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1. ARGINYLATED CALRETICULIN AVOIDS PROTEASOMAL DEGRADATION THROUGH SELF-DIMERIZATION
Goitea VE, Hallak ME.
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Arginylation is a posttranslational modification that occurs at the N-terminal position of proteins and it is catalyzed by the enzyme ATE1. The addition of Arg could be involved in the N-end rule, as a primary destabilizing residue. Calreticulin (CRT) is a protein that retrotranslocates from the endoplasmic reticulum to the cytoplasm, where it is arginylated (R-CRT). We have shown that R-CRT has a greater degree of dimerization than CRT. Here we evaluate if R-CRT is degraded by the proteasome and how dimerization affects its stability. Cells incubated in the presence of the proteasome inhibitor MG132 show increased levels of R-CRT compared with control cells. Moreover, in the presence of MG132 and after stress induced by thapsigargin, R-CRT remains at high levels. During the recovery period in the absence of MG132, R-CRT levels return to the values of control cells. In order to evaluate the effects of CRT dimerization on its degradation, we transfected CRT-/- cells with CRT-EGFP or C146A-CRT-EGFP (which is unable to dimerize). Cells expressing CRT-EGFP exhibit higher levels of R-CRT than cells transfected with C146A-CRT-EGFP. In addition, when these cells are incubated in the presence of MG132 show an accumulation of R-CRT in both cases. Our results indicate that R-CRT is susceptible to degradation and that dimer formation protects the protein from proteasomal degradation. Supported by SECyt-UNC, CONICET, ANPCyT-PICT.

2. DETECTION OF BOVINE PARAINFLUENZA VIRUS TYPE 3 BY RT-PCR IN CELL CULTURES
Raviolo JM1, Tamiozzo PJ2, Lovera H1, Aguilar J3, Escudero R1, Pelizza V1, Spilki FR1.

The confirmation of infection of Bovine Parainfluenza Virus type 3 (BPIV-3) in cell cultures is achieved by immunofluorescence or immunohistochemistry. However, they have low or variable sensitivity and specificity, and are not capable to discriminate different viral serotypes. It is necessary to optimize a new diagnostic tool as PCR for early detection of the virus in cell cultures. Monolayers of MDBK cells were infected with the JR-2007 strain of BPIV-3. RNA extraction was performed using TRIzol® from cell culture infected and uninfected. For the synthesis of cDNA Super ScriptIII® with random primer was used. PCR was performed using primers and conditions proposed by Vaucher et al. (2008) and DNA polymerase Platinum Pfx. An amplicon of 1009 bp was sequenced for greater specificity. Amplicons of 1009 bp corresponding to PIV3-B HN gene were obtained. Sequencing the 1009 bp fragment confirmed the HN gene amplification. Uninfected cultures did not show any reaction. The RT-PCR technique described provides a rapid, specific and reliable detection for BPIV-3 in cell cultures. This would permit a new approach to study the pathogenesis of viral infection, and the molecular epidemiology of circulating strains in the south-central region of Córdoba province.

3. MOLECULAR DETECTION OF RESPIRATORY PATHOGENS IN REARING CALVES
Raviolo JM1, Tamiozzo PJ2, Escudero R3, Lovera H1, Aguilar J4, Pelliza V1, Spilki FR1.

The primary agents associated with the bovine respiratory disease complex (BRDC) more prevalent in Holstein calves, in rearing stage, are Bovine Parainfluenza type 3 Virus (BPIV-3) and Bovine Respiratory Syncytial Virus (BRSV). BRDC control should be addressed with emphasis in diagnosis and prevention. For an accurate diagnosis RT-PCR can be used, being necessary to optimize the technique to use from clinical samples. Twenty nasal swabs were collected in two farms (A and B) from calves aged 2-4 months old with clinical symptoms. RNA was extracted and the synthesis of cDNA Super ScriptIII® with random primer was used. BPIV-3 and BRSV PCR’s were performed using primers and conditions as previously proposed. Non-infected and infected MDBK cells with both viruses were used as negative and positive controls, respectively. An amplicon of each gene was purified and sent to sequencing. We detected amplifiers of the gene HN of the BPIV-3 in three calves from farm A and amplifiers of gene G of the BRSV in a calf from farm A and in three calves from farm B. The sequencing of the amplifiers of HN and G genes confirmed the specificity of the RT-PCRs. We concluded that the techniques used were rapid, specific and reliable in the detection of both viruses from clinical specimens. In addition, viral circulation was confirmed in calves in our country.

4. BIOFILM PRODUCTION AND ANTIBIOTIC RESISTANCE OF Streptococcus uberis ASSOCIATED TO BOVINE SUBCLINICAL MASTITIS
Lasagno M, Rivero E, Fambrini A, Reinoso E, Odierno L.
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Microbial biofilm (BF) formation is a potential responsible for the failure of antibiotic therapy, also contributing to the evasion of the immunological defenses and detachment of planktonic cells often resulting in persistent bacterial infections. BF mode of growth has been associated with S. uberis, the main environmental streptococcus responsible of subclinical mastitis infections (SCM). The aim of this study was to determine BF production and antimicrobial susceptibility to a five antibiotics of 25 S. uberis isolated from cows with SCM from 18 dairy herds located in the east-central region of Argentina. Susceptibility to antibiotics was determined using the disc diffusion assay on agar plates, according to the CLSI (2008). BF production was evaluated in vitro by quantification of BF production by optical density measurement. The results showed a high percentage of isolates resistant to each of the five antibiotics tested. Twelve resistance profiles were identified in S. uberis; Profile A (8/25: 32%) was the most frequent and exhibited resistance to all antibiotics. 21 (84%) isolates were BF producers. 10 (40%) and 2 (5.5%) of 25 S. uberis showed strong and moderate BF production capability, respectively. 9 (42.8%) of the 21 positive BF isolates exhibited resistance to 3 to 5 antibiotics. The high rate of drugs resistance and BF production suggest that these two factors play important roles in subclinical intra-mammary infections by S. uberis.
5. **IMMUNOLOCALIZATION OF CYCLOOXYGENASE 2 (COX 2) IN THE DIFFERENT PLACENTAL ZONES OF STRESSED RATS**

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Chronic stress applied to pregnant rats alters the physiological mechanisms that maintain placental homeostasis, including angiogenesis, a process in which is involved the COX2 enzyme. The aim was to determine qualitatively the COX2 marked cells in different placental zones of stressed rats. Wistar rats, control (C) and experimental (E), stressed by immobilization in tube, were sacrificed at 12, 17 and 21 days of pregnancy. The placental sections were immunolabeled with anti-COX2. We observed COX2 marked cells in both placental zones, the junctional zone (JZ) and labyrinth zone (LZ). In the day 12 of the C group, COX2 was found in the spongioblast cells (SC) in the LZ, and in 12E also in trophoblast giant cells (TGC) of JZ. At day 17 of the C and E groups in the glyogenic cells (GC) and in the TGC of the JZ. On the day 21 of the C group, COX2 was localized in the GC and SC in the JZ and at day 21 of the E group on the SC and TGC in the JZ. In both groups, the spatial distribution of COX2 marked cells changed from the LZ to the JZ as pregnancy progresses. This could be related to the prostaglandins biosynthesis, which are mediators in myometrial contractility and increased blood flow at the end of pregnancy.

