants employed in popular medicine are useful for their characterization and quality control of species.

**127. DETECTION OF ESTEROLYTIC ACTIVITY OF LACTOBACILLI ISOLATED FROM GOAT'S AND EWE'S MILK AND CHEESE**

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Esterases are enzymes that hydrolyse esters of short chain fatty acids (C2-C10), producing piquant flavours and intense aromas. Esterases of lactic acid bacteria are also involved in the development of fruity flavours. The aim of this work was to evaluate the intracellular esterolytic activity of *Lactobacillus* strains isolated from goat's and ewe's milk and cheese. Post-electrophoretic detection of esterase activity showed the presence of 1 to 3 bands per strain. The most intense bands were detected on  $\alpha$ -naphthylacetate. Caprine strains presented higher activity on  $\alpha$ -naphthylbutyrate (0.57-4.93 U/mg). Significant activities were also detected on  $\alpha$ -naphthylcaproate (1.14-4.68 U/mg) and  $\alpha$ -naphthylcaprate (1.40-4.20 U/mg). In ovine strains, esterolytic activity was only detected on  $\alpha$ -naphthylacetate. No hydrolysis of  $\alpha$ -naphthylaurate was observed. The strains studied in this work released short chain fatty acids and therefore, they would actively contribute to the development of milk and cheese flavour.

**128. EVALUATION OF THE TEACHING ASSISTANTS' TRAINING PROJECT IN THE MICROSCOPE MORPHOLOGY AREA**

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Within the Training Program of Human Resources of this Faculty, the chair of Animal Histology promotes the training of teaching assistants through theoretical-practical activities for teaching, research and extension.

This work aims at the comparative evaluation of the methodology used by the chair during 2004-2005 in relation to earlier periods. It also shows the strategies used in the instruction of human resources through the academic, technical and scientific training with the preparation of practical works based on the thematic nucleus Animal Respiratory Organs. Five assistants carried out the following activities: specialized bibliographical research, dissection and histological processing of respiratory organs of different zoological groups, analysis and interpretation of images through light microscopy, theoretical-practical seminars for data integration and consolidation, cooperation in the design of a students' Teaching Guide and teaching practice. The methodology evaluated constituted an improvement with respect to the one used in former periods, since it integrates laboratory with teaching practice. The academic, technical and scientific training constituted a valuable experience that allowed the design of a teacher's profile, contributed to the instruction of teaching assistants in the Microscope Morphology area and encouraged their initiation in research work.

**129.**  
**CONTENT OF POLYPHENOLS IN LEMON JUICE FROM TUCUMAN**

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The content of total polyphenols is a parameter that allows to characterize the lemon juice from a certain geographical region and also to contribute information about a nutritional component that has positive effects on the human health, since there has been demonstrated that the polyphenols reduce the risk of cardiovascular diseases. The objective of the present work was to evaluate the content of total polyphenols in lemon juice from Tucumán as a parameter of characterization and to compare it with other drinks reported in the bibliography as source of polyphenols, such as red wine and black tea. There were analyzed 47 samples of concentrated juice of lemon, representative each one of a batch of 10000 liters of concentrated juice. The concentrated juice was diluted up to reaching the brix corresponding to a natural juice. The determination of total polyphenols was realized for Folin Ciocalteu's method. The average content of total polyphenols was of  $(933.0 \pm 11.3)$  mg of Gallic acid equivalent for liter. This concentration is four times higher than the content of polyphenols of red wine (210 mg/L) and black tea (235 mg/L). In conclusion, the lemon juice from Tucuman has a high content of total polyphenols.

**130.**  
**RADIOGRAPHIC STUDY OF MIXED DENTITION ACCORDING TO NUTRITIONAL STATUS**

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**Objective:** To determine radiographically on size, shape, number and mineralization stage of primary and permanent dentition on normal and malnourished children from S.M. de Tucumán **Material and Methods:** Two groups were formed: one eutrophic children and other malnourished. Retroalveolar radiograph from left lower arch were taken. Dental age was determined by the dental developmental stage adapted by Haavikko. **Results:** Sample was constituted by 34 malnourished and 55 normal. Proportion of children with studied alterations, didn't vary according to nutritional status. ( $P > 0.15$  in all pathologies). It was detected though, that 1° permanent molar eruption grade differ significantly according to child nutritional status ( $P = 0.023$ ), non erupted 1° molar proportion is higher in malnourished children and root calcification degree differ according to nutrition status ( $P = 0.01$ ). Proportion of children with deficient radicular development degree ( $< 1/3$ ) is higher between malnourished than normal. **Conclusion:** studied pathologies don't differ according to nutritional state. Among malnourished 1° molar eruption degree and radicular development is lower than that in normal children.

**131.**  
**ISOLATION OF A PROTEIN DERIVED FROM SPERM EXTRACTS CAPABLE OF INDUCING THE ACTIVATION OF *Bufo arenarum* OOCYTES MATURED IN VITRO**

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In the fertilization of most animals, egg activation is accompanied by an increase in cytoplasmic  $Ca^{++}$ ; however, the mechanism through which the fertilizing sperm induce this phenomenon is still controversial. This work aims at: a) the isolation of the active fraction of the sperm extract; b) the analysis of its effect on egg activation under different experimental conditions.

The sperm extract was subjected to gel filtration chromatography and the fraction with biological activity was dialyzed against 1% NaCl; then polyacrylamide-SDS electrophoresis was carried out. The experiments were performed with *in vitro* denuded *Bufo arenarum* oocytes. The activation parameters considered were the disappearance of the white spot, the elevation of the vitelline envelope and the cortical granules exocytosis.

The results indicate that in the fraction with biological activity of the sperm extract there is a protein of approximately 30 Kda. This protein is capable of activating the eggs in a dose-dependent manner when it is added to the culture medium; however, it has no effect when microinjected into the egg cytoplasm. These results indicate that the protein isolated from the sperm extract would interact with receptors on the oocyte membrane capable of activating the signaling pathways that lead to activation.

**132.**  
**MICROBIOLOGICAL MONITORING OF SUGARCANE JUICE AT DIFFERENT STAGES OF THE CLARIFICATION PROCESS**

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Cane sugar manufacturing process begins with the reception of sugarcane in the sugar mill, where it is crushed to extract its sugared juice, which is subsequently filtered, sulfated, decanted, limed and heated. The juice is then decanted in clarifiers to obtain clarified juice. During all these stages, the microorganisms existing in sugar cane play an important role in relation to the efficiency and quality of the final product.

As a first step to control microbiologic quality, the microbial content of sugarcane juices obtained in Tucumán sugar industry, was analyzed. The microbiological methodology was performed according to ICUMSA official protocols.

When analyzing the values obtained, it could be observed that in the case of first expressed juice and mixed juice, most of sugar mills exhibited very similar count of bacteria, fungi, yeast or polysaccharide-producing microorganisms.

In clarified juices, values obtained were low, and fungus and yeast were absent.

From the results mentioned above, it can be stated that it is important to control different aspects of the clarification process in order to avoid the appearance of undesired microorganisms affecting yield efficiency.

**133. DEVELOPMENT OF HIPERCHOLESTEROLEMIC MODEL IN FLANDERS' hybrids RABBITS**

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Clinic as well as experimental evidence demonstrated that dislipemia is a major risk factor (RF) in cardiovascular diseases associated to hipertension (HT) and diabetes. Objective: Development of an hipercholesterolemic animal model without overimposed RF. 12 male Flanders' hybrids rabbits 2-3 weeks after weaning (800-1000g) were used and separated into two groups: DC standard and DH cholesterol (1%) enriched diet. Pellets were formed by rehydration/dehydration with 10% starch. Body weigh, food and water intake were registered for 5-6 weeks. After this, blood samples were obtained in order to determine total cholesterol (CT), LDL, HDL, triglycerides (TG) and glycemia. Mean arterial pressure (MAP) was measured by direct method. Results: no differences were found between glycemia and MAP in DH vs DC. Significant increases in CT, LDL and HDL were found in DH ( $41 \pm 4$  vs  $436 \pm 223$   $p < 0.02$ ;  $17 \pm 2$  vs  $46 \pm 16$   $p < 0.05$  and  $13 \pm 3$  vs  $244 \pm 127$  mg/dL  $p < 0.05$ ) whereas TG value was similar in both groups. These results indicate the development of a hipercholesterolemic model without associated RFs. An specific protective role of HDL must be investigated.

**134. RELATIONSHIP BETWEEN THE RELAXATION MEDIATED BY NITRIC OXIDE AND THE TONE DEGREE DEVELOPED DURING ISOMETRIC CONTRACTION**

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Endotelial release of nitric oxide (NO) may be due to agonist or mechanic stimulation. The aim of this work was to study whether the tone degree developed during agonist stimulation would act as a NO release-mechanic stimulus. Cumulative doses response curves (CDRC) or single stimulations with noradrenaline (NA) at increased doses were performed in rabbit aortic rings. When the maximal response (R.Max) was achieved, acetylcholine (Ach)  $10^{-6}$  M or sodium nitroprussiate (SN)  $10^{-5}$  M were added. The % of relaxation to Ach after CDRC was smaller than the % of relaxation after single stimulations ( $p < 0.05$ , ANOVA). The more the tone degree was, the higher the % of relaxation to Ach was. However, when the tone degree was close to the R.Max the % of relaxation to Ach was smaller ( $p < 0.05$ , ANOVA with Duncan test). There were no differences in the % of relaxation to SN. These results would indicate the presence of a relationship between the degree of tone developed during the agonist stimulation and the relaxation induced by endothelial release of NO.

**135. SCREENING OF LACTIC ACID BACTERIA FROM WINE WHIT POTENTIALITY TO PRODUCE AROMA COMPOUNDS**

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The typical flavor of wine is mainly due to volatile compounds deriving from the grapes. They can appear in their free form or as odourless, non-volatile glycosides. The volatile compounds from glycosides can be released by acid or enzymatic hydrolyses. The aim of this work was to select strains of *Lactobacillus hilgardii*, *Pediococcus pentosaceus* and *Oenococcus oeni*, from argentinean wine, with ability to produce aroma compounds from glycosilated flavor precursors. We investigated  $\beta$ -glucosidase and  $\alpha$ -arabinofuranosidase activities in cultures supernatant, cellular suspensions and cells free extracts. Cells were cultivated in MRS and MRS+10% grape juice media at 30°C. Enzymatic activities were detected only in cellular suspensions, with specific activities from 0.27 to 15 and from 0.02 to 1.4  $\mu\text{mol/mg/h}$  for  $\beta$ -glucosidase and  $\alpha$ -arabinofuranosidase, respectively. The highest values were observed for *O. oeni* strains derived from MRS medium at half of exponential growth phase (13.9 and 14.4  $\mu\text{mol/mg/h}$  for specific  $\beta$ -glucosidase activity of X<sub>2</sub>L and ST strains, respectively). The activity of *P. pentosaceus* 12p was also significant. The enzymes were not liberated to extracellular medium and they were not detected in cells free extracts. Considering the results, in terms quantitatively, we selected the *O. oeni* X<sub>2</sub>L and ST strains to continue these investigations.

**136. PROFILE OF THE WORKERS IN A PACKING PLANT OF STRAWBERRIES AND THE CONDITIONS OF QUALITY**

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The object of this work is to identify the social cultural framework of the operatives and the influence of personal hygiene on the innocuous results of the frozen fruits.

Two samples were taken, 30 based on the quantitative basic needs unsatisfied and 30 based on capacities to show specific activities showing the harmless effects of the product. The variables were: a) Age and sex b) Domestic units: blood relations or shared relationships under the same roof c) Incomes and outgoings d) Regular activities in the plant, quality of operatives permanent or casual e) Health cover and freedom to select medical care and services f) Education and highest grade obtained g) Type of material, infrastructure, basic services h) Special abilities and knowledge of good practice during the packing process.

Results obtained by the application containing coded questions from which we infer differences in normal working practices.

137.

**INFLUENCE OF MEDIUM COMPOSITION ON ESTERASE ACTIVITY FROM *BACILLUS* STRAINS***Loto F, Baigori M, Pera L.*

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**Introduction.** Carboxylesterases (EC 3.1.1.1) can catalyses ester synthesis and transesterification. They have been widely used in industrial application such as in food, chemical and pharmaceutical industries. Selective conversions of natural or synthetic substrates into useful products using whole cells or isolated enzymes have been gaining an increasing importance among the methods for the production of organic substances. **Objective.** Evaluation of the influence of medium composition on both free and biomass-bound esterase activity. **Materials and methods.** Free and biomass-bound esterase activities were studied with *Bacillus* sp. A60 and *Bacillus subtilis* 168, respectively. Esterase activity was determined by using *p*-nitrophenylacetate as substrate. Microorganisms were grown at 37°C using a set of modified Luria-Bertani media (LB). **Results and conclusions.** When 12.5 g/l tripteine was added the extracellular esterase specific activity was improved. Interesting, when either tripteine or yeast extract were not added significant increased specific biomass-bound esterase activity were observed.

*This work was supported by grant CABBIO 2000 cod 012.*

138.

**DETERMINATION OF MYCELIUM-BOUND  $\beta$ -N-ACETYL-D-GLUCOSAMINIDASE ACTIVITY FROM *ASPERGILLUS niger* MYA 135 IN SUBMERGED PROCESS***Colin V, Romero C, Baigori M, Pera L.*

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**Introduction.** Filamentous fungi grow by apical extension, localized apical synthesis that creates a tubular hyphal morphology. Besides linear tip extension, filamentous fungi branch to form new intercalary growing tips. Wall lytic enzymes have an important role in the process of apical growth. However, the events involved are still not clearly understood. One of the wall lytic enzymes is the activity  $\beta$ -N-acetyl-D-glucosaminidase (NAGase), that we use as a relative marker of the wall lytic potential. **Objective.** Evaluation of NAGase activity during fungal development in submerged process. **Materials and methods.** *Aspergillus niger* (ATCC MYA 135) was grown at 30°C in MB (g/l): sucrose 10;  $\text{NH}_4\text{NO}_3$  2;  $\text{KH}_2\text{PO}_4$  1;  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$  0.2;  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  0.06; pH5. NAGase activity was determined using 0.01 g of wet mycelium and *p*-nitrophenyl-N-acetyl- $\beta$ -D-glucosaminide as substrate. **Results and conclusions.** Both NAGase specific activity and branch frequency increase during fungal growth. The maximum NAGase specific activity was 0.550U per mg of dry weight.

*This work was supported by grant 693/04 CONICET.*

139.

**PREVALENCE OF ORAL LESIONS DIAGNOSED CLINICALLY AS EPULIS. ITS HISTOPATHOLOGICAL STUDY***Wierna A, Alvarez M, Gonzalez Mac Donald M, Ansonnaud A, Ferrari M.*

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The aim of this work is to show the prevalence of tumoral lesions (Epulis) and its distribution by sex and age, as well as the evaluation of the importance of the anatomopathological study in their diagnosis. **Materials and Methods:** it is a retrospective study carried out during years 1996-2005 in which were studied a total of 300 patients that went to an external clinic of the Stomatological Service of FOUNT. It was used as diagnosis method a correct clinical evaluation and complementary exams: radiographies and anatomopathological study. **Results:** on the total of patients registered from the clinical point of view 8,99% corresponded to Epulis. The histopathological study revealed that 66,66% were of type fibrous, 22,22% granulomatous, 7,40% giant cells and 3,70% carcinoma spinocellular. Related to sex, it was observed more frequency in feminine 63% than in masculine 27% The range of ages was between 10 and 76 years being more frequent between 10 and 36 years. **Conclusions:** the anatomopathological study must be the routine exam in lesions diagnosed clinically as tumoral lesions of gum.

140.

**ISOLATION OF A *BACILLUS* STRAIN TOXIC TO *SPODOPTERA frugiperda* (LEP.: NOCTUIDAE)***Alvarez A, Pera LM, Virla E, Baigori MD.*

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**Introduction.** The fall armyworm, *Spodoptera frugiperda* (*Sf*), is one of the most important corn pests in tropical and subtropical America. Some microorganisms are important candidates for its control. *Bacillus thuringiensis* (Bt) is an entomopathogenic spore-forming bacterium, which produces proteinaceous crystalline parasporal inclusions (Cry). **Objective.** Evaluation of ten "Cry" producer strains against first instar larvae of *Sf*. **Materials and methods.** Individuals comes from a laboratory colony maintained under controlled conditions (25°C, 70-75% RH and 12:12 L/D). The artificial diet was immersed in sterile water "Cry" protein suspension. Microorganisms isolated from soil and dead larvae were used. Larval mortality was determined during 7 days. **Results and conclusions.** One of the native strains tested, called RT3, had a strong toxicity against *Sf* larvae. Considering two independent assays, a mortality level from 76.6 ( $F=60.50$ ;  $g/l=1$ ;  $P=0.0015$ ) to 100% was observed after 3 and 4 days, respectively. Finally, in the first assay no larva was survived. Larval mortality using serial dilution of "Cry" suspension was also determined. According to these results, the isolated RT3 can be considered an active strain.

*This work were supported by grant CIUNT D308 and CONICET*

**141. LIPASE ACTIVITY FROM *ASPERGILLUS niger* MYA 135 ON AGARIZED MEDIUM**

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**Introduction.** Lipases (E 3.1.1.3) are biotechnologically important enzymes that catalyze the hydrolysis and synthesis of a wide array of esters. Industrial demand for new sources of lipases is continuing to stimulate the isolation and screening of new lipolytic microorganisms.

**Objective.** Evaluation of different agarized media for selection of fungal producer lipases.

**Materials and methods.** Hyphae of *Aspergillus niger* (ATCC MYA 135) were grown at 30°C on MB agar plus rhodamine B medium supplemented with either olive oil or different kind of Tween (20, 40, 60, and 80). Both MB agar medium and MB agar medium supplemented with olive oil were also evaluated. MB (g/l): sacrose 10; NH<sub>4</sub>NO<sub>3</sub> 2; KH<sub>2</sub>PO<sub>4</sub> 1; MgSO<sub>4</sub>·7H<sub>2</sub>O 0.2; CuSO<sub>4</sub>·5H<sub>2</sub>O 0.06; pH7. Lipase production was monitored by irradiating plates with UV light at 350 nm.

**Results and conclusions.** The presence of rhodamine B and either Tween 40 or olive oil showed the same sensibility for lipase production. A little bit lower sensibility in medium supplemented with only olive oil was observed. Interesting, the presence of Tween 40 also delay conidiation process.

*This work was supported by grant CABBIO 2000 cod 012.*

**142. EXTRACELLULAR AND MYCELIUM-BOUND LIPASE PRODUCTION BY *PENICILLIUM corylophilum***

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**Introduction.** Lipases (EC 3.1.1.3) are enzymes that catalyze the hydrolysis of triglycerides in the oil-water interface. Both extracellular and mycelium-bound lipases from fungi are important in industrial applications. In particular, the use of a naturally-bound lipase can be cost effective because the biomass can be used directly, thus eliminating isolation, purification and immobilization procedures. **Objective.** The aim of this work was the evaluation of both extracellular and mycelium-bound lipase activity production by a strain of *Penicillium corylophilum*. **Materials and methods.** *P. corylophilum* was grown at 30°C in MB medium with and without supplementation 2% olive oil. MB (g/l): sacrose 10; NH<sub>4</sub>NO<sub>3</sub> 2; KH<sub>2</sub>PO<sub>4</sub> 1; MgSO<sub>4</sub>·7H<sub>2</sub>O 0.2; CuSO<sub>4</sub>·5H<sub>2</sub>O 0.06; pH7. Lipase production was monitored using p-nitrophenylpalmitate as substrate. Both extracellular and mycelium-bound specific lipase activity was calculated. **Results and conclusions.** Specific activities obtaining in presence of olive oil were 1.5 U per µg of protein (supernatant) and 1.8 U per mg of dry weight (mycelium).