6. **COMPARISON OF HABITAT USE AND BEHAVIOUR (FORAGING AND VIGILANCE) OF GUANACOS (LAMA GUANICOE) REINTRODUCED THROUGH HARD RELEASE (2007) AND SOFT RELEASE (2011/12) IN QUEBRADA DEL CONDORITO NATIONAL PARK**

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In 2007 began the guanaco reintroduction project in the PNQC, in order that this great wild mammal extinct in the region will help to restore the balance between large-scale herbivory and maintaining diversity without degradation soils, which is needed by this ecosystem of central Argentina. In this paper we compare habitat selection and behavior among guanacos reintroduced by hard release (without pre-adaptation period) and soft release (with pre-adaptation period). We calculated the differential relative use for each habitat unit with Ivlev index. We also made sampling behavior with focal animal type, calculated the occurrence rate and obtained the percentages for vigilance and foraging. The results show that wet and dry grasses were selected by guanacos, both released in 2007 as in 2011/12. The groups of 2011/12 allocated more time to feed than the groups of 2007 and while nosophistic difference in the time spent on monitoring.

For the species meets the ecological role for which it was reintroduced, it will take more reinforcements populations through soft releases.

7. **RECOMBINANT LACTASE ACTIVITY IN THE PRESENCE OF LIPID INTERFACES**

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Previously we demonstrated that the activity of soluble wild-type E. coli β-galactosidase (β-Galwt) versus soluble substrate ortho-nitrophenygalactopiranoside (ONPG) increases in the presence of multilamellar vesicles (MLVs) composed of neutral phospholipids. The aim of this study was to compare the activity of E. coli β-Galwt (Sigma-Aldrich) with a recombinant β-Gal (β-Gal-His6), against natural substrate (lactose). β-Gal-His6 was overexpressed in E. coli, and the six histidine residues (His-tag) fused to the carboxyl terminus facilitated purification by ion metal affinity chromatography (IMAC). The enzyme activity was measured spectrophotometry, in the absence or presence of MLVs of pure egg phosphatidylcholine (EPC interface zwiterion) or at 80:20 molar ratio with dioleoyl phosphatidyl glycerol (EPCsoleDOPG) negative interface. Kinetic parameters were determined by fitting the michaelian model to the experimental data using nonlinear regression. Our results showed that, compared to β-Galwt, the β-Gal-His6 exhibited lower affinity for the substrate and specific activity. However, it retained the property of being activated by adsorbing to the lipid-water interface we already described for β-Galwt but with a greater enhancing effect induced by negatively charged interfaces, favored by electrostatic interactions mediated by the presence of residues His.

8. **PHOSPHOLIPASE D ACTIVITY WITH NBD-PC IN RESPONSE TO HORMONAL STIMULATION IN BARLEY ALEURONE**

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Phospholipids signalling in part of the plant response to stress and hormone. In addition to de novo synthesis in the endoplasmic reticulum, phosphatidic acid (PA) may be generated from plasma membrane glycosphospholipids (GPL) like phosphatidylethanolamine (PC), phosphatidylethanolamine (PE) by the hydrolytic actions of phospholipases, such as phospholipase D. PLD activity was determined by the ability of PLD to use a primary alcohol, in this case butanol, in stark difference to water as an acceptor for the phosphatidyl moiety to form phosphatidylbutanol (PBut). Previously, by surveying fatty acid composition and levels of main lipid classes in aleurone layers, we found that PLD appears to be the key enzyme that responds to ABA, the generated 18:2-PA being the lipid messenger whose action is terminated by PA-kinase activity to give 18:2-DGPP (Villasuso et al., 2013). Now, we measured the PLD activity with NBD-PC and evaluated the effect of H2O2 stimulation as a mechanism involved in ABA response.
Apiculture is very important for the Department of Rio Cuarto economy. During 2008, a census was carried on to characterize beekeepers in the region. The objective of this report was to show a preliminary summary of the data collected. The census universe corresponded to the 639 RENAP A records. Only 47.1% (301/639) of the beekeepers registered could be contacted by phone. In addition, 36.87% (111/301) beekeepers reported being currently out of business, those who were still in (n=190), were interviewed. The beekeepers reported an average of 14 years in apiculture business. Two out of three farmers stated that beekeeping was their main income source. More than a half, contract extra labor (104/190) and two third had been diversified the system. The mortality reported, showed high variation among participants (range 0-100%), with a median of 25%. One hundred sixty three participants declared to control *Varroa destructor* (57 once, 103 twice and 13 three times a year), the rest did not apply any treatment. This present findings applied only for beekeepers still in business. The great variation in mortality reported, requires of an indepth investigation of the factors associated.

**Triatoma infestans** is the main vector of Chagas’ disease in South America between latitudes 10°S and 46°S. A total of 314 insects from 22 domestic and peridomestic sites of 15 houses from the locality of San Martín (Capayán department, Catamarca province) were typed for 10 polymorphic microsatellite loci. Significant levels of genetic differentiation were detected among all collection sites, including the different sampled sites within the same house. The results confirm subdivision in populations of *T. infestans* with restricted dispersal among sampling sites and suggest inbreeding and/or stratification within the different domestic and peridomestic structures. Spatial autocorrelation analysis indicated that significantly positive autocorrelations were found in the first (50 m, \( r = 0.081, 95\% CI 0.085, 0.078 \)) and second distance classes (300 m, \( r = 0.039, 95\% CI 0.043, 0.034 \)), with an x-intercept at 405 m. This result suggests that dispersal typically occurs on the scale of approximately 400 m. Besides, it was detected difference in scale of structuring among sexes, with females dispersing over greater distances than males. This study suggests that in order to reach a higher vector control effectiveness, insecticide treatment and surveillance should be extended within a radius of 400 m around the infested area, which would prevent the propagation and reinfestation process after insecticide spraying.
The increase in fetal mass with the advance of gestation requires a tissue placental adaptation, involving development and remodeling of tissues. During this process, the apoptosis and cell proliferation phenomena play a key role. Our objective was to evaluate the apoptotic and cell proliferation markers, IAp and Ki67, throughout pregnancy, to understand the existing relation between both processes. Crossbred placental samples from slaughterhouses from Rio Cuarto, Argentina, were used. The estimated gestational periods of the samples were: 30, 60, 80 and 90 days of gestation. IA index was calculated from TUNEL assay and ApopTag® commercial kit of the samples were: 30, 60, 80 and 90 days of gestation. IA index showed the same expression pattern. However, by day 90 an increase of apoptosis was detected, together with a marked diminution of Ki67 specific antibodies. Until day 80 of pregnancy, IA y Ki67 showed the same expression pattern. However, by day 90 an increase of apoptosis was detected, together with a marked diminution of cell proliferation. It has been informed that an inverse relation exists between both processes. Nevertheless, in the present work that is only evidenced in the advanced gestation of day 90. During placental remodeling by apoptosis, the eliminated cells are replaced by an active cell proliferation process. Synchronization of both phenomena takes to an increase in the area of placental villi and blood vessels. In more advanced pregnancies, the apoptosis is involved in the mechanisms triggering the farrowing.

Gastric acid secretion is mainly controlled by the hormone gastrine, which is synthesized by G cells of gastric mucosa. Helicobacter pylori alters the inhibitory control of gastrin release and this results in an excessive acid secretion causing peptic ulcers. Several studies confirm the implication of Helicobacter spp in gastric pathologies in human and in other animal species, including pigs. That is why these bacteria could be responsible of zoonosis. The aim of this work was to study the relationship between the presence of Helicobacter spp and the functionality of the G cells in gastric biopsies of pigs. The presence of Helicobacter spp was determined in gastric biopsies of crossbred pigs of different ages and sexes, diagnosed gastritis H (+) and H (-). Porcine samples were obtained from slaughterhouses from Rio Cuarto, mainly of the antral region. The detection of positive G cells was carried out by immunohistochemistry using commercial antibodies. No statistically significant differences were found between groups gastritis H (+)/H (-) (p=0.3895). In this preliminary study, the results indicate that the increase of gastrine is independent of the presence or absence of Helicobacter. In contrast, in humans differences are found related to gastrin concentration and to the increase in number of gastrine producing cells, regardless of sex.
17. VASCULAR DEVELOPMENT IN GOAT PLACENTAS. PRELIMINARY STUDY

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The placenta performs important nutritional, respiratory and excretory functions. These are possible by the formation of an extensive vascular network by angiogenesis. The objective was to evaluate the placental vascular development by studying blood vessels morphometric variables from the last two thirds of gestation. Placental samples were obtained from 10 crossbred goats of 50 and 100 days of pregnancy, which were fixed and processed by conventional histological technique. The sections were stained with H/E staining. Images at 200x in 10 random fields per slide were acquired. Area and perimeter of capillaries were measured with the Axiovision® software. The results show that the caruncular vascular area did not exhibit significant differences between the placentas of 50 and 100. In contrast, cotyledonary vascular area was significantly higher in placentas of 100 days. The perimeter of the vessels was significantly higher at 100 days in both tissues. These results are consistent with data in sheep, showing a slight development in caruncular tissue until 100 days, and a large increase in the vascular area and perimeter at 100 days in cotyledonary tissue. This is consistent with the increase of umbilical blood flow and exponential growth of fetal size in the last third of gestation.

18. MICROBIAL CONSORTIUM FOR AGRICULTURE SUSTAINABLE

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The process of biological fixation of atmospheric nitrogen (FBN) partially covers the demand for soybean nitrogen estimated at 80 kg per ton of grain produced. This process can only be performed by prokaryotes. Bradyrhizobium japonicum is the quintessential symbiont of soybeans. Furthermore, the technique can use the bacterium coinoculation combined with plant growth-promoting bacteria (PGPR) as Azospirillum brasilense and Pseudomonas fluorescens, which enables better results in performance due to the synergistic effect of these PGPR. The aim of this study was to optimize the FBN with consortium of microorganisms in the soybean crop. We conducted a study of 4 inoculated treatments, one with addition of nitrogen fertilizer and one control, in two different places. The results show that the grain yield was higher in treatments with microorganisms than the control, with increases observed from 250-650 kg ha-1.

19. ARGININE DEIMINASE IS INVOLVED IN THE REGULATION OF THE ECYSTATION PROCESS IN Giardia lamblia

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Giardia lamblia differentiation from the trophozoite to the cyst stage is critical for the parasite survival in the environment and for disease transmission. Despite recent discoveries in the field of Giardia encystations, our understanding of the molecular mechanisms initiating and regulating gene expression during this critical process remains incomplete. In a previous work, we analyzed the role of SUMO protein and the putative enzymes of the SUMOylation pathway in Giardia. At present, only the enzyme Arginine Deiminase (ADI) was confirmed as a SUMOylated substrate. ADI is involved in the survival of the parasite and catalyzes the modification of arginine residues to citrulline in the cytoplasmic tail of surface proteins. During encystation, however, ADI translocates from the cytoplasm to the nuclei. In this work, by site-specific mutation of the ADI SUMOylation site, we observed that these transgenic cells failed to enter the nucleus at the first steps of encystation but shuttled in the nuclei late during this process through classical nuclear localization signals. Inside the nuclei, ADI modifies histones by citrullination, and this modification is probably involved in the downregulation of CWP expression and cyst wall formation. Our results strongly indicate that ADI plays a regulatory role during encystation in which posttranslational modifications of proteins are key players.

20. GLYPHOSATE EFFECT ON GROWTH IN MODIFIED CZAPEC MEDIUM OF Aspergillus flavus. DETERMINATION OF RESIDUAL PESTICIDE CONCENTRATION

Carranza C1, Barberis C1, Bergesio MV1, Chiacchiera SM2, Magnoli C3.
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Glyphosate is an important herbicide used in different crops in our region. Filamentous fungi are a powerful tool in the pesticide bioremediation from soil. The in vitro effect of different concentrations of glyphosate (5 to 30 mM) on growth of a non-toxicogenic A. flavus strain was evaluated under three water activities (aW) (0.995, 0.98 and 0.98). The residual concentration of the herbicide on media was calculated. In general, fungal biomass was higher in each herbicide concentrations than in the control treatment at all aW assayed. At 5 mM of glyphosate and 0.995 of aW it was observed a pesticide reduction of 55% after 20 days of incubation. While, herbicide reductions of 91% and 88% were obtained at 0.98 and 0.95 of aW after 10 and 15 days of incubation, respectively. These results the capacity of A. flavus to develop in presence of glyphosate and degrade it on in vitro conditions.
21. EFFECT OF AQUEOUS OZONE ON SPORES GERMINATION OF Aspergillus SECTION flavi AND nigri ON SOIL
Barberis C1, Carranza C1, Chiacchiera SM2, Magnoli C1.
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Recently, aqueous ozone has been proposed as a new sanitizer to eliminate the risk of pathogenic bacteria or mould in foods. The fungus is found throughout the world in soils including agricultural, forest, orchard, grassland and wetland soils. Colonization of grains by Aspergillus species has often resulted in mycotoxin accumulation at harvest. This work evaluate the effect of different concentrations of aqueous ozone (5, 10, 20 y 40 mg/L) on spore germination of two toxigenic Aspergillus strains (A. flavus and A. niger aggregate) on sterile soil; colony-forming units per gram of soil (CFU/g) were determinate to analyze the effect of ozone on each fungal strain. In general, CFU/g of both strains were significantly reduced when aqueous ozone concentration increased, this fact was more noticeable on A. flavus. The spore germination reduction become significant from the lowest concentration of ozone assayed (5 mg/L). Aqueous ozone application on soils could be an alternative to diminishing fungal contamination of crops and the subsequently mycotoxin production.

22. DESMIN AND VIMENTIN IMMUNOEXPRESSION IN PORCINE PLACENTAS DURING PREGNANCY
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The presence of desmin and vimentin intermediate filaments plays an important role in the implantation, development and reorganization of placental tissues in different animal species. The aim of this work was to study the distribution of intensity of desmin and vimentin immunolabelling during porcine placentaion. Histological samples of 2 μm from placentas of 28, 40, 60, 70, 80 and 114 days of pregnancy were used. The placental samples were processed by immunohistochemistry using Novocastra™ primary antibodies and Santa Cruz, Inc. FITC-conjugated secondary antibodies. The High Score values of desmin and vimentin were derived by summing the percentages of intensity of labelling at each intensity value. Effect of gestational period was detected on the High Score of desmin and vimentin. At 28 and 80 days of gestation the greatest values of desmin and vimentin were observed. The presence of these intermediate filaments in the peri-implantation period would favor the maintenance of vascular and tissue integrity, coinciding with our previous studies in which we found the highest rates of proliferation and apoptosis. At the day 80 the High Score of desmin and vimentin are correlated with high rates of vascular proliferation and with high vascular areas found in previous studies. The presence and immunoreactivity of desmin and vimentin in the placental/fetal microenvironment would be closely associated to the vascularization process observed in early and advanced gestations.

23. SILDENAFIL: EFFECTS ON UTERINE CAPACITY AND OXIDATIVE STRESS IN GILTS
Motta C1, Grosso C1, Alustiza F1, Picco N1, Bellingeri R1, Mateuchi F1, Ruffo M1, Vivas A1.
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The uterine capacity can be defined as the relative surface area of placental endometrial attachment required to support the nutrient requirements of each fetus throughout gestation. Transport efficiency of nutrients is conditioned by vascular development and balance between different factors, such as nitric oxide (NO). Sildenafil (SDF), a selective 5-phosphodiesterase inhibitor, elevates the vasodilatory effect of NO on vascular smooth muscle. The aim of this study was to determine the effects of SDF on uterine capacity and oxidative stress in pregnant gilts. Artificially inseminated gilts were selected and divided into two groups: control (n=3) and treatment (n=3). In the treatment group, oral SDF citrate (100 mg) was administered from day 45 to day 55 of pregnancy. The animals were euthanized on day 56 of pregnancy. Number of embryonic vesicles, fetal and placental weights and fetal measures were registered. Lipid peroxide levels in fetal placenta and uterus homogenates were determined, and placental villi length was evaluated. Animals treated with SDF show significantly reduced levels of lipid peroxidation in fetal placenta (p=0.0360) and a significant increase (p = 0.0195) in length of fetal placental villi was found. In conclusion, treatment with SDF citrate in the early pregnancy may increase the relative area of fetal placental adherence and decrease lipid peroxidation in the fetal placental tissue.