*This work was supported by grant CABBIO 2000 cod 012.*

**143. CITOGENETIC CONTRIBUTION TO THE KNOWLEDGE OF *Doru luteipes* (DERMAPTERA, FORFICULIDAE)**

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*Doru luteipes* (Scudder), is an egg predator of *Diatraea saccharalis* (Fabricius) (Lepidoptera, Pyralidae), sugar cane plague. The lack of cytological information motivated these studies. The objective is to analyze the sperm meiosis of males from Lules, Tucumán. For the cytological preparations conventional techniques were used. The preliminary results are: chromosomal number 2n = 20; system of sex determination XX/X0; telocentric chromosomes and one metacentric; identification of one chromosome with satellite; presence of heterochromatic blocks in pachytene; laggard chromosomes and low frequency of bridges in Anaphases I and II. The previous information of the Order indicates that the chromosomes are holocentric, nevertheless in *D. luteipes* are monocentric and the chromosomal number is within the rank (2n = 10-26). The laggard chromosomes and bridges are indicative of certain meiotic instability, but the observed low frequency would indicate that it does not affect the population.

**144. MODIFICATION OF L-MALIC ACID UTILIZATION BY *Saccharomyces cerevisiae* IN CO-CULTURE WITH *Kloeckera apiculata***

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The ability of yeasts to degrade malic acid is dependent on the efficient transport of the dicarboxylic acid through the plasmatic membrane as well as the efficacy of the intracellular malic enzyme. In this work we evaluated the influence of *Kloeckera apiculata* mc1 on the utilization of malic acid by *Saccharomyces cerevisiae* mc2, both strains isolated from Argentinean wines. The yeasts were cultured in grape juice medium added with 2, 4 and 6 g/l malic acid. Pure cultures of *S. cerevisiae* consumed malic acid with specific rates of 0,007; 0,012 y 0,007 g g<sup>-1</sup> d<sup>-1</sup> in presence of 2, 4 y 6 g/l of the organic acid, respectively. 7, 24 y 5% increment of the ethanol production was detected in presence of the three malic acid concentrations. In co-culture with *K. apiculata*, the elliptic yeast showed a higher specific rate of dicarboxylic acid consumption (0,016; 0,028 y 0,020 g g<sup>-1</sup> d<sup>-1</sup>). The ethanol production was higher than in pure culture by 21, 44 y 26%, for increasing concentrations of L-malic acid, respectively. The competence for the substrates in mixed culture could be responsible of the higher utilization of malic acid by *S. cerevisiae*. The physiological role of the malic enzyme in *S. cerevisiae* would be related to an auxiliary pathway for NADPH regeneration. The higher removal of malic acid by mixed cultures of *K. apiculata* mc1-*S. cerevisiae* mc2 has technological importance in the winemaking, contributing to the final product stability.

**145. EFFECTS OF SOLVENTS AND SURFACTANTS ON THE MYCELIAL GROWTH OF *FUSARIUM OXYSPORUM* AND *BOTRYTIS CINEREA***

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Synthetic fungicides represent a significant risk to human health. Thus, there is an urgent need for alternative approaches, as natural products, able to control phytopathogenic fungi. Currently, we are evaluating the amounts of solvents and surface polymers to be used to dissolve the treatments, and to improve their dispersion in aqueous media, respectively. The concentrations of solvents and surfactants should not be inhibitory to the fungus strain. We assessed ethanol, ethylacetate and DMSO at 2–4% with and without PEG 400 at 2%. Fungicidal activity of solvent and surfactant were evaluated using an agar dilution assay. The centre of each PGA plate (control and treated) was inoculated with a plug of growing mycelia and was later incubated until the mycelia reaches the Petri dish border. Mycelial growth diameters were measured for control and treated experiments (3 replicates) and results were analyzed statistically. *Fusarium oxysporum* was not inhibited by treatments with EtOH (2%), EtOH (2%)-PEG, EtOAc (2%), EtOAc (4%)-PEG, and DMSO (2%)-PEG, while *Botrytis cinerea* was not inhibited by EtOAc (2%) and EtOAc (2%)-PEG.

**146. RADIOGRAPHIC DIAGNOSE OF EXTERNAL REABSORPTIONS: LOCALIZATION DEPENDING VIEW**

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External reabsorption is a complication of traumatized reimplanted teeth, maxillary incisors are frequently affected. Root reabsorptions are asymptomatic, and intraoral XR are used to evaluate the progression of those lesions. Andreasen *et al.*, 1987, reported that reabsorption cavities at the proximal root surfaces of mandibular premolars of cadavers can be detected when cavities are of 1.2 mm, but do not differentiate cervical, medium and apical cavities. The aim of this *in vitro* work was to evaluate artificial progressive external reabsorptions. 20 central and lateral maxillary incisors of 6 skulls were selected and intraoral preoperative XR were taken using the parallelism technique. 360 artificial cavities were carved in proximal root surfaces at the cervical, half and apical thirds: a) small (0.5mm) b) medium (1mm) c) large (1.5mm). Intraoral XR with Kodak E-F insight film were taken using a 70kw, 8Ma/s Satelec, Toshiba equipment and 0.4s exhibition time. A positioner (Hawe Kwit-bite, Switzerland) located the film at 40cm of the XR tube standardized the geometric projection. An acrylic plate of 1.8cm interposed between the skulls and the XR tube simulated soft tissue. The same observer applied a x3 magnification. Data was analyzed by SPSS with the Chi Square test. Significant differences ( $p < 0.001$ ) among cervical and apical and apical and media localizations for small cavities were obtained, but not ( $p > 0.05$ ) for others. External artificially created reabsorptions can be firstly detected at the apical localization in XR images.

**147. APPLICATION OF NATURAL PRODUCTS ON POST-HARVEST DISEASE OF CITRIC FRUITS**

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The continuous use of fungicides to control phytopathogenic fungi in citrus produced the arising of multi-resistant strains. Pectinases are key enzymes for the development and expansion of the fungus within host tissues. Endo-polygalacturonases (endo-PG) possess a crucial role in the cell wall degradation. Oligogalacturonide fragments may trigger plant defense response. *In vivo* assays showed that inhibitory proteins of PGs reduce the depolymeration rate of polygalacturonides and improve the stability of oligogalacturonides with elicitor activity. The aim of this work was to select a competent system to study the potential use of natural products as inhibitors of endo-polygalacturonases from phytopathogenic fungi. The culture of *Geotrichum candidum* Link strains was carried out on mediums containing glucose or citric pectin as carbon source. Endo-PG activity was isolated and purified. The enzymatic activity was inhibited by natural products such as glycosidases proteinaceous inhibitors isolated from higher plants (*Solanum tuberosum* and *Cyphomandra betacea*). The inhibition mechanism and the effect of other inhibitor metabolites (secondary metabolites) are being studied.

**148. A NEW AUTOGRAPHIC METHOD FOR DETERMINATION OF LIPOPHILIC AND HYDROPHILIC ANTIOXIDANT COMPOUNDS**

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Several classes of dietary compounds have been suggested to reduce the level of biomarkers of oxidative damage. The antioxidant actions may occur by inhibition of reactive oxygen species generation or by its direct scavenging. Simple experiments can be performed to examine direct antioxidant ability *in vitro*. This work describe a new autographic method to detect lipophilic and hydrophilic antioxidant components in food, phytoterapic or other mixtures using a preformed radical monocation of 2,2 azinobis-(3-ethylbenzothia-zoline-6-sulfonic acid) (ABTS<sup>+</sup>). Different concentrations of reference antioxidant compounds seeded in TLC were covered with agar containing ABTS<sup>+</sup> or sprayed with an ABTS<sup>+</sup> solution. The detection limit was 0.1µg for naringenin and quercetine, 1 µg for rutine and β-carotene, 2.5 µg for ascorbic acid and 0.15 µg of phenolic compounds from plant extracts. This method is rapid, sensitive and reproducible for screening of complex mixtures with antioxidant properties and for the bioguide isolation of antioxidant metabolites.

**149.**  
**SCAVENGING ACTIVITY OF NITROGEN ATOM-CENTERED FREE RADICAL BY PLANTS FROM EXTREME PLACES**

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Previously, we demonstrated that the plant species which growth in Puna, Argentina (*Baccharis incarum*, *Baccharis boliviensis*, *Chuquiraga atacamensis*, *Parastrephia lucida*) show high scavenger capacity on oxygen free radicals (ROS). In present work, we evaluated the antioxidant activity of these plant ethanolic extracts on DPPH radical (1,1-difenil-2-picrylhydrazyl) and ABTS<sup>+</sup> cation (2,2'-azinobis (3-ethylbenzothiazoline-6 sulfonic acid). The results were expressed as the trolox equivalent antioxidant capacity (TEAC,  $\mu\text{mol Trolox equivalents}/100 \text{ g dry weight}$ ). The phytochemistry pattern by TLC and phenolic compound and flavonoid contents were also analyzed. The TEAC values ranged from 14706 for *P. lucida* to 4167 for *C. atacamensis*. A positive relationship between phenolic compounds and antioxidant activity was observed. IC50 values for DPPH scavenger show that *P. lucida* was the most active extract. Our results demonstrated that these plant species are potential sources of natural antioxidant compounds for multiple biotechnological uses.

**150.**  
**FUNCTIONAL PROPERTIES OF YEAST CELL WALLS (*Saccharomyces cerevisiae*)**

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Numerous pathological processes may overproduce oxygen-centered free radicals and other reactive oxygen species, eventually leading to many chronic disease. For this, is important to found news antioxidant natural product. In this work we evaluated the antioxidant capacity of natural products extracted from *Sacharomyces cerevisiae* cell walls. This biological material was obtained by autolysis in the yeast extract production process in a Tucumán food industry. The cells walls were washed and then extracted in ethanol and water at different time and temperature conditions. The total phenolic compounds, proteins, dry materia and total sugars were determined. The alcoholic and aqueous extracts showed a high DPPH radical scavenging capacity with IC50 values of 30  $\mu\text{g}/\text{ml}$ . The ethanolic extract had more protective effect on lipids peroxidation ( $\beta$ -carotene bleaching inhibition) than aqueous extract. Our results suggest the potential exploitation of this industrial discarded material, that may yield sub-products with biological activity.

**151.**  
**MODIFICATIONS OF THE BLOOD PRESSURE AND CARDIAC FREQUENCY DURING THE ORAL TREATMENT WITH THE DINAMAP MONITORED METHOD**

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Since the oral treatment produces physical and psychological stress, it is possible associated with rises in the blood pressure and the cardiac frequency. The aim of this study was to evaluate the changes in the meanings of blood pressure (Diastolic Blood Pressure DBP, Systolic Blood Pressure SBP, Medium Blood Pressure MBP), and Cardiac Frequency (CF). Three different situations were compared: 1. before the oral treatment (while the Clinic Story is been made) 2. During the oral treatment (while the dentist is working) 3. Five minutes after the end of the oral treatment. Thirty patients of both sex, supposedly healthy and with no pharmacological treatment were selected. The patients from a rank of age of 18 to 45 years old went to the Deontology Center of the Faculty of Dentistry, U.N.T. Following the rules of the National Committee for the Prevention, Evaluation and Treatment of the high blood pressure, just one operator evaluated and registered the different meanings of the variables studied (SBP; DBP; MBP and FC), in the three different situations using an oscillometric tensiometer, which determines automatically the called meanings (Dinamap). The data were transcribed to the SPSS statistic program and them analyzed by the two way ANOVA test, with their respective post hoc test of multiple comparisons (Tukey And Tamahane). The results shown no statistical differences of the variables SBP, DBP, MBP, and CF in the different moments of the oral treatment ( $p > 0,05$ ) In this study, no variations in the blood pressure neither cardiac frequency were found in the different moments of the oral treatment.

**152.**  
**INHIBITORY EFFECT OF LACTOBACILLI ON THE GROWTH AND BIOFILM PRODUCTION OF *Klebsiella* STRAINS ASSOCIATED WITH CATHETERS**

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Infections related with catheters and other devices are a challenge for prevention and treatment; therapies are not always effective due to new virulence mechanisms developed by microorganisms: production of biofilms. To avoid catheter-associated infections a great variety of technological innovations has been applied but without success. Recently, OMS recommended bacteriotherapy. Numerous studies have shown the protecting effect exerted by lactic acid bacteria (LAB) against a diverse range of infections. The objective of the present study was to examine the inhibition of the formation of biofilms and growth of catheter-associated *Klebsiella* by using Lactobacillus strains. For the inhibition assaying the O'Toole technique was used. A decrease of between 3 and 7 log regarding bacterial growth, whereas biofilm production was completely inhibited. Inhibition of biofilm formation and growth of *Klebsiella* by lactobacilli and their acid and neutral supernatant could indicate a useful and economical alternative method for prevention of catheter-associated bacterial infections.

153.

**DETECTION OF VIABLE NON-CULTURABLE *Vibrio cholerae* O1 (NCVC) FROM RIVERS IN TUCUMÁN, ARGENTINA**

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Bacteria can use a variety of adaptive strategies to survive in the environment. The temperature, light, evaporation and plankton can affect the survival of microorganisms regarding their persistence or ability to cause diseases. *V. cholerae* belongs to this group of bacteria. In Tucumán the bacterium was sporadically isolated associated with diarrhea. Due to its capacity to colonize sweet water the objective of this study was to detect *V. cholerae* (NCVC) using immunofluorescence (IF) to find environmental reservoirs, assessing rivers in Tucumán. Three preestablished spots of the rivers Lules (1) and Salí [Banda (2) and north canal (3)] were sampled during the four seasons. The filter membranes for water were suspended in 8 ml of PBS. To 1 ml of the PBS suspension and 1 ml of phyto and zooplankton 100 µl of ANY medium was added and the mixtures were incubated at 37°C for 6h. Then 4% formaldehyde was added. Detection of *Vibrio* O1 NCVC using IF DFA-DVC (New Horizons Diagnostics Lab, Columbia, MD, USA) Samples were fixed on slides and reagent was added. Were incubated in a humid chamber at 37°C for 30 min without light. Then they were washed with PBS and examined. *Vibrio* O1 NCVC was detected in all the samples with highest numbers in summer. It is necessary preventative measures to avoid transformation of the rivers into a source of infection.

154.

**MICROBIOLOGICAL CONTROL OF TEA FROM SUPERMARKET SHELVES**

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Tea is a pleasant, popular, economical, safe and socially accepted beverage, which is consumed daily by millions of people around the world. It is obtained through an infusion of leaves from the *Camellia sinensis* plant. This study make an assessment of the microbiological quality of tea commercialized in S. M de Tuc, Arg, in 2004. Ten different tea brands, 5 coming in teabags and 5 in leaves, were analyzed on the following: Total Mesophilic Aerobic Bacteria (TMAB) in nutritious agar medium, Fungi and Yeasts (F+Y) in fungus and yeast medium supplemented with chloramphenicol, Total Coliform Bacteria at 37°C (C37) in Mac Conkey broth (most probable number technique; MPN/100 ml), Fecal Coliform Bacteria at 45°C (C45) in brilliant green broth, Presence or Absence of *Escherichia coli* (EC) and *Salmonella* and *Shigella* (S/Sh) in lactose broth, selenite and tetrathionate *Salmonella* Agar. TMAB figures were between  $2 \times 10^2$  and  $2 \times 10^4$  cfu/ml. 4 samples showed values for C37 within standard limits, whereas the 6 remaining were above standard. Fungi varied between  $2 \times 10$  and  $3 \times 10^3$  and yeasts between  $5 \times 10$  and  $3.1 \times 10^3$ . C45, EC and S/Sh were not detected. Although most microbiological parameters of the commercial teas were generally acceptable, presence of C37 in 60% of the cases is a potential risk of appearance of pathogens. Consequently, periodic controls should be intensified, so as to guarantee and assure good quality manufacturing.

155.

**INDUCTION OF AN EXPERIMENTAL MODEL OF AUTOIMMUNE DISEASE BY INOCULATION OF THE RNP ANTIGEN**

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Mixed connective tissue disease (MCTD) is an illness of autoimmune etiology with overlapping signs and symptoms of lupus, dermatomyositis, rheumatoid arthritis and scleroderma and is associated with anti-RNP antibodies. Objective: to induce an experimental model for MCTD by inoculation with ribonucleoprotein (RNP) antigen. Materials and Methods: 18 BALB/c mice of 40 weeks were inoculated as followed: group I) was injected with 100µg of RNP SC in complete Freund's adjuvant and then weekly with 50 µg in incomplete adjuvant until completing four inoculations; group II) received 50 µg of RNP IP in complete Freund's adjuvant, continuing weekly with 50 µg until. Control mice were inoculated with Freund's adjuvant. Results: 8/18 mice shown visceral hypertrophy; 4/18 alopecia; 2/18 corneal opacity; 2/18 malnutrition; 4/18 arthritis. There were no differences in function of sex or inoculation route. No control mice shown signs or symptoms of MCTD. Conclusion: our findings in inoculated mice with RNP in Freund's adjuvant were consistent with clinical features described in patients with MCTD.

156.

**HISTOPATHOLOGICAL FINDINGS IN LUNG OF AN EXPERIMENTAL MODEL OF AUTOIMMUNE DISEASE**

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Mixed connective tissue disease (MCTD) was considered a pathology of benign evolution but the clinical manifestations are now well-known where the histopathological changes are wide and diverse. Objective: to describe the histopathological findings in lung using an experimental model of MCTD. Material and Methods: 18 BALB/c mice, of both sexes and 40 weeks of age were inoculated with ribonucleoprotein (RNP) in Freund's adjuvant (9 mice IP and 9 SC) in four doses, according to established protocol. Control group: mice were only injected with Freund's adjuvant. After the third month of last inoculation mice were sacrificed and the organs were processed (H-E and Gallego's staining). Results: the most characteristic findings were: lymphoid interstitial pneumonitis, interstitial fibrosing pneumonitis and granulomas in subpleural area. Conclusions: the histopathological findings in the lung of the mice inoculated with the RNP antigen would be similar to lesions described in patients with MCTD.

**157.**  
**PURIFICATION OF NUCLEAR RNP FOR CLINICAL AND DIAGNOSTIC APPLICATION IN A AUTOIMMUNE EXPERIMENTAL MODEL**

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Mixed connective tissue disease (MCTD) is an autoimmune disorder associated with anti-ribonuclearprotein (U1-snRNP) antibodies. The aim of this study was to obtain RNP to induce an experimental model (in mice) and for use in ELISA assays. Materials and methods: Purification of RNP: Blobel and Potter's methods was used for the collection of the nuclei of rat liver. The RNP was purified by ultracentrifugation and by fractionated precipitation. The molecular weight of the isolated protein was determined by SDS-PAGE. ELISA assays: 96 well plates were sensitized with 1 µg RNP in 100µl per well. We used MCTD patients' sera as positive controls and normal individuals' sera as negative controls. Sera of all induced animals were tested. Results and conclusions: the molecular weight of purified RNP was compatible with one fraction of U-1 snRNP (45 kDa) and was reactive with the MCTD patients' sera. Most animals inoculated with the RNP antigen were highly reactive, others only somewhat. Non-inoculated mice were all negative.