24. INTESTINAL PARASITES AND ASSOCIATED FACTORS IN DOGS IN RIO CUARTO
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The presence of intestinal parasites in dogs have veterinary and human health implications. The objective of this study was to determine parasites prevalence in dogs and associated factors. A cross sectional study was undertaken between the years 2011 and 2013, fecal samples of dogs whose owner agreed to participate were recollected from 36 neighborhoods of Rio Cuarto city. Samples were processed with Willis, Benbrooks and modified Telleman techniques. Age, animals’ origin, housing characteristics, observation of feces in the moment of the survey and access outdoors without supervision were the variables analyzed. One hundred sixty eight samples were positive to at least one parasite structure of a total of 368 dogs, representing a prevalence of 37.78%. Anclylostoma caninum was the most frequent structure found (25.00%), followed by Trichuris vulpis (9.24%), Giardia intestinalis (4.89%), Toxocara canis (4.35%), Isospora spp (3.80%), Capillaria (1.36%) and Sarcocystis spp. (1.09%). Results of the logistic regression showed an association of dogs’ age and lack of shadow in the house with a decreased risk of presence of parasites in dogs. The high frequency of parasites found in dogs, reinforces the need of effective prevention measures. Veterinarians should play an important role in increasing the level of awareness of canine zoonotic parasites, thus helping to prevent or minimize zoonotic transmission.
25. VOLATILE COMPOUND VALUES IN THE GRAIN-INSECT-FUNGAL INTERACTIONS
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The grains produce volatile compounds (VC) as a defense mechanism, modulating insect attack and fungal infection. The present study aimed to evaluate the insecticidal activity against Sitophilus zeamais Motschulsky (Coleoptera: Curculionidae) and antifungal activity on Fusarium verticillioides. The VC from grains and fungi were obtained from commercial preparations. The insecticidal and antifungal activities were evaluated through fumigants assays. The most bioactive VC against fungal strain were: trans-2-nonenal > trans-2,cis-6-nonadienal > 1-octen-3-ol > 3-octanol. However, 1-octen-3-ol and 3-octanol were the most toxic against S. zeamais. 1-octen-3-ol and 3-octanol are synthesized by fungal strains and low concentrations of them stimulate F. verticillioides growth. The aldehydes were more effective than alcohols. The present results suggest that these compounds, synthesized by grains, may play an interesting role in the control of fungi and insect infections. In addition, VC synthesized by fungal strains could have repellent effects on insect and/or attractant effects in order to disperse their reproductive structures. In conclusion, the interaction between grain-insect-fungal strain could regulate the fungal and insect infections. These findings could provide an important contribution in search for new compounds to control insect and fungal.

26. INSECTICIDE ACTIVITY OF TERPENES AGAINST Tribolium castaneum HERBST (COLEOPTERA: TENEBRIONIDAE) AND Sitophilus zeamais MOTSCHULSKY (COLEOPTERA: CURCULIONIDAE)
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The stored products are attacked by many beetle pests. Essential oils and its main compounds (terpenes) are interest alternative to synthetic insecticides and have little or no harmful effect on human health. The aims of this study are: 1) to evaluate insecticidal activity of terpenes with different functional groups against maize pests (T. castaneum and S. zeamais); 2) to evaluate insecticidal activity of essential oils whose main components contain the functional group with the highest insecticidal activity against S. zeamais, selected to aim 1). According to previous research, the most toxic terpenes have been tested in contact and fumigant toxicity assays. In addition, essential oil and their main components were tested in fumigant assay. The most bioactive terpenes were: ketones > phenols > ethers > hydrocarbons > alcohols. Essential oils rich in ketones from Aphyllolacudus decussatus Hieron, Aloystia polystachya Griseb, Minthostachys verticillata Griseb Epling, Tagetes minuta L. and its major components: α-thujone, carvone, pulegone and ocimene, respectively, were selected. M. verticillata and its main compound, pulegone, were the most bioactive (LC50 = 116.6 μL/L y 11.8 μL/L, respectively). In conclusion, the essential oils rich in ketones could be used as potential fumigants against stored product insects.

27. GENOTYPIC CHARACTERIZATION OF Staphylococcus coagulase NEGATIVE RESISTANT TO β-LACTAMS
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Antibiotic therapy is an essential component of mastitis control programs against bovine mastitis (BM). Recent research shows a predominance of coagulase negative Staphylococcus group (SCN) as causative agents of BM. Indiscriminate use of β-lactams has contributed to the increase of resistant strains either by the presence of the β-lactamase enzyme or by a penicillin-binding protein which has a very low affinity for all β-lactams antibiotics, coded by blaZ and mecA genes, respectively. S. chromogenes and S. haemolyticus are the most prevalent species isolated from BM to 50 dairy farms from the central basin of Argentina. At a phenotypic level, both species revealed a high percentage of strains resistant to β-lactam. The aim of this study was to analyze the genetic profiles of β-lactams resistance of SCN species with clinical significance in BM. PCR detection of blaZ and mecA correlated at 75% and 62.5%, respectively, with phenotypic resistance to β-lactams in strains of S. chromogenes and 75% and 31.5% isolates of S. haemolyticus. These results show the wide spread of resistance mediated by β-lactamase and a different horizontal transfer, but not least, of the mecA gene between SCN prevalent species. S. chromogenes and S. haemolyticus could act as a reservoir of these resistance genes, and therefore it is advisable the rational use of β-lactam antibiotics against prevalent pathogens associated with BM.

28. ERYTHROMETRIC PARAMETERS AS DIAGNOSTIC CHARACTER IN CRYPTIC ANURAN SPECIES WITH DIFFERENT PLOIDY LEVEL
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In cryptic complexes including species with different ploidy levels, the character that clearly differentiates them is the number of chromosome complements. The blood cells of amphibians conserve their nucleus, and so the erythrocyte size is correlated with the DNA content. We analyzed two cryptic-polyploid complexes occurring in the center of Argentina: Odontophrynus cordobae (2n)/O. americanus (4n) and Pleurodema kriegie (4n)/P. cordobae (8n). Our aim was evaluate the efficiency in the utilization of nuclear area with respect to cellular area of the erythrocytes to define the limits values for the identification of cryptic-polyploid species. We studied 110 individuals of Pleurodema and 116 individuals of Odontophrynus. For each individual, we measured the cellular and nuclear length (L) and width (A) of 40 erythrocytes (Area = L*A*/π) and boundary values were calculated using distribution curves. In both complexes studied, the erythrometric parameters showed significant differences between related species. Moreover, in both complexes the nuclear area was more efficient for identifying the species (Pleurodema: 34.39 μm² (probability=99.96%) and Odontophrynus: 24.02 μm² (99.075%)) than the cell area (Pleurodema: 273.08 μm² (97.55%) y Odontophrynus: 197.69 μm² (97.94%)). Greater efficiency found using nuclear area is novel and significant because most studies use only the cell area to differentiate polyploid complexes.


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*S. aureus* is the ethiological agent most commonly associated with bovine mastitis, infectious disease with a strong economic impact in dairy farming. The objective of the present study was to investigate the efficacy of a live avirulent *S. aureus* vaccine under field conditions. A sequential trial was conducted at a commercial dairy farm in Córdoba, Argentina with 156 Holstein cows in lactation. The prevalence of intramammary infections due to *S. aureus* was 21%. Cows and heifers were assigned through block randomization. Subcutaneous doses (5x10^8CFU/ml) of the *S. aureus* RC122 strain were administered to 21 cows and 14 heifers, 90, 60 and 10d before calving. The experiment was balanced regarding control and vaccinated cows. Milk samples were collected from each quarter at 14, 21 and 60d after calving and tested for bacteriology. A logistic regression model with repeated measures was fitted. Preliminary results show that isolation of *S. aureus* in milk was significantly lower in vaccinated cows (OR=0.31; CI95% 0.14-0.66) in comparison to non-vaccinated group, while there were not significant differences between both groups (OR=0.29; CI95% 0.02-2.50) in heifers. Results showed that immunization of dairy animals with strain RC122 provides protection in cows demonstrated by a significant reduction in bacterial infections with an efficacy of 70%.

30. **Achyrocline satureioides (Lam.) DC: Cytopathic Capacity Against Lymphocytes of Equines and Chemical Analysis of Its Cold Aqueous Extract**

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**Introduction**: *Achyrocline satureioides* (Lam.) DC is an important species of Asteraceae family, is commonly known as “marcela del campo”. In previous studies we demonstrated the ability of cold aqueous extract (CAE) to inhibit the Western Equine Encephalitis virus. It is necessary to evaluate the cytopathic effect of CAE on normal cells of equines to determine its safety and establish a selectivity index. **Objective**: To evaluate the cytopathic effect on lymphocytes of equines and analyze the chemical composition of CAE of *A. satureioides*. **Methodology**: Vegetal aerial parts were submitted to extraction with cold (4°C) water for two days. Then, the solution was filtered and lyophilized to obtain CAE. Equine lymphocyte cultures were treated with different concentrations (0-3000 μg/mL) of CAE, for 18-24 h. Then cytotoxicity was evaluated by two techniques: a) the staining by Trypan Blue Exclusion (TBE) and b) Reduction of MTT. Analysis of chemical composition was performed by HPLC-ESI-MS/MS. **Results and Discussion**: Cytotoxic studies showed low toxicity of CAE. It was demonstrated dose-response relationship on lymphocytes equine by both TBE (CC_{50}=1300 μg/mL) and MTT (CC_{50}=700 μg/mL). Chemical analysis indicated the presence of quercetin, 3-O-methylquercetin and luteolin.

31. **Evaluation of Box-PCR Molecular Technique to Study Escherichia coli Isolated from Water**

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*E. coli* is the most important indicator microorganism of fecal contamination in water. Typeability, reproducibility and discriminatory power of BOX-PCR were determined, to establish the genetic relation of *E. coli* strains and compared with land use. Thirty-eight isolates were analyzed form surface water and groundwater obtained from Barranquita-Knutzen and El Barreal basins. The watersheds include rural zone and land use is predominantly agricultural, followed by livestock. Drinking water is supplied by the unconfined aquifer. By BOX-PCR, 20 patterns were defined with 3 to 7 bands in a rank of 250 y 2500 pb. Typeability and reproducibility were 100%. Discriminatory power was 94% (D=0.94). By UPGMA (Unweighted Pair-Group Method with Arithmetic Averages) and Canonical Discriminant Functions analysis the molecular technique linked strains to each studied basin. In each basin was able to establish the relation between cluster and land use, finding that livestock waste would be the main source fecal contamination in water. PCR-based methods are cheaper, easier to perform and provide faster results. This study demonstrated the value of BOX-PCR as alternative molecular tool for routine examination of water quality.

32. **Effect of Polymer Nanocomposites in Cellular Redox Balance**

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A polymeric nanocomposite material is characterized by the homogeneous dispersion of nanoscale particles within a polymer matrix. These compounds have many applications, including controlled release of drugs. However, little is known about the potential effects of these nanocomposites. The aim of this study was to evaluate the effect of exposure of porcine intestinal cells against different nanocomposites in cellular redox balance. Acrylamide-acrylic acid hydrogels were synthesized incorporating in the solution synthesis different proportions of carbon nanotubes functionalized with chitosan: hydrogel, hydrogel-nanotubes_{10}, and hydrogel-nanotubes_{50}. Porcine enterocytes were cultured and the effect of the incubation of these cells with the nanocomposites in the main antioxidant enzymes (CAT, GPx, SOD and GRd) was evaluated. None of the compounds tested altered the expression of the enzymes compared with untreated control cells. In accordance with previous studies, carbon nanotubes were shown to be not potent inducers of oxidizing species and inflammatory mediators. These results are in concordance with previous reports that says that carbon nanotubes functionalized with chitosan become highly biocompatible.
33. USE OF URBAN ENVIRONMENTS BY AMPHIBIANS ANURANS: IMPLICATIONS FOR PLANNING AND CONSERVATION

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The urbanization is one of the causes of the amphibian population decline. In this paper, we analyzed the reproductive aspects of anuran species in the locality of Río Cuarto, Córdoba, Argentina. We selected 18 sampling sites associated with urban and suburban environments that according to the stability of the water body were classified as environments: permanent (P), semipermanent (SP), semitemporal (ST) and temporal (T). To determine the reproductive activity we recorded acoustic emissions and presence of larval stages. The indexes of alpha and beta diversity, relative importance and permanence were calculated. To compare the diversity among environments a Hutcheson’s t-test was performed. We recorded eight anuran species, with three different reproductive modes. The greatest dissimilarity values were recorded by comparing the permanent environment on the other three categories. The statistical test showed significant differences in the amphibian diversity in all environments except for the pair SP-ST. These environments have the highest diversity values. The lowest diversity was recorded for the environment P, in which only Bufo arenarum larvae were observed. Because the particular requirements of the different species, the diversity of environments with different hydroperiods, particularly with SP and ST regimes, would represent a key factor for the conservation of urban anuran communities.

34. ANTIOXIDANT AND HEPATOPROTECTOR EFFECT OF RHIZODEPOSITION AND SEEDLINGS OF PEANUT (ARACHIS HYPOGAEA)

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It is known that peanut is a source of products with pharmacological properties. The isolation and identification of organic compounds rhizodeposition could be an alternative to obtaining products with beneficial effects on human health. We evaluated the antioxidant and hepatoprotective activity of rhizodeposition and methanol extracts (ME) of peanut plant. Methanol extracts (EM) of leaves (LE), stem (SE) and root (RE) of seedlings of 7 days and lyophilized root exudates (rhizodeposition, Ri) were used. ME and Ri (1mg/ml) were administered orally to Balb/c mice and after 21 days a dose of paracetamol (Pa, 750 mg/kg, orally) was given. The animals were sacrificed, plasma GPT and alkaline phosphatase and hepatic malondialdehyde (MDA) levels were determined. Antioxidant capacity was determined in vitro by assay of DPPH (2,2-diphenyl-1-picrylhydrazyl). Pa administration increased liver enzymes and MDA levels. The administration of the extracts and Ri prevented drug-induced damage, with no differences between the different fractions. ER produced a 30%, EH 67%, ET 27% and Ri 15% of inhibition of DPPH. In conclusion, both Ri as extracts showed antioxidant activity. Furthermore, the increase of liver enzymes in response to Pa indicates plasma membrane stabilization and repair of hepatic tissue damage. The isolation of the compounds contained in the rhizodeposition for use in human health could create added value to the cultivation of this legume.