**158.**  
**NEW REMAINS REFERABLE TO THE FAMILY NOTOHIPPIDAE (MAMMALIA, NOTOUNGULATA) FROM THE LUMBRERA FORMATION (EOCENE) FROM SALTA PROVINCE**

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Several remains of small notoungulates were found in 1999 at El Simbolar, Guachipas Department, Salta Province, in the Lumbrera Formation (above the "Faja Verde I"). Some of these notoungulates had been tentatively assigned to the Oldfieldthomasiidae on the basis of dental morphology. Additional material allowed a more complete analysis. These remains are reassigned here to the Notohippidae. The studied material, assignable to at least three individuals, includes mandibular, maxillar and premaxillar fragments with complete and incomplete teeth. They were compared to several known paleogene species of the family. It is concluded that they belong to a species very close to *Pampahippus arenalesi*. Also, dental morphology suggest that the species studied here is primitive in the context of the family. Noteworthy, the specimens are much smaller than the rest of the known Notohippidae. It is suggested that those belong to a new taxon.

**159.**  
**IMPAIRMENT IN ENDOCHONDRAL OSSIFICATION CAUSED BY PROTEIN MALNUTRITION IN GROWING RATS**

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This study examine for histomorphometrical methods alterations in endochondral ossification in femurs of growing rats subjected to protein free diet. Ten Wistar rats, 21 days age were used After weaning the animals were separated in 2 groups: Control (n = 5) fed on conventional diet ad libitum and undernourished (n = 5) fed on diet lacking in proteins administered ad limitum during 5 weeks. At the end of the experiment the animals were sacrificed, the femurs were dissected and processed for embedding in paraffin. Longitudinally sections were obtained and stained with H&E. Sections were photographed and tracings were made to perform histomorphometrical study. The following parameters were evaluated, according to stereological principles: 1. Length of the femurs taken in direct form with precision caliber. 2. Bone activity of the bone subcondral. 3. Bone volume in the bone subcondral. 4. Thickness of the cartilage of growth. The length of femurs was lower in the undernourished group (p<0,05). Histomorphometrical study indicated in the undernourished group a reduction in bone surfaces covered by osteoblasts (p<0,05), related to an increase in bone areas associated to lining cells. Bone volume was lower in the undernourished group (p<0,05). Thickness of the cartilage of growth did not show significant differences between control and experimental group.

*Subsidized by CIUNT.*

**160.**  
**DIETARY RESTRICTION IN BONE FORMATION IN ALVEOLAR BONE MODELING AND REMODELING**

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This work examined the influence of the dietary restriction in alveolar bone modeling and remodeling in growing mice. Twenty weaned Balb/C mice 17 days age were assigned to one of 2 groups. Control (n=10) and undernourished (n=10). Controls was fed with a conventional hard diet. Undernourished was fed with 75% of the amount of the diet of the control group. The corporal weight was registered in periodic form. At 25 days of experience, the animals were sacrificed, mandibles were dissected and procesed for embedded in paraffin. Buccolingually sections of the mesial root of the first molar were made and stained with H-E. Sections were photographed and tracings were performed for the histomorphometrical study The following parameters were evaluated following stereological principles: percentage of bone reabsorción, bone formation and bone rest surfaces, considering the 100% the total area of the remodeling and modeling alveolar bone walls respectively. Corporal weights were significantly smaller in the undernourished animals. The histomorphometrical study shows that dietary restriction produced an alteration in the process of bony modeling and remodeling characterized by an increase of the bony surfaces covered by lining cells (rest) associated to the statistically significant reduction of surfaces covered by osteoblasts (p<0,05).

**161. REINTERPRETATION OF A MIDDLE EOCENE NOTOUNGULATE JAW FROM THE LUMBRERA FORMATION (SANTA BARBARA SUBGRUP, SALTA GROUP) FROM NW ARGENTINA**

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The aim of this contribution is to reanalyze a complete jaw with all its teeth, previously assigned to the Family Notohippidae (Mammalia, Notoungulata), which is referred here as a Leontiniid. It was found in the upper third of the Lumbrera Formation (over the "Faja Verde II") at El Simbolar, Guachipas Dept., Southern Salta Province. Its dental formula is 3i; 1c; 4pm; 3m. Incisives roots are compressed. The i3 is the biggest, a diagnostic feature of Leontiniids. Incisives and canine are procumbent. Premolars and molars are brachyo-dont. Premolars increase in size gradually from the pm2-pm4. Molars lack posterior fosetid. The symphysis is short and reaches the mesial portion of the p1. New discoveries in the same site and stratigraphic level have cleared up this misinterpretation. The size of the i3, the compression of the incisors and the extent of wearing of lophids of the molars, allow to consider this material as a new basal representative of the Family Leontiniidae. It differs from other leontiniids of El Simbolar in its size and the morphology of the symphysis.

**162. DATES AND DENSITY OF SOWS AND SPACING AMONG LINE OF RICE IN UNIRRIGATED LAND**

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The present paper has the objective of to determine the influence of the date, density of sows and spacing among lines in aspects fenológicos and of yield of the rice cultivated without watering. The trial was carried out during the campaign 2.002-2.003, in the Experimental Field of the Facultad de Agronomía y Zootecnia, Universidad Nacional de Tucumán. Annual average: Rain: 1.188 mm, EP(Thorntwaite): 1.000 mm, Excess: 270 mm in the period December – May., Deficiency: 7 mm in September and October. It has proven three date of sows (October, November and December), two densities (6 and 3 grams seed/m) and two distance among lines (0,5 and 0,3 meters). Results: the date of sows it influences in the final height of the plants, when sows in the 2<sup>d</sup> date they reaches superior heights to the remaining ones, and that there are not yield differences among the densities of sows proven, although it observes significant interaction between dates and densities. Conclusion: the best combination corresponds to the sows in second date, with the biggest density and the smallest spacing among lines.

**163. STUDENTS EVALUATION OF THE DENTISTRY FACULTY OF THE NATIONAL UNIVERSITY OF TUCUMÁN**

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Educational institutions at world level, carry out controls of quality, through certain "factors". They include information from different sources that are unified by countries with similar politics and economy (OECD). The aim of this study was to detect strengths and/or weaknesses of the educational quality of the Dental Faculty of the UNT, through the opinion of students. Systematized anonymous surveys applied to students (n=383) of first to fifth year, with 15 items, 12 of them of multiple option, and 3 to complete. The analyzed aspects were: 1) types and evaluation frequency 2) pedagogic strategies, teaching-learning technique that students took advantage of 3) time dedicated to student's attention 4) weekly time dedicated to study 5) suggestions to improve practice 6) affective relationship 7) students consults attention. Results included: 1) Written applied evaluations were low 2) the strategy students took advantage of was theory and practice (64%) 3) 62% considered enough time dedicated to students, 4) 31% of the students dedicate less than 1 h to study 5) students request more time of practice, 6) student-teachers relationship was very good and good 7) 53% said teachers "always" attend consults and 37% said "sometimes". Conclusions: much **problems** of pedagogic nature could be detected as those related with students well-being. This should be applied on University politics to improve institutional quality.

**164. DETECTION OF THE HIV VIRUS IN TOTAL SALIVA OF HIV/AIDS PATIENTS**

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Certain evidences suggest that orofaringeous tissues can reserve the HIV and sustain viral replication. Total saliva (TS) is a complex mixture of gland secretions, where recent studies detected the virus by ELISA and Western Blot in HIV patients with gingivo-periodontal affection. The aim of this work was to associate viral RNA presence in TS of individuals HIV/AIDS, using the PCR technique, with the immunologic state. 15 HIV+ patients, both sexes, 33-45 yrs old were selected. Non stimulated TS was collected in 10 min of the sublingual and vestibule regions, centrifuged at 12000 rpm 60 min at 4°C and conserved at -70°C. Patients were divided according to their CD4 values: 500 cel/μl, 500-200 cel/μl and <200 cel/μl. After the viral RNA extraction, retrotranscription using RT Superscript enzyme, amplification with specific primers of the highly conserved region of the GAG gene virus (SK 38, SK 39, SK 145) and detection by agarose gel electrophoresis were carried out. Positive and negative controls were included. CD4 was determined in blood, while the quantification of copies of viral RNA in plasm was carried out with the Quantiplex HIV-1 RNA 3.0 Assay when TS was obtained. In 4 CD4 (500 cel/μl), 5 (500-200 cel/μl) and 6 (< 200 cel/μl) patients the virus was present. PCR technique allows to determine the presence of HIV in TS of moderate and severe immunosuppression patients.

165.

**COMPARATIVE HISTOPATHOLOGIC STUDY OF BIOPSIES OF PATIENTS WITH AND WITH OUT HIV/AIDS WITH PERIODONTITIS***Koss M<sup>1</sup>, Carino S<sup>2</sup>, Salúm MK<sup>1</sup>, Castro C<sup>3</sup>, López ME<sup>1</sup>**<sup>1</sup>Cát. Quím Biol <sup>2</sup>AnatPatol <sup>3</sup>Cát. Period. Fac Odontol, UNT. Tucumán. E-mail: myriam.koss@odontologia.unt.edu.ar*

The periodontal disease (PD) is characterized by the histological degradation of collagen. Gingival injuries are associated with HIV infection. The aim of this work was to carry out a comparative histopathologic study among biopsies of patients with PD with and without HIV/AIDS. 44 patients of 20-60 yrs old were selected. Diagnosis included periodontal and gingival indices, probing depth and insertion level, and was applied for all patients. 11 HIV/AIDS and 12 with chronic PD without infection were selected and histopathologically classified in 3 Gingivitis groups: Levee (I), Moderate (II) and Severe (III). Biopsies were obtained during the basic therapy by a mucoperiosteic tornpiece and processed by the routine technique. The study at the epithelial level included: queratinization, atrophies, focal or diffuse hyperplasia, espongiosis, exocytosis and presence of bacteria. At connective level: congestion hemorrhages and predominant cellular types (lymphocytes, plasmocytes, polymorfonuclear neutrophils, PMN). Group I with HIV/AIDS showed similar features, except for the high PMN infiltrate. Groups II and III with HIV/AIDS showed diffuse hyperplasia, higher number of colonies in epithelial and connective tissues, leucocytosis and PMN infiltrate. Groups without infection showed inflammatory focal hyperplasia and epithelial lymphocytes infiltrate. Results show different activity between HIV/AIDS patients and the group without infection.

166.

**CHEMICAL ANALYSIS OF GINGIVO CREVICULAR FLUID OF PATIENTS WITH PERIODONTITIS AND DENTAL MOBILITY***Castro CE<sup>2</sup>, Koss MA<sup>1</sup>, López ME<sup>1</sup>**<sup>1</sup>Cát. Química Biología, <sup>2</sup>Cát. Periodoncia, Fac. Odontol., UNT. E-mail: cecilia.castro@odontologia.unt.edu.ar*

The Periodontal Disease is characterized by inflammation (gingivitis) due to bacterial colonization that progresses toward the support tissues of the tooth. One of the characteristic signs of Moderate and Advanced Periodontitis is the mobility of the pieces and the support loss. Mobility is classified in degrees (Miller): I (the tooth moves 1 mm in horizontal sense), II (more than 1mm in horizontal sense) and III (horizontal and vertical mobility). The aim of this work was to determine chemical composition of GCF of patients with Periodontitis and dental mobility. 25 patients with diagnosis of Adult's Chronic Periodontitis, aged between 25 and 55, ten with mobility type I, 11 with mobility II and 5 with mobility III were included. The periodontal diagnosis was carried out by a single examiner, and consisted on: periodontal index (IP), gingival index (IG), probing depth (PD), insertion level (IL) and bleeding (B). GCF samples were taken from two places of the same mobile uniradicular tooth. Aspartate Amine Transferase, Lactate Dehydrogenase Alkaline Phosphatase and Collagenase (zimography) were determined. Statistically significant differences were observed for AST, LDH and AP with regard to controls. Enzymes in GCF could difference Moderate and Severe Periodontitis, but not mobility degrees.

167.

**EFFECT OF ENDODONTIC IRRIGANTS ON RADICULAR HUMAN DENTIN***Salas MM<sup>1</sup>, Alcaide MF<sup>2</sup>, Terán H<sup>2</sup>, De la Casa ML<sup>3</sup>, Bulacio MA<sup>3</sup>, López ME<sup>1</sup>.**<sup>1</sup>Cát. Quím. Biol, <sup>2</sup>Inst. Morf Anim, Fund. MI Lillo, <sup>3</sup>Cát. Endod, Fac. Odontol, UNT. Av. B. Aráoz 800. Tucumán. Argentina. E-mail: mercedes.salas@odontologia.unt.edu.ar*

The effects on the dentin tissues of irrigation solutions are studied in order to optimize their employment in Endodontics. Objective: the histological and chemically evaluation of the action of irrigation solutions on the structure and composition of human dentin. Methodology: 10 uniradicular roots of human antero superior teeth were extracted by orthodontic reasons and cut in 2 mesial and distal halves being one as control. The other half was exposed to 1 ml of: 1% NaClO, 17%EDTA, 1%Ca(OH)<sub>2</sub>, 0.2% Chlorhexidine and distilled water 30 min, fixed 3h in buffered formol pH 7 and conserved in alcohol 70°. Halves were fractioned in thirds, treating the cervical and half thirds until a thickness from 6-8 µm and colored with Hematoxilin-Eosine (H-E), Alcian Blue pH 2.5 with PA-Schiff (AB-PAS) and Alizarin Red pH 9.3. Total proteins, hydroxiproline, Calcium and Phosphor in the irrigation solutions were determined. Results: Tissue disorganization was observed with NaClO and EDTA. NaClO eliminated proteins and calcium. EDTA solution had a highly content of hydroxiproline and Phosphor. Conclusions: 1%NaClO evidenced its oxidizer action on collagen and mineral; 17%EDTA demonstrated its quelant power affecting the mineral and the organic components. Photographer F. Pucci.

168.

**SALIVARY BIOCHEMICAL PARAMETERS IN XEROSTOMIC PATIENTS WITH AND WITHOUT HUMAN IMMUNODEFFICIENCY VIRUS***Vargas CF<sup>1</sup>, Salum MK<sup>1</sup>, López ME<sup>1</sup>**<sup>1</sup>Cát. Quím. Biol. Fac. Odontol, UNT. Av. B. Aráoz 800, S.M. Tucumán. E-mail: carmen.vargas@odontologia.unt.edu.ar*

The decrease in the salivary flow rate (xerostomy), can alter the protective role of saliva on mineralized and non mineralized tissues. HIV/AIDS patients demonstrated to have salivary alterations related to a subclinical disease of salivary glands caused by immune suppression or by the antiretroviral treatment associated to proteases inhibitors. The aim of this work was to analyze physical and chemical salivary variations in xerostomic patients with and without HIV. 33 patients both sexes, aged 40 were considered: 7 HIV- without xerostomy, 15 HIV- with xerostomy and 11 HIV/AIDS (CD4 200 cel/µl) with xerostomy. Stimulated total saliva was obtained in 15 min of the sublingual and vestibule regions, and centrifuged. PH, buffer capacity and flow rate were determined. Chemical characterization consisted on: proteins, hydroxiproline, peroxidase, calcium and phosphor. Data was analyzed by ANOVA,. Results showed statistically significant differences (p<0.001%) for proteins, calcium and phosphor among xerostomic HIV- and HIV/AIDS groups. Differences (p<0.05%) were for flow rate, buffer capacity, proteins, peroxidase, calcium and phosphor when the two xerostomic groups were compared with controls. HIV/AIDS xerostomic patients showed increased biochemical values related to xerostomy or the viral infection.

**169. CONTENT OF N-P-K IN DIFFERENT COMPONENTS MORFOLOGICS FROM STRAWBERRY PLANTS cv. SELVA IN CULTURE OF 1<sup>st</sup> AND 2<sup>nd</sup> YEAR IN TAFÍ DEL VALLE, TUCUMÁN, ARGENTINA**

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The objective of the work was to determine the content of NPK in plants of strawberry, cv. Selva of 1<sup>st</sup> and 2<sup>nd</sup> year cultivated in 2003/04, in Tafí del Valle at 2000 m.o.s.l. Fertilization was: 50, 20, 100 UF of NPK, in culture of 1<sup>st</sup> year and 110, 45 and 220 of UFN-P-K in the 2<sup>nd</sup> year. It was determined the content of NPK % in fruits, leaves and petioles in plants of 1<sup>st</sup> and 2<sup>nd</sup> year in March of 2005. ANVA and Test of Tukey in plant and correlation of Pearson of NPK % in fruit took place. Significant differences in 2<sup>nd</sup> year with respect to 1<sup>o</sup> year of N in fruit of 1,4 and 1.2; leaves of 2,4 and 2.3; and petioles of 0,9 and 0.7; P in: petioles of 0,19 and 0.18; K in: petioles of 2,8 and 2,3, respectively, and significant differences in culture of 1<sup>st</sup> year with respect to 2<sup>nd</sup> year of P in: fruit of 0,2489 and 0.24; K in: fruit 2,1 and 1,7 and leaves of 1,9 and 1,7, respectively, were founded; and negative correlation in fruit between P and N (-0.5736), K and N (-0,8277); and positive correlation between K and P (0.4976) were founded. Its results suggest it is necessary to adjust the fertilizers according the smaller fruits demand of P and K% in the 1<sup>st</sup> year.

**170. EVALUATION OF YIELDS AND ABSORPTION OF N-P-K IN TUBER (*Solanum tuberosum* L. Spunta) SEED IN TAFÍ DEL VALLE, TUCUMÁN, ARGENTINA**

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The object of the trial was to evaluate yields and absorption of NPK by seed potato, cv. Spunta, in Tafí del Valle, in 2004/05. The experimental design was Blocks at random with 6 treatments: T1.Control. T2. 100 Units of fertilization of N/ha. T3.100 UFN+90 UFP/ha. T4.100 UFN+150 UFK/ha. T5.100 UFN+90 UFP/ha+150 UFK/ha. T6. 130 UFN+160 UFP/ha, and 5 repetitions. The ANVA and LSD in tuber yield, Test of Tukey in NPK in tubers and correlation between production of seed potato and NPK in tubers were realized. Differences in yield of tuber were detected between T6(22,140) and T5(20,164) with respect to T1(12,404) kg/plot. Significant differences in content of N were detected between: T6(1,6), T3(1,4), T2(1,4) and T4(1,4) with T5(1,3) and T1(1,1); between T2(1,4), T5(1,3) and T5(1,3) with T1(1,1); in content of P between T2 (0,26), T3 (0,26), T5 (0,26) T6 (0,26) and T1 (0,24) with T1 (0,23). There were no differences in K in tubers. Positive correlation between yields with N (0.3233) and P (0.1338) and low correlation of K (0.0648) in tubers were found. Its results suggest it is necessary to realize adjustment fertilizer according the absorption and accumulation of NPK by the tubers seed.