35. EFFECT OF STRESS INTENSITY ON SODIUM EXCRETION AND OXIDATIVE STATUS IN RATS WITH A PARENTAL HISTORY OF HYPERTENSION

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Urinary sodium excretion in basal conditions and in response to stress (S) is a heritable phenotype that can be used to study the etiology of hypertension (HTA). We have also demonstrated that the increase of free radicals (FR) associated with renal sodium handling, with nitric oxide bioavailability and HTA. We compared the oxidative and natriuretic response in rats with genetic predisposition to HTA and subjected to two types of chronic S. Three groups of male rats F1 crosses between Wistar and spontaneously hypertensive rats: control, movement restriction S (R) and immobilization S (IMO) 1h/day/14day. Urine samples were obtained, blood, adrenals and kidneys. Plasma was determined in glucose (GLU), corticosterone (COR), Na+ and creatinine. Urine creatinine was measured, Na+ and volume. We calculated creatinine clearance (CC). Activity was measured by the superoxide dismutase (SOD) and malondialdehyde (MDA) and renal total nitrates. Increase was observed in GLU and COR in all stressed rats was higher in the IMO. The IMO antinatriuresis caused no changes in the CC. Natriuresis and caused the largest R. IMO only increased the MDA and SOD activity decreased in all rats S. Despite having predisposition to HTA, only strong stress caused antinatriuresis and increase in RL, although in both cases decreased renal response antioxidant. La protection seems to depend more on the intensity of the S strain.

36. EFFECT OF STRESS INTENSITY ON SODIUM EXCRETION AND OXIDATIVE STATUS IN BHR RATS

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Urinary sodium excretion in basal and stress conditions is a heritable phenotype that can be used to study the etiology of hypertension (HTA). Moreover has been shown that an increase of free radicals (FR) is associated with renal sodium handling, nitric oxide bioavailability and HTA. We compared the oxidative and natriuretic response in rats with genetic predisposition to HTA and subjected to two types of chronic stress. Three groups of male rats, F1 from Wistar x spontaneously hypertensive rats (BHR) were considered: control, restriction stress (R) and immobilization stress (IMO) 1h/day/14days. Urine samples were obtained, blood, adrenals and kidneys. Plasma glucose (GLU), corticosterone (COR), Na+ and creatinine were determined. Urine creatinine and Na+ was measured. Creatinine clearance (CC) was calculated. Renal superoxide dismutase (SOD) activity, malondialdehyde (MDA) and total nitrates were measured. Higher GLU and COR levels in all stressed rats was observed, but this values were greater in IMO tan R. Antinatriuresis without changes in CC were observed in IMO, but R caused natriuresis and an increase in CC. Only IMO increased MDA and SOD activity decreased in all stressed rats. Despite HTA predisposition, only strong stress caused antinatriuresis and FR increases, although in both cases antioxidant renal capacity was lower.
Alternatives and agroecological production measures that allow sustainable agriculture are being investigated. The high cost and the pollution by mineral fertilization has made frequent use of organic fertilizers (biofertilizers). The aim of this work was to isolate and characterize microorganisms from a foliar biofertilizer based on vermicompost; to confront them with phytopathogenic fungi “in vitro”; to determine the innocuity and physical-chemistry composition. To isolate the bacteria, the biofertilizer was diluted and inoculated in Petri plates containing TSA at 25%. It was incubated at 28°C for 48 h. The isolated bacteria were submitted to metabolic testing for identification. The results were loaded and evaluated in bacterial identification software (ABIS 6). To determine the inhibition by bacteria, TSA plates were inoculated at 25% with fungi of the genera: Macrophomina, Fusarium and Cercospora. The plates were incubated at 28°C for 7 days. The percentage of inhibition was calculated based on the reduction of mycelial growth compared to the control plates. The innocuity was performed by determining E. Coli sp. and Salmonella sp. Thirteen bacteria included in genera: Paenibacillus, Bacillus, Serratia and Yersinia were isolated. These microorganisms inhibited the growth of fungi in different magnitudes. The biofertilizer proved to be harmless. The results of the physical-chemical analysis indicated that the product has macroelements and microelements, which could increase plant growth.

The use of hematological biomarkers allows to detect observable or measurable changes in the exposure of organisms to xenobiotics. In this work, differential count and cytomorphometry of white blood cells are proposed as biomarkers of genotoxicity in this work, differential count and cytomorphometry of white blood cells are proposed as biomarkers of genotoxicity. In this work, the use of hematological biomarkers allows to detect observable or measurable changes in the exposure of organisms to xenobiotics.

The space used by an individual to satisfy its daily requirements is defined as home range. In the present study, we studied the size and use of Melanophryniscus stelzneri home range during its reproductive period. We selected an ambient in which the species typically inhabits, called mallin, characterized for being a swampy area, developed in floodable sites of the landscape alongside permanent or semi permanent water courses, in which water accumulates or flows slowly. We established a grid encompassing 128m², subdivided in 1m² quadrants. We captured and photographed all active individuals for their later identification by using their dorsal spot patterns. Later, we monitored active individuals and we registered their position in the grid during each sampling day. We identified a total of 43 individuals, of which nine were recaptured on two opportunities and nine had one recapture. Sites used most frequently by the species were represented by cavities of approximately 1m³ produced from livestock stepping. Most of these sites were near or under Cortaderia selloana, a plant species used as refuge by the red bellied toad.

The concentration of reactive oxygen species and other serum components varies according to the plant species and the stress condition. Among the analyzed components, the nitrite content was the most significant. It is called stress to the change of any environmental factor acting on the plant affecting the biochemical and physiological response. This change may occasionally result in damage or injury. Plants, unlike animals, lack mobility exposing themselves to environmental stresses, causing limitation on their growth and productivity. According to the changes observed in our laboratory against phenolipids signals involved in the response to stress, and trying to establish a link between metabolism and reactive oxygen species (ROS), an objective was established to determine the formation of the same in seedlings germinated under control and stressed conditions. The seeds were germinated in darkness under control conditions and salt (25-100 mM NaCl) and osmotic (50-200 mM mannitol) stress for 4 days. In spectrophotometry determination of H₂O₂ and O²⁺ stressed seedlings, an increase was detected in the level of these ions, which was confirmed histologically. In roots and coleoptiles mannitol treated, H₂O₂ increased 108 and 150% respectively. Salt stress produced an increase of 107 and 125% in roots and coleoptiles, respectively. Regarding the determination of O²⁻ treated roots both NaCl or mannitol, the increase was of 31 and 51%, whereas in coleoptiles was of 91 and 83% compared to control. Data suggest that both types of stresses influence ROS production, and that the highest production level is on coleoptiles, causing damage to membranes, change in phospholipids and other cellular components which could explain the reduction in the growth of seedling when they germinate under stress.

The use of hematological biomarkers allows to detect observable or measurable changes in the exposure of organisms to xenobiotics. In this work, differential count and cytomorphometry of white blood cells are proposed as biomarkers of genotoxicity. In this work, the use of hematological biomarkers allows to detect observable or measurable changes in the exposure of organisms to xenobiotics.
41. RELEASE CALLS OF Hypsibo aspulchellus AND H. cordobae
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The release call in anurans is an acoustic-mechanical response to a male-male mating attempt. Some studies show that the temporal structure of these vocalizations could be phylogenetically informative. In this study, we analyzed a total of 110 release calls from seven individuals (Hypsibo aspulchellus: n=2; H. cordobae: n=5). Release calls were induced in the laboratory by a slight pressure in the axillary region, simulating an amplexus. The acoustic signals were digitized and analyzed by means of oscillograms, sonograms and power spectra using the software Adobe® AuditionTM 1.0. Each call series was characterized by three parameters: (1) call duration [ms]; (2) intercall duration [ms]; and (3) dominant frequency [Hz]. We calculated means, standard deviations, maximum and minimum for each individual variable. Species comparisons were performed using ANOVA. The release call in both species consists of a single note. H. pulchellus call has an average duration of 11.6 ms, being higher than that of H. cordobae. The mean intercall duration (274.05 ms) and the mean dominant frequency were higher in H. cordobae (2388.95 Hz) than in H. pulchellus (1604.82 Hz). Call duration and dominant frequency showed significant differences between species (p <0.05). This work represents the first description and characterization of the temporal and spectral release call of these two species.