**171. RELATIONSHIP BETWEEN LOW TEMPERATURES AND TISSUE DAMAGE IN LEMON (*Citrus limon* L.)**

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Lemon has become very important crop in Tucumán in the last years. This province presents big thermic variations with frequent Autumn-Winter frosts. At -2°C flowers, at -3°C leaves and -9°C woody tissues are damaged. Damage is related with the duration of low temperatures. The objective of this study was to evaluate tissue damage caused by low temperatures in different top sectors of lemon plants. It was worked in El Manantial with Eureka variety top and Citrange Troyer rootstock trees. The low temperature incidence on North and South top sectors was evaluated. The mean minimum registered was 3°C. The cellular flux conductivity of leave tissue was determined as Dexter (1932) modified by Amado and R. Rey (1984). In each sampling date, 10 samples were incubated at 25°C, 15 hs. (control) and 10 treated at -10°C, 2 hs., then incubated the same as control. Tissue damage index (T.I.I., Singh and Kanwar, 1978) was calculated: T.I.I.=Control Conductivity (25°C)/Treatment Conductivity (-10°C). Conductivity determination of the cellular flux of congealed and uncongealed cells permits to evaluate the low temperatures damage to the membrane system functioning. Results show greater tissue damage at leave level at top South sector than at the North one owing to the cold front advance from that orientation.

**172. EFFECT OF THE THERMIC FACTOR IN THE REPRODUCTIVE DEVELOPMENT OF PEPPER CROP**

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The pepper production in greenhouse constitutes an important activity for Tucumán province (Argentina). Pepper is a species with high sensibility to low temperatures, manifesting a growth detention at 10°C and minor flower coagulation at 18°C. The objective of this study was to evaluate the development of the pepper crop in a determined thermic cycle for the 2005 year employing the minimum temperatures occurred in the greenhouse. It was worked from last May to middle September in the Centro de Experimentación Adaptativa Lules (CEAL) dependent of the Instituto Nacional de Tecnología Agropecuaria (INTA) located at San Isidro de Lules (Tucumán province). It was used the Margarita hybrid. The implantation was made to a distance of 40 cm between plants and 120 cm between lines. Evaluations were made from May 31<sup>st</sup> to September 19<sup>th</sup> consisting on the extraction of three entire plants. Fresh weight, dry weight and number of flowers per plant were determined according to the methodology of evaluation and analysis of the growth. Results show a decreasing of the number and dry weight of flowers in an 80% when minimum greenhouse temperature decreased from 10°C to 3°C which indicates minor flower coagulated and low yield of the pepper crop at cooling temperatures.

**173.**  
**EVALUATION OF ORAL HEALTH RELATED HABITS IN A GROUP OF TEENAGER STUDENTS**

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The aim of this study is to evaluate oral hygiene and alimentary related habits in teenagers' students of Odontology School taking the class of Health Education and to estimate the importance that they give to buccal health and the frequency of visit to the dentist office. This study was made with 64 students, 46 female and 18 male, aged 18 (n= 7), 19 (n= 41) and 20 years old (n= 16), during the first day of class in 2005. Answers indicated that they brushed their teeth 1 to 6 times a day (mean 3 times a day). 55% of the students changed teeth brush each 3 months, 33% each 6 months and 12% each 12 months. 77% of the students used other kind of implement like dental floss (64%) or dental rinse (33%) as a complement of buccal hygiene. 86% of them ate lacteous products every day but also cariogenic food (sodas 3 to 4 times a day and candies 1 to 2 times a day). 60% of the students gave the same importance level to oral health than body health, they visit the dentist office mainly because caries and less frequently to obtain preventive care or orthodontic treatments. The detection of inadequate buccal habits and the perception that students have about oral health let us to implement preventive strategies of self-care and specific protective procedures in this special group of students that in a next future will be responsible of public oral health.

**174.**  
**INTERDISCIPLINARY PROJECT: USE OF MEDICINAL NATURAL RESOURCES IN THE ARGENTINE NORTH-WEST**

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The rescue of popular knowledge and its revaluation require the contributions of the community and numerous scientific disciplines. With the objective to generate an interdisciplinary experience to investigate use of medicinal natural resources in the Argentine north-west it is instituted a project between the Medical Anthropology and Unit of Medical Practices (FM) and Pharmacognosy (FBQF) of Universidad Nacional de Tucumán. The application of technique of operations groups with an ethnographic boarding is used like methodology from *emic-etic* perspective. The protagonists are teachers, students and the studied community. In the first stage developed in the locality of Lamadrid, Graneros, province of Tucumán, semi structured survey was released to Know the use of medicinal natural resources between the settlers. The results obtained allowed to integrate the knowledge with other disciplines to program joint operations and to interact with the community from an approach *emic-etic*.

**175.**  
**CHEMICAL STUDY AND BIOLOGICAL ACTIVITY OF JATROPHA MACROCARPA GRISEB. (EUPHORBIACEAE)**

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*Jatropha macrocarpa* Griseb., Fam. *Euphorbiaceae*, commonly called "higuera de zorro" is native of Argentina and growth in La Rioja, Catamarca, Salta, Jujuy and Tucumán provinces. Other species of *Jatropha* are used in the traditional medicine as antirheumatic, hemostatic, laxative and skin diseases. The objective of the present work was to carry out a study the chemical composition and biological activity in this species. Leaves of *Jatropha macrocarpa* was dried and extracted by maceration with ethanol and fractionating into different constituents according to polarity. On the other hand successive extractions with hexane, dicloromethane and methanol for biological activity were made. The effect of extracts on ATCC bacteria: *Staphylococcus aureus*, *Escherichia coli* and *Pseudomona aeruginosa* by agar diffusion method was assayed. Ethanolic extract revealed steroids, flavonoids, alkaloids, triterpenoids and quinones compounds. All extracts tested showed highest antibacterial activity.

**176.**  
**AINEs PRESCRIPTION BEFORE PAIN IN CHILDREN DENTISTRY**

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Analgesics, antipyretics and antiinflammatories (AINEs) prescription in children, must be based on the analysis between probable benefits and risks of adverse effects. **Aims:** 1) Evaluate the pharmacological treatment before pain in children 2) Determine the rationality of drug prescription in case of pain. **Materials and methods:** 120 students of the F.O.U.N.T. and dentists were interviewed with structured surveys for data collection in order to determine: a) Therapeutic attitude before dental pain in children, b) AINEs prescription selected by specific criteria according pharmacological action, c) Dose and intervals of them, d) Pharmacological treatment duration. **Results:** In both groups, first election AINE was Ibuprofeno, giving priority to anti inflammatory action like selection criterion. Second criterion of selection more used by the dentists was based on the analgesic-antipyretic action. Whereas in students group, second election criterion continues based on anti inflammatory action. Doses and intervals were correctly prescribed in both groups, nevertheless the treatment length was not optimal. **Conclusions:** Predominant pharmacological treatment election in students and dentists was Ibuprofeno, based on its main anti inflammatory action.

**177. COOPER ACCUMULATION IN ROOTS, STEMS AND LEAVES OF A FOOD PLANT**

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Plants metal biosorption are affected by species, growth and chemical elements characteristics. In Tucumán there is a copper filter plant that produces metal contamination in agriculture surrounding areas. The aim of this work was to determine Cu accumulation in maize plant and its capacity of growth. Maize seeds were germinated in sterile, humid and dark conditions at 30 °C for 3 days, being later seeded in an inert material. The plants were watered 10 days with nutritive broth, 6 more with also CuSO<sub>4</sub> 250 mg/L and kept at 30 °C with light cycles of 12 h. The growth was evaluated in roots, stems and leaves. Cu accumulation was measured by atomic absorption spectrophotometer. A growth diminution of 10% in roots and leaves was observed compared to the controls. Only stems and leaves presented 16 and 13% weights reduction. Stems Cu accumulation was 93% more than the controls, however in roots and leaves were 83 and 86%. The capacity of Cu(II) accumulation by a food plant, could be prejudicial for the trophic chain because their toxicity in high concentrations

**178. ELICITATION OF DEFENSE REACTIONS IN STRAWBERRY (*Fragaria x ananassa*) BY ELICITOR DERIVED FROM *Colletotrichum***

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The oxidative burst generating reactive oxygen species (ROS: H<sub>2</sub>O<sub>2</sub>, O<sub>2</sub><sup>-</sup>) is one of the earliest plant responses activated by a defense elicitor. Accumulation of H<sub>2</sub>O<sub>2</sub> can trigger cell wall thickening, induction of defense genes and a localized cell death called hypersensitive response (HR). The aim of the study was to analyze the occurrence of defense reactions in response to a fungal elicitor in strawberry plants. The elicitor was obtained from culture filtrate of an avirulent strain of *Colletotrichum fragariae* and infiltrated on the abaxial surface of two leaves per plant of the cultivar Pájaro. Histochemical localization of H<sub>2</sub>O<sub>2</sub> showed spread micro-bursts in treated leaves with a maximum accumulation four hours after infiltration. In the same areas we have also detected the reinforcement of mesophyll cell wall due to the apposition of lignin and the swelling of few adaxial epidermal cells followed by their collapse 24 hours latter. HR cell death was visualized at infiltration sites by yellow autofluorescence under UV-light (310 nm) excitation indicating the accumulation of polyphenols. Our results indicate that the H<sub>2</sub>O<sub>2</sub> burst is closely associated with HR and the lignification. These local defense responses induced a systemic protection when plants were challenged with a virulent pathogen.

**179. ANALYSIS OF TISSUE TYPE PLASMINOGEN ACTIVATOR (t-PA) IN PORCINE OVIDUCT**

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Plasminogen activators are highly specific serine-proteases that convert plasminogen to plasmin, an active protease with a very broad spectrum of substrates. In previous works, we determined the activity of plasminogen activators and the expression of urokinase type plasminogen activator (u-PA) in the epithelium of the porcine oviduct. The aim of this work was to demonstrate that tissue type plasminogen activator (t-PA) is synthesized and secreted in the porcine oviduct as well as to study the differences between the phases of the estrous cycle. Western Blot assays performed with oviductal fluid obtained in the follicular and luteal phases, by using a monoclonal antibody against t-PA, showed a band of 72 kDa corresponding to MW reported for porcine t-PA. The presence of t-PA was observed in both phases of the estrous cycle. The t-PA concentration was higher in samples obtained during follicular phase than luteal phase. The expression of t-PA gene studied by semi-quantitative RT-PCR in both ampulla and isthmus oviductal regions indicated no significant differences between both segments. When we studied the t-PA gene in the epithelial cells, an up-regulated expression during the follicular phase in this tissue was observed. According to these results, the presence of t-PA in epithelial cells was also confirmed by immunohistochemical assays. This work indicates that the t-PA is synthesized in the porcine oviduct and secreted to the oviductal lumen, where it could activate plasminogen to plasmin near gametes or embryos. This enzyme could act directly or indirectly on the extracellular matrix (ECM) components in the last case by activating matrix metalloproteases or growth factors present in the ECM.

**180. REACTIVATES SEROLOGY FOR TRANSMISSIBLE DISEASES BY TRANSFUSIONS IN DONORS OF THE PROVINCE OF TUCUMÁN AT OFFICIAL LEVEL. PERIOD 2004**

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Descriptive, transversal cohort study, over 12,981 donors from Tucumán official data base (Argentina) Period 2004. Objectives: Describe the frequency of reactive serology for transmissible disease by transfusions (TDT) in blood donors and discriminate it according to the type of disease. The information was obtained of the Tucumán official data base. Exclusion Criteria: Samples without pertinent studies. Descriptive study of variables was made. Reactive serology presented in 1567(12%) on 12,981 donors. The most frequently diseases founded were: Chagas 7%(862 cases), anti-HBcore 4%(454), anti-HCV 1,4%(185), HBsAg, 1%(129), the rest was presented in less of 0,4%. Comparing the frequency founded (12%) with studies that used normatized systems of tamizaje (4%) was observed a greater significantly difference. The differences with the studies described would indicate that it would be necessary to fit the tamizaje methods.

**181. MICRO-STRUCTURAL ANALYSIS AS QUALITY INDICATOR OF BLUE-BERRIES MAINTAINED IN PHYTOPRESERVATIVES**

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Blueberries (*Vaccinium corymbosum*) are been recently cultivated in Tucumán, Argentina. Its production and commercialization is influenced by the short time of shelf life of them, principally for the presence of bacteria and fungi. In a previous work, we determined the efficacy of plant extracts to inhibit growth of microorganisms. The phytopreservatives were effective in the suppression of the growth of microbes during 12 weeks of storage at 4°C. The color and firmness are important factors that determine the quality of fresh and processed fruits. For this, the textural quality was studied using microstructural and compositional data. Phytopreservatives was able to retain the integrity of epidermal and subepidermal cells, the epidermal cell layers number, the cell wall and epidermal pigment (anthocyanins) were preserved.

Consequently, phytopreservatives are promissory as natural antimicrobial and antioxidant agents in foods such as minimally processed fruits.

**182. IMMUNOHISTOCHEMICAL PROFILE OF PROLIFERATIVE LYMPHOID LESIONS IN MAJOR SALIVARY GLANDS. FIVE CASE REPORTS**

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Mucosa-associated lymphoid tissues have been referred to as MALT. In salivary glands, reactive proliferations include the benign lymph epithelial lesion (B.L.E.L.). Most lymphomas are non-Hodgkin lymphomas, phenotype B. There is some controversy and difficulty to make a differential diagnosis between reactive and neoplastic lesions A clinical-pathological study was carried out in lymph proliferative lesions of major salivary glands diagnosed as: MALT lymphomas (MALT L), 3 cases; benign lymph epithelial lesion (BLEL), 1 case; diffuse large B cell lymphoma (DLBCL), 1 case. In order to make an early diagnosis of malignancy, an immunohistochemical profile was made. Monoclonal and policlonal antibodies were used: common leukocyte antigen (CD45); Pan T (UCHL-1, CD3); Pan B (CD20); Bcl-2; chains  $\kappa$  y  $\lambda$ ; cytokeratin (AE1 – AE3) **Results:** MALT L: CD20 + diffuse 3/3, UCHL 1 + focal 3/3, and light chain restriction. B.L.E.L: CD20 +1/1, UCHL1 + 1/1, without chain restriction; DLBCL: CD20+diffuse1/1, UCHL1 + focal1/1. The key to diagnose MALT L was light chain restriction. The diagnosis requires the analysis of clinical, histological, immunohistochemical and molecular data.

**183. HYPOGLYCEMIC ACTIVITY OF SEVERAL EXTRACTS AND SUB-EXTRACTS OF SMALLANTHUS SONCHIFOLIUS LEAVES**

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*Smallanthus sonchifolius* (yacon) is a perennial herb native to the Andean region and is known to have been cultivated and consumed since pre-Columbian times. The leaves are used in folk medicine as a tea for diabetes treatment. Previous results from our laboratory demonstrated that water extracts of yacon leaves have a marked hypoglycemic activity in normal and diabetic rats, probably due to the presence of active, yet unidentified components. The present study was undertaken to determine the hypoglycemic effect of five organics fractions from yacon leaves, by a singly oral administration to normoglycemic and transiently hyperglycemic rats. The methanolic total extract (MTE) was obtained from dried leaves, and the hexanic (HSE), ethyl acetate (EASE), buthanolic (BSE) and chloroformic (CSE) sub-extracts were obtained successively. No significant effect on basal blood glucose level was observed when normoglycemic rats received each extract, but the MTE, BSE and CSE sub-extracts caused a rapid decrease in the hyperglycemic peak during the glucose tolerance test. These extracts are rich in polar compounds, which could be responsible for such effect. Further investigations are necessary to identify the active molecule/s.

**184. GANGLIOSIDES IN LEAD NEPHROPATHY**

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Gangliosides are sialic acid containing glycosphingolipids. They are constitute molecules of plasma membranes and play important roles in cell function. Due to their abundance and electronegative charges, these molecules may be involved in the maintenance of glomerular filtration. Kidney tissue was characterized by high concentrations of GD3. This ganglioside and his 9-O-acetylated form are responsible of diverse events such proliferation, differentiation and apoptosis. Lead is one of the most common toxic metals present in our environment and kidney is quite vulnerable to toxic injury. The aim of the present study was to investigate the pathophysiological relationship between lead exposure and the gangliosides expression in the development of lead nephropathy. Adult male Wistar rats were given 0.06% lead acetate in their drinking water for 4 months whereas the controls received ordinary tap water. Gangliosides composition was analyzed using TLC and their localization by indirect immunohistochemical methods. Apoptotic cells were investigated using TUNEL detection. Gangliosides from kidney lead-treated rats showed an increase of GM2, GM4, GD3 and a decrease of GM1. GD3-O-acetylated expression was significantly higher than controls, showed an inversy relation with apoptotic nuclei recount The alteration of gangliosides expression may be implicated in lead nephropathy and glomerular cells could increase GD3-O-acetylation suggesting a way to avoid apoptosis and cooperate to cell survival.

**185. EVALUATION OF THE USE OF MOLECULAR ANIMATION IN THE LEARNING OF TRANSMISSION MECHANISMS OF HORMONAL SIGNS**

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The aim of this study is to evaluate the use of two molecular animations for the learning of transmission mechanisms of hormonal signs used in a Biochemistry class for students of medicine at the National University of Tucumán, taking into account the knowledge acquired by the students and their opinions. The animations were obtained from the book *Molecular Cell Biology* by Lodish *et al.*, and from the internet. After a class with fixed images in power point, a questionnaire was handed out to the students (87) with multiple choice questions about the concepts presented. Following, the animations were shown and then the same questionnaire was again handed out but including questions of opinion about each animation. In all of the questions there was an increase in correct answers after having visualized the animation between 5 and 30% depending on the question. Among the questions of opinion the vast majority answered that they liked the animations, they found them useful, the movement helped comprehension and that concepts were clearer in those cases. Conclusions: Molecular animation tools are good teaching and learning aids. The students recognize the virtues of images in movement for conceptual comprehension. Its use motivates students as well as achieves greater learning.

*This study is subsidized by the CIUNT.*

**186. INCIDENCE OF GENDER IN THE GENERAL KNOWLEDGE OF MATERNAL LACTATION OF MEDICINE STUDENTS OF THE NATIONAL UNIVERSITY OF TUCUMAN**

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The role of health professionals promoting maternal lactation is crucial. This establishes the need to have a space for learning about maternal lactation for future medical doctors, beginning with the previous knowledge of the students. The aim of this study is to determine whether there are differences in the previous knowledge concerning maternal lactation in the 3<sup>rd</sup> year students of medicine at the University of Tucumán, taking into account the gender of the students. Throughout lectures of 3<sup>rd</sup> year students in 2003 (85 females and 43 males) and in 2004 (35 females and 26 males) a survey with questions about different aspects relative to maternal lactation was handed out. (For example the best time to begin lactation, the duration of maternal lactation, cases in which maternal lactation is not recommended). The surveys belonging to female students were processed separately from those of the male students. The results obtained showed different degrees of knowledge depending on the topic and in some cases on the groups surveyed. Even though it is expected that women be more informed on maternal lactation, no marked tendency was found in the groups and aspects studied, that reflect superior knowledge among one of the sexes over the other.

*This study was subsidized by the CIUNT.*

**187. SUGARCANE SYSTEMIC DISEASES DIAGNOSIS AT "ESTACIÓN EXPERIMENTAL AGROINDUSTRIAL OBISPO COLOMBRES (EEAOC)"**

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Sugar industry is one of the most important in Tucumán. Therefore, to know the crop health situation is fundamental to prevent or reduce the losses caused by diseases. Consequently, a precise and highly sensitive diagnosis method is required. "Enzyme Linked Immunosorbent Assay" (ELISA) immunoenzymatic technique and its variants, are the most commonly used, although Polymerase Chain Reaction (PCR) molecular technique has been found to improve pathogen detection. At EEAOC, ELISA and since 2005 PCR, are used for optimizing disease diagnosis. Thus, the molecular diagnosis of four diseases caused by *Leifsonia xyli* sp. *xyli*, *Xanthomonas albilineans*, Sugar cane Mosaic Virus (ScMV), Sugar cane Yellow Leaf Virus (ScYLV), was optimized. The analysis of 160 samples with both diagnosis techniques showed no differences in bacterial pathogen detection, whereas with PCR a greater number of positive samples for ScMV was determined. From this results, we suggest to apply the serological technique and then PCR in the negative samples; it will allow a balance between sensitivity and analysis cost.

**188. ACCREDITATION OF THE MEDICINE CAREER: EVALUATION OF THE INFORMATION IN STUDENTS OF FIRST YEAR**

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In order to know the level of information on the processes of accreditation of the Medicine career of the UNT, It made a survey (S1) to 120 students of first year. After an informative class, a second survey (S2) was made to evaluate the acquired knowledge. After 2 months, the same group of students was re-evaluated by means of a third survey (S3). The S1 showed that 77% knew about the CONEAU 2000 accreditation, a 46% in relation to CONEAU 2006 and a 57% concerning to MERCOSUR 2005. Although there was an increase of the knowledge of the students on the accreditation processes, It was not the adequate. Survey 2 revealed that the 100% recognized the meaning of abbreviations CONEAU and a 91% the meaning of MEXA. S3 indicated that a 85.5% knew on relation of CONEAU 2000 accreditation, a 83.6% of CONEAU 2006 and 89% on regarding to MERCOSUR 2005. Only a 13% identified the abbreviation CONEAU and nobody MEXA. We concluded that the information process must be continuous, which would favours the sense of property of the students, who are the true protagonists of our studies house.

189.

**DIVALENT CATIONS EFFECTS ON VESICLES PREPARED WITH CYTOPLASMIC MEMBRANE GRAM NEGATIVE LIPIDS**

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Membrane fusion is an essential event for life and cellular development. However, the mechanism involved in the initiation and regulation of this process are still unclear. Divalent cations can induce aggregation, desestabilization and fusion of phosphatidylserine (PS) small unilamellar vesicles while monovalent cations can induce only aggregation. In order to study fusion and permeability of more complex systems, we have purified cytoplasmic membrane lipids from phylogenetically related organism such as *Escherichia coli*, *Salmonella typhimurium* and *Pseudomonas aeruginosa*. We have improved the lipid extraction with a modification of the standard Folch technique. The obtained lipids were tested qualitatively and quantitatively obtaining better yield with our modification. The small unilamellar vesicles were prepared by sonication methods and their stability were checked by liberation of preencapsulated calcein. The obtained results show that the vesicles are stable. The permeability and fusion of the vesicles induced by mono and divalent cations was studied by fluorescence techniques. The results suggest that the changes in permeability and fusion of the vesicle membranes depend on the bacterial origin of the lipids used in the liposome's preparation.

These results could be useful to elucidate basic aspect of exocytosis in Gram negative bacteria.

190.

**PHARMACEUTICAL WATER PURITY CONTROL**

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The water contamination is due to the presence of substances to make it unclean and adulterate its quality by natural or artificial process. The Pharmacopoeias (FA VII; USP XXIV) specify the parameters to obtain water of different quality. Pharmaceutical and biotechnology industries use potable water (AA), purified water (AP), water for injectable (API) in their process. The objective of this assay is to analyze the purity of three different types of water (AA, AP, API) used for manufacturing pharmaceutical form and quality control, cleaned and sterilized reactive. The parameters assayed were: temperature, pH, conductivity, dried weight, chloride, nitrates, sulfates and organic matter. The microbiological control was made by plate count in solid medium and presence/absence techniques for total aerobes microorganism, fungus and yeast, *Pseudomonas* and coliforms. The obtained results allow to conclude that when AP and API are of equal origin, the physical-chemistry profile is conserved, showing that the sterilization process does not affect the characteristics of the sample. Most of the potable water samples (AA) do not reunite the aptitude requirements for pharmaceutical industry due to the presence of sulphates, chloride and organic matter. The microbiological results demonstrated absence of pathogenic microorganisms, few fungi and yeasts and a number of total mesophilic aerobes inferior to 300 UFC/ml, in coincidence with the Food Argentine Code and Pharmacopoeias. In deed of the microbiological quality of the AP sample is inferior to those of the AA of the same origin, possibly due to a deficiency in the distiller, AP and API are still optimal for their pharmaceutical use.

191.

**WEEDS OF EMERGENT IMPORTANCE IN GRAIN CROPS AT TUCUMÁN (ARGENTINA)**

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The species that tolerate and germinate after the normal Glifosate doses, complete its reproductive cycle and increase their population, are called emergent weeds. The use of new technologies for weed control in grain-crops proves the increment on the emergent weeds populations. So it is necessary to identify the emergent weeds to know their behavior in order to make emergency predictive models. The aim of this paper is to register and characterize the emergent importance weeds in grain crops in Tucumán. The samples were collected in chemical fallow on the soybean-wheat system during 2004-2005. The samples were identified at species level using the specialized bibliography. The scientific name, the botany family, the common name, the life cycle, the phenology, the exomorphological and reproductive characters are described. The weeds of emergent importance found are: *Avena fatua* L.; *Bromus catharticus* Vahl.; *Chloris dandiana* var. *breviaristata* (Hack.) A.M. Molina & Rúgolo; *Papophorum pappiferum* (Lam.) Kuntze; (Familia Poáceas); *Commelina erecta* L. (Familia Commelináceas); *Amaranthus quitensis* Kunth (Familia Amarantáceas); *Cyclanthera hystrix* (Gillies ex Hook. & Arn) Ern. (Familia Cucurbitáceas); *Manettia cordifolia* C. Martius (Familia Rubiáceas); *Solanum lorentzii* Bitter (Familia Solanáceas); *Euphorbia postrata* Aiton (Familia Euforbiáceas); *Trianthema portulacastrum* L. (Familia Aizoáceas).

192.

**TEACHER'S SOCIAL REPRESENTATIONS OF EDUCATION FOR HEALTH. THE MEASUREMENT OF ITS MEANING**

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**Objective:** to identify the social representations that teachers from General Basic Education 1 and General Basic Education 2 have about "Education for Health" in San Miguel de Tucumán.

**Materials and Methods:** 64 teachers working at schools belonging to the program oral EDSA were questioned about the concept "Education for Health" and were asked to give their point of view. With the resulting data a meaning factorial analysis was made. A semantic profile was determined from the values obtained.

**Results:** distribution of the 24 pairs: fourteen with a positive direction: Important/Unimportant, Necessary/Unnecessary, Good/Bad, Desired/Not desired, Significant/Insignificant, Prime/Superfluous, Unique/Not necessary, Right/wrong, Basic/trivial, Opportunate/Innapropriate, Positive/Negative, Simple/Complicated, Sure/Dubious, Unpredictable/Rejectable. Three have a neutral meaning: Obscure/Defined, Efficient/Inefficient, Able/Disabled. The rest is negative: "slightly containing, dynamic and positive", "rather forgotten, scarce, partial and lacking".

**Conclusion:** The predominant direction of the opposed pairs is positive. The relevant intensities are "slightly" and "rather" The attitude is that of acceptance of the object.

**193.**  
**LEARNING HABITS AND MOTIVATION IN ODONTOLOGY STUDENT**

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Learning habits and motivation have the goal to detect the deficiencies that students might have, and to achieve an improvement in their intellectual techniques, which would prognosticate a better academic success.

Objectives to change learning habits in 4<sup>th</sup> year students, attending Periodontics course, belonging to clinical studies of Odontology career. **Material and Methods:** two commissions of students attending Periodontics regularly during 2004, were selected. These students were given a 56 point structured., consisted of 7 items: I Environmental factors, II Physical and Emotional Health, III Aspects about the learning method, IV Plans and Schedules Organization, V Examinations performance, VI Information search, VII About the learning motivation. **Results:** the sample was finally constituted by 48 students. 84 % found difficult to concentrate with noises. 71% revealed that emotional problems damage their performance, 68% makes a general exploration before they start studying. Most of them express that they separate the most important items out of each subject, and they also underline the main content of what they study. 54% can't distinguish clearly the words indicating what they really have to do. 65% doesn't know the general structure of a scientific job. **Conclusions:** most consider study as something personal, and feel that it is a means to recreate and spread knowledge.

**194.**  
**PRELIMINARY STUDIES OF VOCAL REPERTOIRE IN *Conepatus chinga***

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As for is the case with many carnivores in Argentina, investigations on the hog-nosed skunk; *Conepatus chinga*, are limited, numerous aspects of its biology being unknown. The aim of the present work is to increase our knowledge of an important part of its behavior: the acoustic communication. We recorded and analyzed the calls emitted by 5 individuals of this species. By means of the analysis of different physical parameters (duration, range of frequencies, repetition rate, pulse duration, etc) we defined seven different calls. Only one call was tonal (bleat) and it was produced by the newborns. There were four pulsed calls which had high repetition rates. Yelp was formed by an increase in the repetition rate of squeal. Snort had a lower repetition rate, and is more regular. Bubbling had an upper frequency of 4000 Hz. The two atonal calls, (cough and hiss) were similar, but they differed in the emission situation. Most vocalizations had components over 8000 Hz; the bleat is ontogenetically the first and occurred only in the newborn-mother context. The importance of this study is not only that it is the first on this species, but also that a spectrographic description allows us a better identification, and more appropriate comparison with other species of the same genus and the same family.

**195.**  
**A COMPARATIVE HISTOLOGICAL STUDY OF SKIN FROM BACK AND LEGS IN VICUÑA (*VICUGNA VICUGNA*)**

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The vicuña is a wild South American camelid of great economic importance for its fine wool. On ranches each vicuña is sheared every 2 years, obtaining 2 classes of wool—one from the dorsal hair coat and one from the legs and belly. The objective of this paper was to compare the histological characteristics of hair follicles from these 2 areas. Biopsies obtained from an animal from INTA Abra Pampa, Jujuy and processed with conventional techniques for light and electron microscopy. The back epidermis was thin, flat, layered and keratinized with many collagen fibers. The dermis had many compound hair follicles with primary and secondary hair follicles, sudoriferous and sebaceous glands. The ratio of secondary to primary follicles ranged from 28:1 to 50:1 (mean=40:1). Follicle diameter ranged from 103-221  $\mu\text{m}$  (mean=170) for primary hairs and from 20-61  $\mu\text{m}$  (mean=38) for secondary hairs. The belly-leg dermal layer was thicker with some collagen, blood vessels, erector pili muscles and more glands. Secondary to primary follicles ranged from 6:1 to 12:1 (mean=9.8:1). Follicle diameter ranged from 156-256  $\mu\text{m}$  (mean=190) for primary and from 41-82  $\mu\text{m}$  (mean=63) for secondary hairs. Vicuña skin thus showed a greater ratio of secondary to primary follicles and smaller diameters on the back than for llama, alpaca or merino sheep, in accordance with fiber diameter and economic importance.

**196.**  
**NEW CONTRIBUTIONS TO THE VOCAL REPERTORY OF HOWLER MONKEY (*Alouatta caraya*) IN CAPTIVITY**

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The howler monkey (*Alouatta caraya*) has an extensive vocal repertory, used in diverse social contexts, with important functions in social facilitation, exploration, coordination of displacement, localization and territory delimitation. The objective of this study was to analyze the vocal repertoire of this species, according to the age of individuals. The calls of five individuals were recorded; these vocalizations were analyzed, and classified according to sound parameters. We identify four new calls: Caw (1000—2500 Hz), Bark (1000 - 2000 Hz), Teeth chatter (2000 – 4000 Hz) and Lip smack (2000 – 6000 Hz). The typical signal obtained from infants up to six months old was Lip smack, and juvenile calls from six months old included: Caws, Barks and Teeth chattering. In adults from 1 1/2 years old the calls were: Guf, Roars, Howls, pure vocal calls and bleating. These data suggest that howler monkeys present an extensive vocal repertory. The present investigation represents an advance in the area, since this is the only one that analyzes the spectrographic characteristics of the acoustic signals and their behavioral function.

**197.  
PRODUCTION OF A FUNGAL POLYGALACTURONASE  
AND ITS APPLICATION IN BIOTECHNOLOGY**

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Pectinolytic enzymes are very useful in the industry for the extraction, purification and liquefaction of fruit juices and wines, to macerate plant fibres and fruits, etc. They are classified in three main groups: lyases, hydrolases and esterases. The polygalacturonases (PGs) are hydrolases and according to their function can be endo-PGs (EC 3.2.1.16) or exo-PGs (EC 3.2.1.67). Many filamentous fungi are frequently used in the commercial production of polygalacturonases.

The purpose of this work was the production and characterization of an exo-polygalacturonase from *Pycnoporus sanguineus* and the study of its use in biotechnological processes.

The highest yields of the PG activity was obtained in liquid medium at pH 4.8 and pectin as carbon source. Its Mr is 40 kDa. The TLC analysis of the products of the enzyme action on polygalacturonic acid and pectin showed that the enzyme is an exo-PG which main product is polygalacturonic acid. The enzyme is stable at pH 3.5-8 being its optimum at 4.8. It works at temperatures up to 65°C and has a  $K_{map} = 2.20$  mg/ml for polygalacturonic acid and 2.88 mg/ml for pectin. Consequently, this enzyme would be an useful tool for the processing of materials rich in galacturonanes.

**198.  
INJURIES CAUSED BY SHARP INSTRUMENTS AND  
FIREARMS. HOSPITAL CIRCLES IN PROVINCIA DE  
TUCUMÁN (2001-2003)**

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Violent behaviour in Latin América is a serious public health problem and it is also the cause of a decline in the quality of life, health, welfare, social and economical balance of the population. The number of patients who enter hospitals with different traumatism caused whether by firearms (F) or sharp instruments (SI) has significantly increased.

The objective of this paper is to determine whether the number of patients who entered hospitals with (F) and (SI) injuries through Hospital Emergency Departments Pre and Post institutional crises (2001-2003) has changed or not.

Total number: 345 patients who entered the operating room of the main emergency department, (2001-2003), with (F) and (SI) injuries; no significant differences. 2001: 106 patients, 66 SI; 40 F. 2002, 129 patients 69 Si and 60 F. 2003, 110 patients, 59 SI and 51 F. Frequent average age (13-30), sex: 91% male.

This paper is a contribution to provide updated data about this pathology and to emphasize the role of the Phisycian as to create a working protocol which registers in a single book all the injury incidents and not only those which enter the operating room.

**199.  
LEAD INTOXICATION: HEMATOLOGYCAL ALTER-  
ATIONS IN CHILDREN. PRELIMINARY REPORT**

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Lead intoxication and the environment pollution produced by lead represent a public health problem all over the world. This metal affects several systems of the human body, mainly, the central nervous system, the hematopoyectic, the renal, the endocrine, the osseous system and others at early stages of life.

The objective of this paper is to evaluate the complete hematological profile in children intoxicated with lead and to use this evaluation as a tool to analyze the general conditions of public health. Several children of both sexes with a defined exposure source to lead were studied: Laboratory complete hemogram, with hematometric indices; plumbemia an ALA-D. The statistics used was descriptive. Average age of the seven children was 6.2 (DE± 1.6), the average hematocrit 31% (DE±0.02), average hemoglobin 10.2 g/dl (DE± 0,78). 100% presented defined hypochromy, microcitosis and anisocytosis. Average ALA-D was de 8.9 U/L (DE±4.5); average plumbemia was 37.9 ug/dl (DE± 6,22).

The environmental problems at early stages of life affect health, survival and quality of life at late stages. All preventive measures to improve the environment can be considered as a human investment which will positively influence the economical and social development of the population in a near future.

**200.  
EXPERIMENTAL MODEL: ENDOTHELIAL MINIMAL  
CHANGES OF LEAD EXPOSITION. PRELIMINAR  
COMUNICACION**

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The endothelial function can be modified by environmental toxic substances such as lead. Microalbuminuria is an indicator of the endothelial dysfunction and it reflects an early and general alteration of the integrity of the endothelium. It is associated with hypertension and it is a significant indicator of cardiovascular morbidity-mortality.

The objective of this paper is to determine whether rats exposed to different concentrations of lead present microalbuminuria and if this is correlated with exposure dosis.

Wistar white rats will be used (0.5; 500 y 1000 ppm lead acetate). Laboratory: ALA\_D, microalbuminuria, urea and creatinine. Results: microalbuminuria mean is 3.25mg/l (DE± 0.5); 0.5 ppm: 3.6 mg/dl (DE± 0.79); 500 ppm: 5.5 mg/l (DE± 0.52) and 1000 ppm: 7.1 g/l (DE± 0.67).

Although there is a significant difference between control rats and rats treated with 0.5ppm doses this might be due to exposure time or low doses. Significant differences were found between controls (500 and 1000ppm), and this suggests that the endothelial dysfunction progresses according to the doses. This strengthens the hypothesis of the close relationship between microalbuminuria, endothelial damage and the role that lead plays in the genesis of cardiovascular diseases.

**201. EARLY ATHEROSCLEROTIC ALTERATIONS AND LEAD**

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Lead exposure produces alterations in the structure, cardiovascular and endothelial function of children and adults. These alterations can unchain precocious atherosclerotic and vascular modifications. There are evidences that the effect of several metals, such as lead, increases the lipid peroxidation, which produces a deterioration of the cell membranes, one of the risk factors for the cardiovascular diseases.

The objective of this paper is to evaluate whether there are modifications in the intima media thickness of the common carotid artery in a group of children exposed (EC) to a lead pollution source, compared with healthy control children (HC).

Twelve children were evaluated (average age: 11.2 years old), (8 EC and 8 HC) with toxicology laboratory (ALA-D, plumbemia). A protocol testing on carotid artery was carried out. Inner and outer diameters of the common carotid artery were measured.

It was observed that the EC group has significantly higher values. EC group Me: 0.5 and group HC Me: 0.4, p: 0.034 when evaluating the intima media carotid thickness.

Lead exposure in children alters the endothelial function, which should be valued in a risk study and as an early indicator of an atherosclerotic disease related with environment pollutants.

**202. BIOSYNTHESIS OF RED AND YELLOW PIGMENTS DURING THE DRYING PROCESS OF THE PAPRIKA**

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This work's aim is to evaluate the production of red and yellow pigments in two drying processes under very different conditions, such as direct solar exposition and liofilization. The paprika extracts were made in acetone at a temperature of approximately 20° C and protected from light. The red and yellow fractions were isolated using semi-prepared plates of TLC (Thin-layer chromatography) of silica gel 60 GF<sub>254</sub> (glass plate of 20 x 20 cm, 0,7 mm thickness) in solvent mixture of hexane / ethyl acetate / ethanol / acetone (95:3:2:2). The spectrophotometrical method was used to calculate the concentration of the red (R) and yellow (A) fractions. The evaluation of the pigments in the sample dried through direct solar exposition presents the following composition: total carotenoids 5530.53 ± 0.2 µg/mL, yellow fraction 1732.04 ± 0.2 µg/mL and red fraction 3798.49 ± 0.3 µg/mL. In the sample dried through liofilization the following results were obtained: total content of carotenoids 5921.89 ± 0.3 µg/mL, yellow fraction 1262.52 ± 0.2 µg/mL and red fraction 4559.37 ± 0.2 µg/mL. The variation in the pigments of the different drying systems is explained thanks to the activation or inversion of the biosynthetic ways and the synthesis occurs from the pigments, that would work as precursors.