42. THE ALLUVIAL AQUIFER OF RIO CUARTO (CORDOBA, ARGENTINA) AS AN ECOSYSTEM
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Groundwater ecosystems are characterized by the absence of primary producers. Microorganisms are the basis of food webs and they are consumed by invertebrates. The aim was to analyze the food webs in groundwater and the relationships with nutrient inputs in an unconfined aquifer of alluvial origin. Ten wells were sampled (unsaturated zone between 2 and 14 m) in areas with different land uses in the alluvial aquifer of Rio Cuarto during 2010 (wet and dry seasons). Groundwater chemical and bacteriological analyzes were carried out. For invertebrate assessment, three samples of 50 L each one were collected and sieved with a 63 μm mesh. Highest invertebrate abundances, with dominance of crustaceans and mites, occurred in sites where although groundwater was characterized by low ionic contents (fresh water)- some anomalies (e.g. nitrates) and high bacteriological values were detected. These wells are characterized by their proximity to pollution sources (cattle, on-site sanitation and compost) that generate nutrients and bacteria input to groundwater. We conclude that the nutrient input in these heterotrophic environments promotes the bacterial growth and therefore the increase of invertebrate abundance.

43. MICRONUCLEI AND NUCLEAR ANORMALITIES IN ANURAN LARVAE FROM AGROECOSYSTEMS
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The pampean region has presented an important agricultural and livestock expansion, reducing the habitat quality and negatively impacting in anuran amphibians, which by its characteristics are bio-indicators of environmental quality. Our aim was to determine the frequency of micronuclei (MN) and nuclear abnormalities (NA) in erythrocytes of anuran that inhabit in environments with different alteration degrees in suburban area of Río Cuarto, Córdoba. The sampling was conducted at three sites: two agroecosystems (C1 and C2) and a site with a lower anthropic intervention (SM). In each site, five larvae of Bufo arenarum (B.a) and Leptodactylus latrans (L.l) between stages 30-40 were collected. Blood was taken from each larvae by cardiac puncture and a smear was prepared, which was stained with May Grunwal-Giemsa and observed under a microscope (1000X). The frequency of MN and NA were calculated on 1000 erythrocytes. The results were B.a: C1: MN 1,5±1,2 and NA 2,8±3,72; C2: Mn 1,19±0,48 y AN 5,38±5,08; SM: MN 0,64±0,46 y NA 0,84±0,94; whereas for L.l: C1: MN 0,60±0,60 y AN 2,5±2,26; C2: MN 0,87±0,49 y NA 5,90±4,70; SM: MN 0,10±0,22 y NA 1,35±1,49. These results allow us to infer a relation between the alteration degrees of the environment with genetic abnormalities present in anurans, and presume the existence of genotoxic compounds in agricultural and livestock sites.

44. PARASITISM OF Hannemania sp (ACARI: LEEUWENHOEKIDAE) IN Pleurodema kriegi AND Pleurodema cordobae FROM SIERRA GRANDE, CORDOBA, ARGENTINA
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The mites of the genus Hannemania Oudemans are intradermal parasites in numerous species of amphibian around the world. In the present study we compare the prevalence, mean abundance and mean intensity of infestation on the endemic species Pleurodema kriegi and Pleurodema cordobae from Sierra Grande, Córdoba. Populations of Pleurodema were sampled in permanent and semi-permanent ponds and streams. A total of 188 adult individuals were examined under a stereoscopic microscope to quantify the number of capsules per specimen. Then, the subcutaneal parasites were excised with needles for its taxonomic determination. Snout-vent length (SVL) and sex was measured to each individual. The parasites were identified as larval stages of Hannemania pulchellus. The prevalence in P. kriegi (90.99%) was notably higher than in P. cordobae (41.56%). Similar results were found comparing mean intensity (40.71/14.38 per individual, respectively) and mean abundance (37.05/5.97 per infested host, respectively) between species. A relation between body length and mean parasite abundance was only found in P. kriegi (r=0.27; p=0.0004). The present study represents the first comparative analysis of the parasitic ecology of Hannemania sp. on cryptic and endemic anuran species from Sierra Grande, Córdoba.
45. GERMINATION WITH Justicia squarrosa GRISEB AT DIFFERENT LIGHT, TEMPERATURE AND WATER STRESS CONDITIONS

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Justicia squarrosa is a forage species which is present at natural communities of Argentinian Chaco Arido. It is part of an important component in the livestock’s diet during drought periods. The aim of this study was to characterize factors affecting germination and seeds bank with the objective of deducing the strategies to establish its domestication and crop. Germination was evaluated at different temperature patterns (15/5°C, 25/15°C, 30/15°C and 35/20°C), light quality (light-12/12 hs- and permanent dark) and hydrological potential (0.0; -0.75; -1.5; -1.0 y -1.2MPa). The seeds bank was determined. Germination was conditioned by both temperature and wa stress. The highest germination percentage was found at 25/15°C both in light and darkness. Seed germination decreased significantly below -0.2MPa. The seeds did not respond to light treatments. After 48 months a high percent of germination of the seeds of the species was observed. Despite this fact, soil seeds bank were not formed. The obtained results allowed establishing strategies to domesticate and propagate the species.

46. CHARACTERIZATION OF THE VEGETATIVE GROWTH OF TWO PEACH TREE CULTIVARS (Prunus persicae B.) AT DIFFERENT LOCATIONS OF THE TREE CROWN

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The different crown sections of the fruit trees in a plantation can be exposed to several environmental conditions. This causes a differential vegetative growth, which implies adapting the monitoring of soil to be done. The aim of this study was to analyse the vegetative growth of two peach tree cultivars - Elegant Lady (EL) and Summer Pearl (SP) - through a shoot growth monitoring. The evaluation was conducted in the UNRC, 2012/13 season in a seven years plantation. The latter was arranged in a rectangle of 5x4m, N-S orientation and vase-shape pruning. Three randomly chosen plants from each vegetative cultivar (VC) were used and marks were drawn over the shoots at two different heights: above (A) the intermediate position of the crown and below (B) it, two orientations: North (N) and South (S) and two exposures: East (E) and West (W). From 09/04/2012 to 01/22/2012 the length of the shoots was weekly recorded in centimetres and compared with ANAYA (p<0.05). The orientations and exposures did not show significant variations. Major differences were found in both length and height of the shoots of the two cultivars. The final shoot length of the vegetative cultivars SP and EL was of 45.9 and 37cm respectively. Shoots located at the top of the crown showed a growth 35% superior to the ones located at the lowest part of the crown (A 47,7 cm y B 35,1 cm). This difference in growth could be due to a better dominance of the buds of superior brands, favoured by a better lighting.