**203. MODIFICATIONS IN THE PLANT OF THE COTTON FOR TWO DIFFERENT SPACINGS**

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Out of the 266,387 ha cultivated whit cotton in Argentine 19% of them was in the province of Santiago del Estero during the period 2003-04. The price of the cotton decreased along the year, and a form of increasing the yield was attempted, reducing the distance between the rows of the crop in order to obtain a better to distribution of plants. The purpose of this research was to determine the changes operated in the crop when the distance between rows was modified. Two distances between rows were tested (0,35 and 0,75 m) and the variables controlled were: yield (Y) and total dry weight of plant per hectare (Tdw.pl/ha) measured as kg.ha<sup>-1</sup>. The number of open boll by plant (Nob/pl), fiber weight per open boll (Fwob), seed weight per open boll (Swob), weight of the open boll (Wob) and the dried weight per plant (Dw/pl) measured in grams. Thirty two samples of both distances were evaluated, and the results were compared using the t test. The results showed statistic significant differences between the two treatments, being the variables Y and Tdw.pl/ha 30 and 31% higher in 0,35 m than 0,75m. On the other hand the variables te Nob/pl, Wob, Swob, and Dw/pl the sample of 0.35 displayed inferior values 37%, 4%, 6% and a 32% than 0,75 m. In the variable Fwob, no difference was observed between samples. The smaller distance cause than the plants individually has minors values of N.cap, the P.cap, the S.cap, and the Ps.pl, but that when improving the distribution of these in the surface is obtained an increase in the yield due to an increase of the total biomass of the crop.

**204. RELATIONSHIP BETWEEN CARIOGENIC RISK FACTORS AND THE PREVALENCE OF CARIES IN A RURAL CHILDREN POPULATION**

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The aim of the present study was to relate two cariogenic risks factors and caries prevalence in a rural children population from the Municipio Florencio Varela, Buenos Aires Province. Sixty three children were studied without evident pathologies, (mean age 9 years) in groups 0-6 ; 7-12 and 13-17 years old. Different Index were determined: a) For permanent teeth DMFT (Disease, Missing, Filled Teeth) and DMFS (Surface) . For temporary teeth: dmft and dmfs. Plaque Index (Löe and Silness) and Sugar Moments were also determined. Main caries activity was observed in 0-6 and 13-17 years groups and the median was the principal population performance according to the highest value. No important differences were found in Sugar Moments, which average 6 indicated a moderate risk, but related to DMFT and DMFS index were considered high risk. The survey results of this rural school-children groups were lower compared to other similar studies and we infered they could be due to socio-economic crisis in 2001 with none children population health dental control. High values in 13-17 years group we think they were because of adolescent hormonal changes and none odontological attendance as a consequence of the pauperization.

**205. IMPACT OF INOCULATION WITH FLUORESCENT *PSEUDOMONAS 51 B* ON THE DEVELOPMENT AND YIELD OF BEANS (*Phaseolus vulgaris* L.)**

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The use of deteriorated seeds, not only causes problems to this crop, but also to final quality of the product. This research was aimed to study the effect of the 51 B strain on the development and yield of beans by inoculating seeds with differences in their vigour; for this, the beginning of the phases of flowering (R6) and maturity at harvest (R9) were evaluated; and- as components of yield- also the number of pods and the grains/plant, as well as the number of grains in 100 gram, to do this, lots of the cultivars Alubia (white) and NAG 12 Norte and Cerrillos (blacks) were subdivided: a) controls, and b) with one day of artificial damage. These in turn splited in i) without inoculation, and ii) inoculated with fluorescent *Pseudomonas 51 B* ( $10^8$  cfu/ml<sup>-1</sup>). Results have shown that while control aged seeds of white bean did not emerge in the field, treatment with the 51 B strain stimulated significantly ( $p \leq 0,05$ ) the emergence of seedlings, increasing also the size of grains. On the other hand - while the inoculation to seeds with high vigour of the cultivar Norte modified the beginning of the R6 and R9 stages - it induced the same response on lots having medium vigour when the beginning of stage R6 was recorded. Moreover, inoculation of seeds with both vigour levels, of the cv. Cerrillos resulted in advancing R9 as compared with responses of the controls lots. Finally, bacterization of high vigour seeds of black bean cv. Cerrillos increased the size of grains produced. The mentioned would indicate that inoculating of the 51 B strain to seeds of the studied cultivars, will have different effects on the development and yield, depending on the cv. and of quality of the seeds being utilized.

**206. COMPARATIVE STUDY OF DENTO-ALVEOLUS DISEASES IN THREE EXTINCT POPULATIONS OF REPUBLICA ARGENTINA**

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The diagnostic and interpretation of dento-alveolus diseases and their analyses in extinct populations is necessary for their osteographic reconstruction. The aim of this study was: a) to determine the insertion level as a periodontal disease index in three extinct populations from Republica Argentina; b) to infer the possible dietary influence and technological manipulation on the possible variations that were found. In this survey, 28 craniums and 7 calvarium (512 teeth) from araucanos (La Pampa and Neuquen provinces) 25 calvarium and 2 craniums (246 teeth) (Pampa Grande, Salta); and 9 craniums and 2 calvarium (117 teeth) (Santa Cruz), from collection of the Museo de Ciencias Naturales of La Plata were studied. They were classified according to insertion level into light, moderate and severe diseases. There were no significative differences between sex and age and 100% of Santa Cruz craniums, 94% of araucanians and 73% of Pampa Grande records were vertical lesions possibly due to dental wears observed on them. The rest of craniums showed moderate and light periodontal disease. They also had pre-mortem traumatic injures, deshiscens, fenestras and furcation lesions with important coronal wears as a coincidence with eating habits. We can infer that belonged to a mixed economy society with ethnographic influence.

**207. ULTRASTRUCTURAL CHARACTERISTICS THE ANTERIOR AND POSTERIOR EXTREMITY OF THE BODY IN *PSEUDOCORDODES BEDRIAGAE*, (CAMERANO, 1896)**

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The Nematomorpha is vermes that in the adult state is of free life and they live in fresh water bodies (Gordiida Class) and 4 species are marine (Nectonenatoidea Class). In the states larval and they young stage, are parasitic of artrópodos. The taxonomic studies on Nematomorpha have been performed under light microscopy and based on the characteristics of posterior extremity of the body and cuticle. In the present work we aimed at describing the ultrastructural characteristics the anterior and posterior extremity of the body in *P. bedriagae*. that would allow to clarify the status of Gordiida in a philogenetic context. Six male collected in Sierra de la Ventana, were studied by TEM and MEB cross- and ultrathin sections of anterior, posterior levels of the body. Anterior extremity has the pharynx obturated in its 0,66 cms. at the beginning, with amorphous contents. Distally we can see permeable gut, Serial cuts of the first centimeter of the animal body do not show circumfaringeal nervous ring. The last body show the testicular cavities, the gut, and neural cord. Between 0,66 and 0,33 cms we observed the testicular cavities ending, separated by cloaca and the gut. In the apex we see a caudal nervous ganglion. The absence of a circumfaringeal nervous ring and the presence of a nervous ganglion in the Gordiida could be a characteristic differential with the Nectonenatoidea, considered its group brother.

**208. OXIDATIVE STRESS AND ANTIOXIDANT DEFENSES IN *Glycine max* L. TREATED WITH ARSENIC**

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*Introduction:* Species of inorganic arsenic produce oxidative stress, generating free radicals and reactive oxygen species. These species react with lipids, proteins, pigments and nucleic acids, producing lipoperoxidation, enzymatic inactivation, so affecting the cellular viability. *Objectives:* a-Determine lipoperoxidación parameters like TBARS (Thiobarbituric acid reactive species). b- Measure reduced Glutathione (GSH), non protein thiols (TNP) and phytochelutins (FQ), in leaves and roots of *Glycine max*. L. *Materials and Methods:* Roots and leaves with 24 and 72 h of intoxication with arsenic (16 and 160  $\mu$ M), in plants with 10 days of development, using like control plants with equal development free of arsenic. MDA was measured according to Heath (1968). GSH by the method of Anderson (1985), TNP by Gallego, (1999) and FQ were determined by difference between the TNP and GSH. *Results:* TBARS showed a significant increase in leaves ( $p < 0.001$ ), roots showed a significant decreased ( $p < 0.01$ ). TNP showed a similar behavior respect to TBARS in leaves ( $p < 0.01$ ), in roots a decrease was observed at 24 h ( $p < 0.01$ ). GSH increased in leaves ( $p < 0.001$ ), in roots decreased ( $p < 0.05$ ). FQ decreased with 24h of treatment ( $p < 0.001$ ), in roots. *Conclusions:* While in leaves an oxidative stress was observed and GSH as a non enzymatic defense parameter began to act, in roots the metabolic behavior is different. With higher As concentration and 72 h of treatment an oxidative stress is verified in soybean plants.

**209.**  
**INCIDENCE OF PLANT DISEASES IN CITRIC FARMS OF SANTIAGO DEL ESTERO**

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In order to determine the presence of diseases in citric farms in the irrigated area of the province of Santiago del Estero, fifty-one farms were evaluated, whose planted area ranges between 2 and 300 hectares. The aforementioned farms were implanted with lemon, oranges, tangerines and grape fruit. The incidence of infections was evaluated in plants aged between 3 and 20 years. Samples were withdrawn every month for two years starting in 2003. Twenty-nine variables were analysed, being 5 of them quantitative: total planted surface, and discriminated orange, tangerine, grape fruit areas, also age of plants. The remainder 25 variables were qualitative: drought, frost, wind, wind barrier, control of frequent fungi, bacterial and viral diseases, etc. The presence of pathological agent were classified a "serious"; "occasional" and "absent". The data were analyzed with the multivariate method using ACM, included in the SPAD 3.5 Software. According to the results is possible to admit that the infections could be favoured by environmental factors such a management practices, dimension of planted area, pruning, etc. Most of fungi diseases such as melanosis, anthracnose and others were found in "serious" stage, while fumigate were found as occasional disease. Exocortis virus was the only viral disease found.

**210.**  
**PRESENCE OF PLAGUES IN CITRIC FARMS OF SANTIAGO DEL ESTERO**

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In order to recognize the plagues that affect the citric plants of Santiago del Estero, 51 citric farms cultivated with oranges, tangerines, lemon and grape fruit were studied. The commercial citric plantation studied were located in the zone of irrigation of the province, and they were sampled every month for two years starting in 2003. Thirty three variables were analyzed, being 5 of them quantitative and 28 qualitative. The data obtained were submitted to the multivariate analysis, particularly the ACM method using the SPAD 3.5 software. Serious attack of *Phyllocnistis sp*, *Tetranychus sp*, *Unaspis citri*, *Chrisomphalus sp* and *Phyllocoptruta sp* were found as well as occasional attack of birds, ants, *Toxoptera sp* and the fly *Ceratitis* and *Anastrepha*. The ACM analysis detected that the damages produced by wind, hail and plagues decrease when wind curtains were used and that early orange and tangerine were more severely affected by *Ceratitis* and *Anastrepha*. *Phyllocnistis* and *Unaspis citri* were found in almost every plantation. Most of the farms smaller than 5 ha, were devoid of plagues when periodic fertilization were applied, while lack of weed control and periodic irrigation increase the incidence of plagues.

**211.**  
**ONCOIMMUNOLOGIC TREATMENT IN A MURINE BREAST CANCER: PRELIMINARY REPORT**

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**Introduction:** Since neoplastic cells express different antigens regarding normal cells, the development of an antitumoral vaccine is attractive. We therefore studied the effect of antitumoral therapy and immunotherapy in a murine breast cancer model.

**Material and Methods:** 15 Balb/c mice with M3 breast cancer were studied and separated in four groups: *Group 1* (n=5) received IV doxorubicin (D) 0.1 ml (0.15 mg) at 12 days, in 1 doses (*subgroup 1a* n=4) or 2 doses (*subgroup 1b* N=1) separated by 12 days. *Group 2* (n=6) received D 0.1 ml at 12 days plus 0,1 ml of IM Ribovac Vaccine at 14 days (*subgroup 2a*) or twice separated by ten days (Group 2b). *Group 3* (n=4) received 0,1 ml of IM Ribovac Vaccine, 1 dose at 12 days (*subgroup 3a*) or two doses at 12 and 24 days (*subgroup 3b*). *Group 4* served as control.

**Results:** Mice in group 1a showed hyperplasia (Hy) in spleen white pulp (HWP), Hy in external zone of lymph nodes (HLN) and mild necrosis. Group 1b revealed significant Hy in spleen red pulp (HRP), HLN and a marked increase in the number of spleen megakaryocytes (M), as well as intense necrosis. In Group 2b, HWP and HRP was seen in 5 mice, while 4 of them showed HLN. Group 3b showed the most severe HRP and increase in M. More research is needed in order to elucidate immunotherapy response.

**212.**  
**EFFICIENCY OF TRANSMISSION OF POPULATIONS OF WHITEFLY GEMINIVIRUS VECTORS**

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The objective of the present work was to determine the efficiency of transmission of Geminivirus of two originating populations of whitefly of different geographic regions, Las Peñas and Monte Cristo (province of Córdoba, Argentina). The populations of *Bemisia tabaci* are established under conditions of temperature to 25°C, and photoperiod of 18 hs. of light, on the species *Ipomoea setosa* L. As source of inoculum were used plants of *Leonurus* sp., and proved cultivating of Munasqa soybean. Twenty emerged recently flies were used, of each population by each cage to foliar, using the times: 2 days of acquisition, 2 days of latency and 2 days of infection. Finalized these times the flies they were eliminated and the soybean plants were located under conditions of greenhouse until the appearance of symptoms. Its infection was corroborated by observations of thin sections to the electron microscope. The efficiency of transmission of the population Las Peñas was of 100% and for the population Monte Cristo of 80%. The transmission of Geminivirus is reported from the *Leonurus* sp. weeds to soybean, which probably can be happening in the nature.

*Financing: PICTO-INTA BID 081294 – CABBIO.*

**213. EFFECT OF ABIOTICS STRESS ON THE GROWTH AND ANTIOXIDANT ENZYMES IN *Bradyrhizobium japonicum* E109**

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The objective of this work was to evaluate the growth of *B. japonicum* E109 and the activities of antioxidant enzymes under stress conditions. The conditions were induced by different concentrations of sodium chloride and sorbitol. The oxidative stress was caused by hydrogen peroxide. The results showed that growth with NaCl was affected by salt stress not with sorbitol and peroxide. The activities of superoxide dismutase (SOD) and glutathione reductase (GR) were greater with sodium chloride not with sorbitol. Similar data showed that SOD increased with peroxide but not GR. We concluded that *B. japonicum* E109 is tolerant even to 200 mM with sorbitol without affecting significantly its growth. The salinity induces the EAOs and the activities of SOD and GR. The osmotic component seems to be a determining factor of tolerance/susceptibility in bacteria.

**214. PRELIMINARY STUDY OF EXPRESSION OF SUBUNIT  $\beta 1$  OF INTEGRINS DURING PORCINE PLACENTATION**

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The integrins constitute a family of proteins that have functions in adhesion, migration, invasion and control of cell physiology. These molecules involve a great family of protein heterodimers composed of  $\alpha$  and  $\beta$  subunits. These subunits form 23 known heterodimers. The porcine placenta is epitheliochorial, noninvasive and diffuse; therefore to analyze the presence of placental integrins would permit us to understand the porcine gestation. The aim of this study was to determine the presence of integrin subunit  $\beta 1$  in placental tissue in different gestational periods. Placental tissue from porcine female of 37, 55, 60, 70 and 80 days of gestation, at term, and empty uterus were used. The presence of the integrin subunit  $\beta 1$  was analyzed by indirect immunocytochemistry. The fetal trophoblastic and uterine epithelium villi exhibited high intensity of Integrin  $\beta 1$  throughout the pregnancy; this expression was significantly less in at term placenta. Integrin  $\beta 1$  was strongly expressed in maternal placental glands and in fetal and maternal blood vessels during porcine gestation. In conclusion, Integrin  $\beta 1$  would allow porcine gestation through placental remodeling processes.

**215. INCIDENCE OF THE LEVELING COURSE ATTENDANCE UPON PREVIOUS KNOWLEDGE IN GENERAL BIOLOGY FOR STUDENTS OF VETERINARY MEDICINE IN UNLPam.**

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The admission to the National Universities has been a theme for debate. The incomers rely on previous knowledge unequal, due to the fact that they proceed from high schools with different orientations. The course of leveling that is dictated in the faculty of veterinary is a tool implemented to give students, a previous approximation to the biological themes. The objective of this work is to analyze the incidence of the effect of this course upon the previous knowledge the students possess. The students that enroll to the carrier can have access to the didactic material "Notebook on Biology". The course lasts three weeks. At the very beginning the students undergo a diagnostic evaluation of previous knowledge. Another evaluation is required at the end of the course. In 2005, from a total of 186 enrolled students, 45,16% came from biological oriented schools, 41,93% from schools with other orientations and there is no register of the remaining 12,90%. In the data analysis we observe evident changes in the academic performance of the incomers. This allows a reflection on the positive incidence of the leveling course previous.

**216. IMMUNOHISTOCHEMISTRY OF THE INTERSTITIAL CELLS OF CAJAL IN THE ABOMASUM OF CALF**

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The interstitial cells of Cajal (ICC) have been described in different mammals. ICC generates and propagates slow waves and plays a critical role in motility regulation in the gastrointestinal tract. The present study analyzed the distribution of c-kit positive cells in the normal abomasum samples obtained six one week old calves. C-kit immunohistochemistry was performed on 4±1 mm sections from 10% formalin fixed paraffin-embedded specimens, according to the LSAB® method of DAKO Co. In myenteric plexus, several types of c-kit positive cells were observed, multipolar periganglionic and intraganglionic positive cells were significantly higher and cell area smaller. These cells present short dendrite processes. In circular muscle tunica, positive cells appeared as bipolar cells with long prolongations, interconnected among them. In longitudinal muscle tunica, positive cells distributed within muscle bundles. The specificity of the reaction anti-c-kit and the location of these cells agree with the descriptions in the stomach of other species. We have identified, for the first time, cells in abomasum with morphological and immunological phenotypes similar to ICC.

**217. LECTIN HISTOCHEMISTRY OF INTESTINAL GOBLET CELLS**

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The carbohydrate expression of goblet cells in the intestine of pigs, rabbits and horses was characterized by a lectin histochemical study. The intestinal sections were deparaffinized and incubated with the following biotinylated lectins: Con A, WGA, DBA, SBA, PNA, RCA-1 and UEA-I. Except for some rectal goblet cells of pigs and horses, no reactivity was found to Con A. An heterogeneous lectin binding pattern of goblet cell was observed in all the intestinal sections of the species studied with DBA, WGA and RCA-1. PNA reactivity was absent in the small intestine, except for some cells in the horse. DBA did not bind to colonic goblet cells of the pig, whereas SBA not only did not label colonic goblet cells of the pig, but also those of the horse. RCA-1 staining was negative in the large intestine of the horse. Most of the goblet cells of the whole intestine were intensely labelled with the lectin UEA-I; however, goblet cells of the small intestine of rabbits, colon of horses and rectum of pigs remained unstained.

Our results allowed us to conclude that the lectin binding pattern of the intestinal goblet cells varies among the three analyzed species.

**218. THROMBOCYTOPENIA AFTER INTRAVENOUS INJECTION OF COLLOIDAL CARBON IN CHICKENS**  
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In order to increase the knowledge of thrombocyte kinetics in chickens we have studied the short time response to the endovenous injection of colloidal carbon, taking advantage of the ability of circulating TBCs for endocytose particulate materials. Six (one month age) chickens were intravenous injected with 0,5 ml/k india ink (Pelikan Argentina, Batch 0206T1) diluted 50/50 in steril physiological solution. Two control chickens only received physiological solution. After previous evaluation of the initial thrombocyte blood count, blood samples were collected at 5', 15, 30' and 60' after the injection, and the TBC count was evaluated. A marked thrombocytopenia (49.035 ± 29.66% of the initial count) was detected after 5' of india ink injection. This thrombocytopenia is transitory because at 15' the TBC count increases, recovering initial values at 30' and 60'. We suppose that this thrombocytopenia is not due to thrombocyte destruction but to temporary sequestration.

**219. EFFECTS OF ALUMINUM PHOSPHIDE FUMIGATION (PHOSTOXIN DEGESCH) OVER GERMINATION PROCESS IN SOYBEAN SEEDS (GLICYNE MAX (L) MERR)**

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The purpose of the present paper is to show the favorable effects of an aluminum phosphide fumigation over the germination process in soybean seeds (*Glycine Max (L) Merr*).

Samples of 100 seeds were taken from a commercial growth in Tucumán, R. Argentina, and were fumigated with Phostoxin Degesch in a 4 tablets/tons dosage during 4 days of time exposure. High significant difference were found, in the hypocotile and radicle extend between test and treatments. No significant differences were found in germinative energy and germinative power.

The results therefore a treatment fumigation of aluminum phosphide, over soybean seeds, show a rapid establishment of the shoot plants in a minor time with respects a teste.

We can conclude that the fumigation with Aluminum phosphide, produce a favorable effects in the germination of soybean seeds determining a rapid establishment of the shoots plants in a less time.

**220. STUDY ON THERMALLY ALTERED HONEY**

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This study tested whether thermal treatments can alter the quality required by the Argentinean Food Code (AFC). Samples were taken before and after a 3-hour long 70°C thermal treatment. Parameters of fungus and yeast, total coliforms, humidity, acidity, HMF, color and crystallization degree (660 nm absorbance) were checked. The Student Test for Paired Samples ( $p < 0.05$ ) was applied on physical and chemical parameters, and Friedman's Non Parametric Test ( $p < 0.05$ ) on fungus and yeast. Results showed significant differences for color, HMF, humidity, absorbance, fungus and yeast, but not so for pH and acidity. The statistic result showed significative differences for color ( $t = 3.17$ ;  $p = 0.009$ ), HMF ( $t = 3.69$ ;  $p = 0.005$ ), humidity ( $t = -5.30$ ;  $p = 0.009 \times 10^{-1}$ ), absorbance ( $t = -13.57$ ;  $p = 6.08 \times 10^{-9}$ ), and for Fungi and Yeast ( $r = 0.67$ ;  $p = 0.025$ ); not so for pH ( $t = 1.01$ ;  $p = 0.17$ ) and acidity ( $t = -1.57$ ;  $p = 0.08$ ). No coliforms were observed before treatment. We deduce that the differences in values for fungi, yeast, humidity and HMF remained below those allowed by the AFC. Concerning liquefaction (absorbance), it improves demand with the local market, while the opposite occurs with the increment in color.

221.

**EFFECT OF TIME ON THERMALLY TREATED HONEY***Mouteira C, Malacalza N, Mały L, Albo G.**Fac. Cs. Agr. y Ftiles., UNLP y MAA. C.C 19. La Plata E-mail: zooamg@ceres.agro.unlp.edu.ar*

Quality parameters are altered when pasteurizing and liquefying honey, depending on crystallization, temperature and extent of treatment. Two tests comprising seven repetitions each were performed: T1 analyzed for: humidity, acidity, HMF, color and crystallization degree, before a 70°C thermal treatment and T2, same as T1 after the treatment. Total fluidification time was controlled. Statistical analysis to relate differences in parameters before and after tests respect of time followed Spearman's Rank Correlation Test ( $p < 0.05$ ). The difference between values before and after the thermal treatment is the new variable. Results show non significant differences and reverse relation in acidity ( $r = -0.25$ ;  $p = 0.54$ ), color and HMF ( $r = -0.71$ ;  $p = 0.08$ ). Humidity ( $r = 0.38$ ;  $p = 0.34$ ) and absorbance ( $r = 0.42$ ;  $p = 0.29$ ) showed non significant differences and direct relation respect of time. The pH-time rate shows negatively ( $r = -0.82$ ;  $p = 0.044$ ) and correlates close to significance. Conclusion: color and HMF show a high degree of inverse association between them and time. Although  $r$  is below significance, these parameters stop increasing as time is increased. Acidity, absorbance and humidity showed no significant variation. The time-pH relation is stronger, differences decrease as time is increased

222.

**DETERMINATION OF NUTRIENTS IN WOOD and BARK OF CLONES OF POPULUS SPP IN SANTA FE PROVINCE, ARGENTINA***Senisterra G<sup>1</sup>, Ducid MG<sup>1</sup>, Vázquez M<sup>1</sup>, Di Marco E<sup>1</sup>.**<sup>1</sup>Fac. de Ciencias Agrarias y Forestales. UNLP. La Plata (1900). E-mail: gseniste@ceres.agro.unlp.edu.ar*

The *Populus* genera is widely spread in Argentina and the world, for its adaptability and uses. For sustainable systems to be possible with intensive wood extraction, should maintain or improve the soils nutritional levels. Diverse genetic materials could represent different levels of exportation. The objective of this work is to determine the concentration of some nutrients (wood/bark) of different clones. Samples of wood to 1.30 m of height were extracted of 10 clones (5 trees/clone) of intraspecific crossovers of *P. interspecifica* deltoids and of *P. deltoid* x installed *P. nigra* in a test of 9 years of age, in Teodelina (34° 09' LS; 61° 15' W), Santa Fe, Argentina. The concentration of P, K, Ca and Mg was determined by dry digestion and colorimetric evaluation for P, flame photometry for K and complexometric for Ca and Mg. The average values obtained for bark and wood were for P (0.05 and 0.01%), Ca (1.30 and 0.92%); K (0.46 and 0.32%) and Mg (0.45 and 0.05%), respectively. The wood showed lower concentrations of nutrients than the bark in all the cases. Significant differences for almost all the elements were founded between clones, which would demonstrate genetic differences of its vegetal nutrition. This establishes a departure point to estimate extraction during the harvest; constituting this topic as a selection element of genetic materials and allowing to determine the restitutive fertilization dose, for the promotion of sustainable production systems.

223.

**COMPLEMENTATION OF STUDENTS DE F.A.Z.-U.N.T. FORMATION WITH PRACTICAL EDUCATIONAL AND OF HORTICULTURAL PRODUCTION IN THE AGRICULTURAL HOME SAN AUGUSTINE: 1<sup>st</sup> STAGE OF EVALUATION***Villagra EL, Alvarez ME, Carrizo A, Cosiansi CD, Fierro JD, Gómez Terrazas NA, Jaldo AM, Luján E, Maza N, Minervini MG, Padovani F, Amuchástegüi J, Cuezco J, Cuezco H, Romero JI, Laborda de la Croix A.**Facultad of Agronomy and Zootecnia. National University of Tucumán. Avda. Roca 1900. Tucumán. CP 4000. Argentina. E-mail: evillagra@faz.unt.edu.ar*

The FAZ-UNT and the HASA develop tasks of teaching jointly. In this mark, FAZ has as objective the complementation of the formation of its degree students with practical extra-rooms of education and horticultural production. HASA work in the formation of poor children to integrate them to the society. The students make use of the properties of the HASA -1,5 has and they conditioned the floor for installation of cultivations, prepared substrates for sows, to carried out direct sowings in land and in trays, transplant to field, and conditioning of the greenhouse for the protected vegetables. In this 1<sup>st</sup> work stage 15 students integrated the theory with the practice; it increased their capacity to act in new situations in order to identify, to outline and to solve problem, important for their professional future.

224.

**MODIOLASTRUM MALVIFOLIUM (GRISEB) K. SCHUM. ANATOMICAL FEATURES***Jaime G, Vallejos S, Barrionuevo R, Sayago J, Rojo S.**Cát. de Botánica. Inst. de Est. Veg. "Dr. Antonio R. Sampietro". Fac. de Bioq., Qca. y Fcia. UNT. Ayacucho 471. 4000 S. M. de Tuc. Tucumán. E-mail: gsjaime@fbqf.unt.edu.ar*

Root transversal sections reveal a peridermis of 3 suber cell layers and a limited felodermis. The cortical parenchyma is small related with the vascular cylinder (vc). It shows abundant starch granules, clustered crystals and mucilage-cells. Vascular bundles isolated by medullar-rays containing clustered crystal are observed in the vc. They continue toward the cortex with fiber groups, while parenchyma medullar-rays face mucilage-cells. The stem shows a clear difference between cortex and vascular cylinder, where the medulla reaches a big development. Epidermis exhibit a hairy covering of stellate and glandular hairs. Sub-laying these tissues a chlorophyllic parenchyma and an angular collenchyma are observed. The cortical parenchyma is featured by 3 cell layers and contains clustered crystals and few starch granules. Schlerenchymatic fibers of vascular cylinder are continuous or isolated by parenchymatic cells. Phloem and xylem are collateral and form a continuous ring. Mucilage-cells are also present in the medullar parenchyma. The leaves shows a palisade and a spongy parenchyma. Lower and upper epidermis have stellate and glandular hairs. The main nerve shows few collenchyma cells. Mucilage-cells are also present in this structure.

225.

**EFFECTS OF SIMVASTATIN ON RAT CALVARIAL BONE. HISTOLOGY AND BIOCHEMISTRY**

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Statins are drugs with analogy to mevalonic acid, that produce a reversible competitive inhibition of HMG-CoA reductasa. The aim of this work was to evaluate simvastatin effects on calvarial bone defects. Thirty female Sprague Dawley rats ( $150 \pm 20$ g weight) were used. They received surgical circular bone defects (8 mm diameter) (CZD), at parietal bone. Simvastatin was orally administered by 10 mg/Kg/days through six weeks. In order to evaluate bone activity: total alkaline phosphatase (TAP), tartrate-resistant acid phosphatase (TRAP), calcium (Ca) and phosphorus (P) were measured. The animals sacrificed at 7, 21 and 42 days after surgery were submitted to perfusion, decalcified and processed in routine manner. The histological results showed in both groups granulation and vascular fibroblastic tissue on CZD. Experimental group demonstrated dense fibrous tissue with or without calcification and bone formation. High levels of TAP and TRAP were observed on first week, showing an important bone turnover. Also, high levels of Ca and P in urine revealed an overcoming in renal threshold by these ions. From 21 days, TRAP, Ca and P in blood were decreasing to normal values, but TAP keep high values until 42 days. These results support that simvastatin could be a modulator of bone formation on CZD.

226.

**RELIEF OF THE ARGENTINIAN NORTHWEST PLANTS USED IN FOLK MEDICINE**

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The use of native and exotic plants as medicinal is frequent in the argentinian northwest. People use and commercialize native and studied plants as herbal medicines, and this use has increased over the last years because the social and economic conditions. That is the reason why it is important to continue the research in this area to catalogue the information about the folk uses of the plants from those places where this knowledge is transmitted from one to another generation. This work shows an index of several vascular plants, ordered by their botanical family, folk and scientific names, and the main ethnobotanical uses of plants from the mentioned region.

We show the results of 30 plants studied species. Among them, there are 16 native and 14 cosmopolitan species. This relief contributes to the knowledge of the species used as medicinal in the argentinian northwest.

227.

**ANTIBACTERIAL ACTIVITY OF ROYAL JELLY AGAINST BACTERIA THAT CAUSE SUPERFICIAL INFECTIONS**

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**Introduction:** Royal Jelly (RJ) is a secretion from the hypopharyngeal and mandibular glands of worker bees. RJ has several pharmacological activities. RJ exert antibacterial activity on microorganisms such as *B. subtilis*, *S. aureus*, *E. coli*, *S. hemolyticus*, etc. *in vivo* or *in vitro*. **Objective:** Determine RJ's purity and its *in vitro* antibacterial activity on men and animals superficial infections causing bacteria. **Materials and methods:** RJ from southern Córdoba. Physicochemical analysis: moisture, pH, acidity, protein and lipid contents, ash, reducing sugars and sucrose. Gram negative bacillus: *E. coli*, *P. aeruginosa* and *K. pneumoniae*. Gram positive cocci: *S. aureus*, *S. epidermidis* and *M. luteus*. The antibacterial activity was analyzed by the agar well diffusion method. Results: moisture: 66%; pH: 4.2; acidity: 19 mg KOH/g; proteins: 11%; lipids: 5.6%; ash: 4.7%; reducing sugars: 16.3%; sucrose: 1.8%. Different concentrations of RJ inhibited bacterial growth: *S. aureus*, *S. epidermidis* and *M. luteus*, (0.75 g/mL); *K. pneumoniae* (1 g/mL), and *E. coli* and *P. aeruginosa* (undiluted RJ). **Conclusions:** Physicochemical parameters of RJ agreed with local regulations. RJ showed antibacterial activity against Gram positive and Gram negative bacteria, the former being more sensitive.

228.

**THE OVIDUCTAL HISTOLOGY OF THE NEOTROPICAL VIVIPAROUS COLUBER *Thamnodynastes hypoconia* IN VITELLOGENIC STAGE**

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The study of the oviduct morphology in reptiles, particularly of the snakes from the South American temperate zone, are few. The genus *Thamnodynastes* is characterized by viviparity (Gudynas, 1981). We extracted the left oviduct to perform anatomical and histological studies. For the histomorphological studies, we were used paraffine methodologies and performed semiserial and serial cuts stained with hematoxylin eosin (H-E), and with PAS, alcian blue (pH 2.5 and pH 0.5) and with toluidine blue (pH 5.6) for glycosaminoglycans identifications. Three regions were macroscopically distinguishable: the most anterior region of the oviduct slender and flaccid; the second region which has an anterior convolute zone and a final straight, both with thick walls and the posterior region straight and with thin walls. The oviduct wall was formed mucosa, muscularis and serosa. In the convolute part we differentiated the first one because the massive gland development, with basophilic and acidophilic cells which demonstrated the presence of proteins and neutral and acid mucins. In the convolute portion the mucosa has espiralated glands. The great vascularization of the gland indicate placental interactions. We will study then placentation using gestant females.

229.

**METABOLIC PROFILE AS A TOOL OF PARACLINIC DIAGNOSIS IN PREGNANT COWS OF TWO DIFFERENT AREAS IN SANTA FE CENTER REGION***Roldán VP, Gapel C, Gasparotti ML, Piérola F, Sola JM, Pinto M.*

The object of this work was to evaluate field and corporal condition effects on the macromineral metabolic profile: Ca, P, Mg, Na and K. Thirty pregnant cows were used from Pilar and Cuenca del Salado areas from a center Region of Santa Fe. Corporal condition (CC) it was evaluated in scale from 1 to 5 and macromineral determinations were performed in blood extracted from jugular vein. The concentration of Na and K was determined for flame photometry and Ca, P, Mg for UV-vis spectrophotometry. The statistic method ANOVA was applied for data treatment. The corporal condition were: CC<sub>1</sub>=2; CC<sub>2</sub>=3; CC<sub>3</sub>=4. The average concentrations were: Ca: 8,94 ± 0,28; 8,51 ± 0,30 mg%; Mg: 2,14 ± 0,10; 1,78 ± 0,11 mg%; P: 7,14 ± 0,17; 6,98 ± 0,18 mg%; Na: 140,3 ± 0,6 mmol/l; 140,5 ± 0,7 mmol/l; K: 4,62 ± 0,13 mmol/l; 4,78 ± 0,14 mmol/l, for Pilar and C del Salado respectively. The concentrations of Ca, Mg, P, Na and K were considered inside the range reported by literature. The macromineral concentrations in blood were compatible with an adequate homeostatic situation for the cows of this study. However, the Mg show significant difference (p<0,05) for the higher content of mineral in the leguminous which were predominant in Pilar field. The significant difference found in Ca concentration of CC<sub>3</sub> respect to CC<sub>1</sub> and CC<sub>2</sub> could be justified by best CC of the animals.

230.

**STUDY OF HEMATOLOGIC PARAMETERS IN PREGNANT COWS OF A CENTER REGION OF SANTA FE***Roldán VP, Gapel C, Gasparotti ML, Piérola F, Luna M.*

The object of this work was to study hematologic parameters in pregnant cows of two different edaphic areas from the Department "Las Colonias" (Santa Fe Center Region) with different copper concentration in soil. Thirty pregnant cows were used from Pilar and Cuenca del Salado areas. The hematologic determinations performed in blood with EDTA, from the jugular vein were: Hematocrite (Hto); Middle corpuscular volume (MCV), Red globules (RG/mm<sup>3</sup>), White globules (WG/mm<sup>3</sup>), Hemoglobine concentration (Hb g/dl), and percentual formula. The statistic method ANOVA was applied for data treatment. Mean values of hematologic determinations for Pilar and Cuenca del Salado were: RG: 6.999.000 ± 382.000; 6.541.000 ± 733.000 mm<sup>3</sup>; MCV: 44,43 ± 2,28; 44,13 ± 3,31 μ<sup>3</sup>; Hto: 33,79 ± 1,84; 31,6 ± 3,54%; Hb: 10,28 ± 0,62; 9,81 ± 0,86 g/dl; WG: 10.600 ± 1.600; 10.400 ± 3.600 mm<sup>3</sup>; neutrófiles: 34,57 ± 8,46; 38,73 ± 4,71%; eosinófiles: 3,42 ± 3,11; 5,41 ± 2,58%; basófiles: 0,072 ± 0,267; 0,133 ± 0,351%; linfocites: 60,57 ± 7,57; 58,40 ± 6,54%; monocites: 1,35 ± 0,49; 1,33 ± 0,49%, respectively. The hematologic parameters were considered inside of normal ranges present in bibliography. However, RG and Hto values show a significant difference (p<0,05) between the fields (Pilar and Cuenca del Salado). This values were smaller in animals of low edaphic copper region (Cuenca del Salado); but have not correspondency with the anemia caused by subclinic hypocuprosis.

231.

**INFLUENCE OF THE TIME OF FEEDING IN EGG-LAYING WITH OMEGA-3 DIET TO LINEN***Albo G, Tavella M, Peterson G, Lago G, Rodríguez V.**Monogástricos. Fac. Cs. Agr. y Ftiles. Univ. Nac. La Plata. CC 30 (1900) La Plata. E-mail: zooamg@ceres.agro.unlp.edu.ar*

The enrichment of eggs with ALA improves the low readiness of fatty acids Omega-3 dietary. The main lipid component of *Linum sp.* is the acid alpha-linoleic (ALA), a fatty acids Omega-3 of short chain, that improve human cardiovascular health. The aim of the work was to evaluate the influence of a diet enriched in Omega-3 (ALA) of linen seed, during 42 weeks (T1) and 24 weeks (T2) on the productive parameters (egg weight/week (g), death poultry/week (%)). Was used 4209 Isabrown line egg-laying. The statistical analysis used was the Test of Wilcoxon for Matched up Samples, taking 51 observations of each treatment in every week for all productive parameters evaluated (p<0.05). The results presented significant differences between both treatments (p<0.05). T1 had bigger egg weight/week (g) and smaller death poultry/week (%). The conclusion of the work allows to infer that the supply with linen's Omega 3 of a diet egg-laying, to improve the productive parameters studied.

232.

**BOVINE CASTRATION: A NON CONTAMINANT ALTERNATIVE TO IMPROVE FATTENING SYSTEMS***Berardo D, Ashworth G, Poloni L, Gauna H.**UNRC-Córdoba.*

In order to optimize the production in pasture systems it was necessary to look for alternative techniques able to improve the efficiency in fattening systems such as ovariectomy. On the other hand, ovariectomy induces another hormonal changes besides the ones observed on gonadal steroids, principally on metabolic hormones such as TRH, T3 and T4. The aim of this work was to analyze the changes induced by ovariectomy in young and old cows studying weight increase, canal rendering, conformation changes, cost-benefits relationship, T3 levels and the efficiency of castration technique. Two different experiments were performed in different fields: A (young cows) and B (old cows). Each experimental group was divided into two: castrated group (ovx) and control group (t). The following parameters were measured in all groups: Tri-iodotiroxine in blood (by RIA), body weight and cost-benefits relationship of the treatment. In group B it was also measured the blood progesterone by RIA, canal rendering (percentage of weight of the animal once it was sacrificed, bled, eviscerated, head, legs, tail, kidneys, pelvic fat in kidney cortical tissue and skin removed) in relation to live weight previous to slaughter, meat-bone-fat relationship (performed by separating the three components, weighing each of them separately and relating them to live weight by measuring it in the rib eye of the eleventh rib) and infiltration of fat in muscular mass. An increase in the body weight gain of young castrated cows was observed (68.33 ± 3.16 kg. for ovx vs 56.40 ± 2.96 kg. for t., p= 0.012) while no differences were observed for old cows. In experiment B there was a greater rendering of the canal in ovx respecting the control ones (53.51% ± 0.58 vs. 51.58% ± 0.55, p= 0.045); it was also observed a lesser fat infiltration in muscular mass in castrated cows respecting the control ones (12.71% ± 0.73 in ovx. vs. 16.31% ± 1.23 in t, p= 0.032). In both cases it was observed an increase of plasmatic levels of tri-iodotiroxine in castrated cows respecting the control ones (basal 87,70 ng/dl ± 2.08 vs. 127,32 ng/dl ± 10.25, p=0.0025 and 127,49 ng/dl ± 13.08, p=0.010 for days 60 y 120 respectively; and cost-benefit relationship was positive (11,93 k gain ovx least 6 k surgical cost = 5.93 k net gain). As conclusion it might be stated that ovariectomy increases tri-iodotiroxine values and has a favorable cost-benefit relationship in both groups: young and old animals. It also improves the body weight gain in young cows and the canal rendering in old cows, and decreases the fat infiltration in the muscular mass.

**233. CHANGES IN REPRODUCTIVE PARAMETERS BY PRE-NATAL STRESS AND EARLY POSTNATAL STIMULATED RATS**

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In our laboratory we have determined that the testicles weight and testosterone (TES) level in male rats decrease with prenatal immobilization stress (IMO). Also, IMO produces Hypothalamic-Pituitary-Adrenal axis (HPA) hyperactivity of adult offspring male in basal conditions, and habituation under the same acute stress. It is known that early postnatal stimulations produce beneficial effect on long term emotional reactivity and HPA axis activity that can affect the offspring's Hypothalamic-Pituitary-Gonadal (HHG) axis. The objective of this work was to investigate the effect of early postnatal stimulations in male offspring stressed prenatally on the gonad size, the luteinizing hormone (LH) and TES plasmatic levels and its relationship with the activity of the HPA axis. Males of three months of age were used, offsprings of mothers IMO stressed (EP) and non stressed (CP) during pregnancy. Half of the EP animals were manipulated during the first week of life. Blood and testicles were extracted to all the groups of adult animals to obtain their respective parameters. Prenatal stress decreases testicles weight and TES level in male rats. TES level and the testis size increased under the stimulation without showing differences with the prenatal controls. LH levels showed the same tendency. In conclusion, postnatal stimulation reverts the effects of prenatal stress on some reproductive parameters.

**234. KNOWLEDGE AND ABILITIES FRESHMAN STUDENTS OF BIOLOGY CAREERS HAVE, RELATED TO THE SCIENTIFIC METHOD**

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This work researched into the acquired knowledge and developed abilities in relationship to the scientific method during the senior school year of the different modalities of Polimodal (Argentina's secondary school), from which the students of the 2004 school year at our University School come. A transversal descriptive-comparative study was made. Data collection was done through a semi-structured survey; besides, an application exercise was performed to know whether the in-coming 1<sup>st</sup> year students were capable of distinguishing the steps of the scientific method in a simple text. 69% applied the scientific method mainly in subjects such as PRISCO (*Socio-Community Institutional Project*), Biology, Chemistry, and Physics. 81% had done research. 44% knows the elements that compose a written report of scientific style. 13% recognises in the scientific method keywords such as order, steps, research, generation of scientific knowledge. The application exercise showed that only 38% recognised the steps of the scientific method, observing a tendency to confuse problem with hypothesis. It is concluded that freshmen in Biology careers know the basics of the scientific method and that students coming from the modality of Natural Sciences are better prepared than the ones from other modalities, but they actually are positioned only at an intermediate level.

**235. THE RELATIONSHIP EXISTING BETWEEN METHODOLOGICAL STRATEGIES, PREFERENCE LEVELS, AND ACADEMIC PERFORMANCE OF THE STUDENTS OF HISTORY AND EPISTEMOLOGY OF BIOLOGY**

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The objective of this work, it was our aim to analyse the relationships existing between the application of different methodological strategies, and the academic performance of the students, as well as their level of preferences, as regards the strategies mentioned before. In order to do that, the total number of the students attending the subject "History and Epistemology of Biology" in the years 2003 and 2004 were taken. These were confronted to three different methodologies (exposition, research-action and colloquium) in the various contents of the subject, using the same techniques and evaluation instruments in each case. Educational indicators in the survey were: academic performance and preference levels. The following results were obtained: with the research-action method, students increased their grade point average in 2.30 points in relation to the exposition method; while with the colloquial method said difference decreased in 1.40 points. Taking into account preference levels, 65% of the students chose the research-action method, 23% chose the colloquial method and 12%, exposition. It is concluded that the research-action method is the most adequate to be used in the issues taught in this subject. This situation can be caused by the students' need to generate their own learning methodology.

**236. BIODIVERSITY OF DIPTERA ORDER IN A STREAM OF YUNGAS OF CATAMARCA, ARGENTINA**

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Representatives of Diptera order, whose immature states are aquatic, occupy a great variety of habitats, among them, mountain stream waters, as "Los Pinos"; it begin in Concepción (Capayán-Catamarca) and crosses the most austral sector of Yungas of the Argentine Republic. The marginal vegetation is compound mainly of *Podocarpus parlatorei*. The objective of this work is to indicate the taxocenosis of the Diptera presents in "Los Pinos". The sampling station were located at 1.020 m.s.n.m., 28° 37' 15" SL and 66° 02' 05" WL. and corresponds to the low water station. Six samples from center of the stream were taking with a "Surber" of 900 cm<sup>2</sup> of surface and 300 µm of mesh opening, fixed *in situ* with formol to 4%. In laboratory the organisms were determined until the lower taxa than it was possible and a systematic list was elaborated. The organisms were conserved in alcohol 70°. Total of 4.292 individuals of 8 Families and 6 Genera were determined: *Hexatoma* and *Limoniine* (Tipulidae); *Maruina* (Psychodidae); *Dixidae*; *Simulium* (Simuliidae); *Bezzia* (Ceratopogonidae); Chironomiidae; *Odontomyia* (Stratiomyidae); *Chelifera* (Empididae). The more abundant taxonomic group was Chironomidae, followed of Ceratopogonidae and Tipulidae. *Odontomyia sp.* was the least abundant species and was represented in only one sample.

**237.**  
**EVALUATION OF A MIXTURE OF SOLUBLE PROTEINS OF LEISHMANIA BRASILENSIS USED AS ANTIGENS BY ELISA**

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The protozoan genero *Leishmania ssp.* Cause the leishmaniasis disease. The objective of this article was determine the sensibility and specificity of a mixture of soluble proteins of *Leishmania brasienlis* (HPL) using the technique of ELISA. It was analized 199 human serum with leishmaniasis (Lh) infection confirmed by MIR and/or smear; 45 serums of people from no-endemic areas that is assumed that they do not suffer the disease. The technique of ELISA was performed using HPL 2 ug/poc; dilution of serum 1:20 anti-IgG of marked goat with peroxidase. 183 out of 199 Lh patients showed positive reaction and 8% were negative. In the case of people no-endemic area, 41 showed negative reaction while 8,8% presented positive reaction. The sensitivity obtained was 92% and the specificity was 91%. The obtained results for the sensibility suggest that this antigens is appropriated for the diagnosis of leishmaniasis infection. But the serological diagnosis must be followed by specific tests diagnosis for Chagas, avoiding wrong diagnoses as other study suggest.

Finance for CIUNSA and Wiener Lab.

**238.**  
**ANTIMICROBIAL ACTIVITY OF HONEYS FROM SOUTHERN CORDOBA**

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**Introduction:** Honey has different nutritious, therapeutic and biological properties. Among them, the most important properties are healing and inhibitory effects on different bacterial species. Honey has been successfully used in wound and burn treatment, promoting healing without negative effects on tissues. Thus, it is important to study the biological properties of regional honeys. **Objectives:** Determination of antimicrobial activity of regional honeys on bacteria that cause superficial infection in man and animals. **Materials and methods:** Gram positive cocci: *E. faecalis*, *M. luteus*, *S. aureus*, *S. epidermidis*, *S. uberis* and Gram negative bacillus: *E. coli*, *K. pneumoniae* and *P. aeruginosa*. Honey samples from apiaries, named A to J, and commercial samples named K to P. The antimicrobial activity was analyzed by the agar well diffusion method. **Results:** *S. aureus* was the most sensitive specie to honey samples. Samples C and D showed the highest antimicrobial activity; whilst samples F, G, H and I inhibited the major number species. Honeys from apiaries presented an enhanced antimicrobial activity as compared to commercial honeys. **Conclusions:** Honey samples presented antimicrobial activity on Gram positives and Gram negatives microorganism. Most of the honeys samples must be used undiluted to get inhibition of bacterial growth.

**239.**  
**CHEMICAL CHARACTERISTIC OF WORMCOMPOUND OBTAIN OF GOAT MANURE**

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Between the organic fertilise use today the wormcompound obtained from the earthworm dejections occupy a place important for excellent property physi-chemical and bacteriology, has high organic material, the presence of macro and micro nutriment and lot of number of nitrogen fixing bacteria. The nutrition more employed is manure of cow, horse and not goat. The objective of this work was to determine the principal characteristic chemical of wormcompound obtain of manure goat. The work was make in Tucumán, October 2004-June 2005. For obtain of wormcompound use *Eisenia foetida* (californian red). The manure use for nutrition was before compost during two month, after was put in the soil in the area of 10 m. long for 1 m. wide and 10 cm. high, where distribute 2.000 earthworm for 1m<sup>2</sup>, to cover with half shadow the 60%. The nutrition replace 20 day of initiate the work with cloak of 5 cm. high, repeat this operation 10 day the first four month and then to the end the work each 5 day. To the 9 month begin the work take a sample of worm compound and was perform technique different. The values find show important amount of organic material and nitrogen. P excellent registration, Ca half level. K, Mg adequate moderate. The value of pH and conductivity no present big limitation for use in great number of farming, the worm compound is important alternative of fertilise in the organic production.

**240.**  
**RESULT-IMPACTS IN A CERVICAL CÁNCER DETECTION PROGRAM**

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Monitoring and evaluation of cervical cancer prevention Program operation and impact are essential to determining whether the program is meetings its objectives effectively and efficiently. The aim of our study was to compare the tendency in the relation between Intraepithelial Cervical Neoplasia Grade III (CIN III)-Carcinoma In Situ (CIS) and Invasive Carcinoma (I.Ca.) of the cervix -Pan American Health Organization's indicator- in a population sample of the public subsector under Program, since 2001. an explorer descriptive longitudinal estadistical study of 1297 biopsies with diagnosis of precursors and invasive lesions (1984- 2004) from the archives of Pathology Institutes (Health Center Z. Santillán-Tucumán; Regional M. Belascuain -Concepción) was perform. In 3 years-periods. In the total biopsies I.Ca frequency was in: 1984-86:70%, 87-89: 76,8%, 90-92:55,2%; 93-95: 41,7%; 96-98: 45,2%; 99-01: 43,9%; 02-04: 35,9%. The frequency of CIN III in the total biopsies was, 1984-86: 7,1% , 87-89: 5,8%, 90-92: 8,6%, 93-95: 16,7 %; 96-98: 22,1%; 99-01: 23,7%; 02-04: 25,7%. The relation between CIN III/Ca.Inv in 4 years-periods was 85-89: 7%, 90-94: 16%; 95-99: 26%; 00-04:38%.The tendency to increment the presence of precursor lesions and to decrease invasive forms, shows an improvement from the quality of the Program.

**241. CHROMOSOMAL STUDIES IN *Acicarpa tribuloides* Juss.**

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*Calyceraceae* is a similar family to *Asteraceae*. *Acicarpa* genus has herbaceous, annual or perennial plants, widely distributed in Argentina, Brazil, Paraguay, Uruguay. *Acicarpa tribuloides* Juss. (cardo torito) is an annual weed, about 40 cm height, of fruit mounts, grazing fields, gardens and lawns, highly troublesome for animals and people because of its sharp fruits. In Argentina is in Tucumán, Salta, Corrientes, Entre Ríos Chaco, Santa Fe, Buenos Aires y Río Negro in different types of zones. It flowers in spring and spreads by seeds. The objective of this work was to realize chromosomal studies of mitosis and meiosis, and to determine its genetic potential through its chromosomal number and their behavior during meiosis. Studied material came from Finca El Manantial (FAZ-UNT). For mitosis, tip roots were pretreated in p-diclorobenceno (Paclisol), 2 hs. 20 min., fixed in 3:1, hydrolyzed in HCl 1N at 58-60°C, and colored in hematoxyline 2%. For meiosis young flowers were fixed in Newcomer and it was used the same technique. *Acicarpa tribuloides* Juss. has 2n=16. In meiosis there was regularity in all analyzed phases (Division I y Division II) with 8 bivalents in Metaphase I and normal tetrads in Telophase II, corresponding this with the normal grain pollen formation and with the subsequently production of fertile seeds.

**242. EFFECT OF COLD ON THE OXIDATION STATE IN *DIGITARIA ERIANTHA* STEUDEL SUBESP. PARAMETERS OF LIPOPEROXIDATION AND ANTIOXIDANT DEFENSE SYSTEM**

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*Introduction: Digitaria eriantha* Steudel subesp fom Sudafrica has shown sensibility to the cold, due to which the improvement of the species has been attempted achieving a synthetic variety *Digitaria eriantha* Var mejorada INTA. *Objectives:* a-Determine lipoperoxidación parameters like TBARS (Thiobarbituric acid reactive species). b- Measure reduced Glutathione (GSH), non protein thiols (TNP) and phytochelatins (FQ). c- Measure superoxide dismutase (SOD) and ascorbate peroxidase (APX). *Materials and Methods:* MDA was measured according to Heath (1968). GSH by the method of Anderson (1985), TNP by Gallego, 1999 and FQ were determined by difference between the TNP and GSH. The antioxidant enzymes SOD and APX were measured according to Beauchamp (1971) and Nakano (1981), respectively. The determinations were carried out in the leaves at 6, 24 and 72 h of treatment at 4°C. The results were compared with a control. *Results:* TBARS increases with the time, being significant the difference between control, 24 and 72h (p< 0.001). Similar data were observed with TNP. However GSH and FQ did not show significant differences. SOD showed a significant decrease at 72h (p<0.001). APX increased at 6 and 24 h (p<0.01). *Conclusions:* In a model of short times, a beginning of oxidative stress is observed while the antioxidant enzymes showed different behavior and the plants could not have started the non enzymatic defense mechanisms.

**243. MICROSCOPICAL EVENTS OF THE COCLEAR NEUROBIOLOGY**

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*Introduction:*The auditive passages and the mechanical stimulus conversion in electrical signal have been under several studies. The aim of this work was to obtain an experimental model wich allows us the microscopical study of the inner ear components, comparing it with the human ear. *Methods and materials:* The material was collected from 15 white rats (Institute variety) of three days development and several fixers were used according with the technique used to colour them. In the Cajal technique for nervous endings in block, the Castro fomula to chloral hidrate and formol at 10% for H/E and Masson Tricomic were used. Horizontal cuts in serial way, of 5 microns thick were done. The silver impregnations were toned afterward with gold chloride. *Results:* The obtained samples allowed a splendid observation at coclear maze level of the coclear nerve faces and the distribution of their extensions in the Corti organ at vestibular maze level where the cilliad cells, the sacculus macullas and the utricullus are. Over the macullas it is the otolithical membrane and over this one there are otoliths. *Conclusion:* In our findings, a similarity between the experimental animal and the human structures was confirmed. Key words: inner ear, experimental model, microscopical.

<b>A</b>		Aulet O	64, 153	Cárdenas IL	121, 122, 123
Abadala GC	209	Avila A	19	Cárdenas L	89
Abajón C	127	Avila AL	104	Cardinale M	83, 84, 85
Abate CM	102, 103, 104	Avila N	77	Cardozo ML	135
Abbas L	157	Aybar A	75	Carino S	165, 182, 225
Abdala G	210	Aybar I	182	Carmona L	156
Abregú AV	48, 49	Ayrault G	209, 210	Caro MS	143
Afur R	198	Azcuy CL	L2	Carrasco MP	170
Agüero G	26, 27, 28, 30, 36	<b>B</b>		Carrasco Juárez B	150
Agüero S	162	Baca C	20, 21	Carrera Silva EA	25
Aguilera G	60	Baigori M	137, 138, 141, 142	Carrizo A	223
Aguilera M	12	Baigori MD	140	Carrizo TR	48
Ajmat C	157	Baino O	145	Carrizo TR	49
Ajmat MT	6, 7, 131	Balderrama Coca M	107	Cartagena E	38
Alabarse G	156	Ballesteros G	33	Cassol A	212
Albarracín P	96, 97	Barbeito CG	216, 217	Castagnaro A	95, 101, 187
Albarracín V	12	Barboza GE	126	Castagnaro AP	112, 178
Albarracín VH	104	Bardón A	24, 38, 42, 43	Castagnaro R	8, 9, 10
Alberto MR	31	Barraza T	182	Castillo M	154
Albo G	221, 231	Barrionuevo R	224	Castillo MC de	64, 65
Albuxech C	182	Basualdo C	238	Castro C	165, 193
Alcaide MF	167	Basualdo MM	176	Castro CE	166
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