47. MONITORING OF PRIMARY PLAGUES AND DAMAGE TO FRUITS IN A PEACH TREE IN RIO CUARTO, CORDOBA

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The aim of this study was to analyse the population dynamics of the Mediterranean fruit fly (Ceratitis capitata) (MFF) and Oriental fruit moth (Cydia molest a) (OFM) in two peach tree cultivars in Rio Cuarto - 2012/13 season – and the effect on the damage to fruits. The monitoring was conducted with two yeast pellets traps for MFF and two sex pheromone traps of OFM, being the captures registered weekly. The first MFF capture was conducted on 12/18/12 and it lasted until 3/12/13, having its highest peak on January 22nd with 40 adults. OFM captures were performed from early September 2012 to late March 2013. Population peaks (and number of individuals) were: 9/29 (1,5), 11/21 (5,5), 12/11 (10), 01/09 (11,5) and 02/07 (15). On 01/02/13 1736 Elegant Lady cultivar fruits were harvested, weighting approximately 81 grams, 8,8 °Brix and 23 lb under pressure. The damage registered was of 2,94% per MFF and 0,11% per OFM. This harvest was conducted after the third OFM peak in which the plague remains in shoots, it is the onset of MFF capture and the fruits remain with better strength. On 01/15/13 498 Summer Pearl cultivar fruits were harvested, weighting approximately 120 grams, 10,1°Brix and 3,9 lb, the damage recorded was of 32,93% per MFF and 1,4% per OFM. This type of harvest occurred only after the fourth OFM peak and almost at the highest peak of MFF capture. This cultivar harvested at advanced maturity and withstood the highest pressure in the plagues, inflicting substantial levels of damage.

48. EFFECT OF COPPER AND SULPHUR BASED FUNGICIDES ON SOIL ORGANISMS IN THE PEACH TREE

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The presence of disease affects fruit production, for this reason, fungicides with strong effect are used on soil organisms. Studies conducted on the impact of agrochemical on the environment greatly contribute to a sustainable agriculture. The objective of this research was to evaluate the impact in the peach tree of bordeles breeding ground (BBG) and copper oxychloride (CO) on soil organisms. This study was conducted in UNRC, 2012/13 season, in two seven year old peach cultivars - Elegant Lady and Summer Pearl. Fungicide-treated plots were compared to control plots: CO (400 g/hl) and BBG (1%) applied in autumn (leaves fall) and late winter (swollen bud) soaking the whole plant. The impact of fungicides on the floor was evaluated through the vegetable material deterioration, using two mesh bags sizes: 0.2 and 3 mm, filled with 50g of alfalfa hay. The bags, buried at 10cm, were placed on 05/09/2012. On bag from each mesh was located in surrounding soil of each plant. BCA was the design used, with 12 treatments and three repetitions. The dry weight (DW) of the undergraded material was obtained in order to measure the edaphic biological activity by weight difference. It was also analysed using ANAYA (p<0.05). The breaking down of the dry material was major in the big mesh bags (1.83 g DW) than in the small mesh bags (3.50 g DW). There were no significant differences between, the cultivars, the BBG treatments (2.75 g DW), CO (2.25 g DW) and the control (3 g DW). This finding indicates that the fungicides used did not present a negative impact on the soil organisms.
Forestation with native species demands the necessity of knowing the requirements for germination and preservation of their seeds. The aim of this study was to evaluate the germination of “Molle de beber” Lithraea molleoides (Vell.) Engl. (sp1), “Manzano del campo” Ruprechtia apetala Wedd. (sp2) y “Orco quebracho” Schinopsis marginata Engl. (sp3). The seeds were collected from Valle de Punilla (30°50’3.18"S 64°30’4.56"O), the date varied with the specie, sp1: 02/11 and 02/12; sp2: 06/10 y 06/11; sp3: 06/11 y 0/12. Both the purity of the plot and the humidity in the seeds were determined, weight of 1000 and number per kilo. The germination was evaluated on paper at 20 and 25ºC (50 seeds x 5 repetitions). Previously, in sp1 and sp3 a mechanical scarification (ME) and soaking in warm water (SW) were conducted. In sp1 the SW improved the germination and the increase in temperature both reduced the hard seeds and increased the number of dead seeds. Abnormal seedlings were also observed in different year. In sp2 the germination was affected due to the environmental conditions during the growth of the seed, causing dormancy (fresh seeds) or deterioration. In sp3, neither ME nor SW improved the germination and the seeds stayed hard – not soaking- until the end of the experience (1 month).

Cryptosporidiosis is a common infection in cattle worldwide, economic losses are related to diarrhea and the extra costs that diarrheic calves demand. C. parvum is known to infect humans and is recognized as the major zoonotic species. The objective of this study was the molecular identification of C. parvum in positive calves. A cross sectional study was undertaken between March 2011 and June 2012 in dairies located in San Martin department, Cordoba. Calf rearing units that were positive in a previous study were resampled. Feces from Holstein calves less than 15 days of age were recollected from the rectum in plastic bags and refrigerated. Samples were processed with formol-ether technique, and Cryptosporidium oocysts were demonstrated by microscopic examination of faecal smears with the modified Ziehl-Neelsen technique. Oocysts were purified, DNA was extracted and PCR was performed to detect the gene encoding 18S rRNA. The study population comprised a total of 225 calves from 27 dairies. Overall prevalence for Cryptosporidium spp oocysts was 27.11% (95% C.I.: 21.30; 32.92). Amplification of a 844 bp fragment corresponding to C. parvum was detected in 23 of 52 samples analyzed and confirmed via a second PCR amplifying a fragment of the coW gene. The identification of C. parvum in calves indicates that neonatal calves are an important source of zoonotic transmission. Calves may, therefore, represent a risk to farmers and veterinarians by means of direct contact, and to the general human population in the region through the contamination of food and water with oocysts.
53. LAND USE DETERMINATION OF RÍO TERCERO RESERVOIR WATERSHED (CÓRDOBA, ARGENTINA) BY REMOTE SENSING
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Lakes and reservoir are exposed to eutrophication as a result of anthropogenic impacts. As each reservoir is part of its watershed, activities perform in the basin will influence on it. Therefore it is difficult to manage a reservoir as an independent system of its watershed and environment. The objective was to generate a land use map of the watershed of Río Tercero reservoir, which is used for multiple purposes. Samples in the basin were taken to determined watersheds and environment. The objective was to generate a land use map of the watershed of Río Tercero reservoir, which is used for multiple purposes. A Landsat 5 TM image of the study area (Path: 229, Row: 82) was used as satellite information. Watershed and sub-watershed were delimited by remote sensing techniques. A supervised classification was done. As final product we obtained a land use map of the watershed from which we determined the absolute and relative surfaces of each category. In relation to the antecedents, we observed a reduction of forest, which were replaced by the advance of the agricultural frontier. Santa Rosa and La Cruz sub-basin presented high anthropic activities, dominated by larger urban settlements and the largest agriculture and animal husbandry areas. These results demonstrate the potential use of remote sensing in the integrated management of watersheds and reservoirs.

54. DORMANCY IN SUNFLOWER (Helianthus annuus L.) ACHENES
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The pericarp regulates seed dormancy due to physical and/or chemical factors. Our aim was to examine the pericarp contribution on achenes germination of two sunflower inbred lines (B123: with dormancy; B91: without dormancy) at harvest (day 0) and after storage at -20°C±1 during 33 days. Hormonal quantification was performed by LC-ESI/MS-MS. At day 0, the germination percentage in achenes of both lines was similar with and without pericarp. Storage at low temperature maintained B123 achenes dormant. At day 0, 12-oxo-phytadienonic acid (OPDA) and salicylic acid (SA) were the major compounds in pericarps of B123 achenes; imbibition process caused a SA, OPDA and jasmonic acid (JA) decrease. In B91 line, SA and JA were stable during the time-course of imbibition. At 12 h, abscisic acid (ABA) peaked in both lines. At 33 days after harvest, SA was the most abundant compound in B123. At low temperature, OPDA and JA decreased; ABA increased in B91 and SA in B123. Upon imbibition, SA decreased in both lines; on the contrary, ABA and OPDA increased. In B123, the similar germination percentage between achenes with and without pericarp suggests that dormancy wouldn’t be regulated by the pericarp. In our conditions, the storage at low temperature is a major factor to maintain the B123 achenes dormant. The similar kinetics of pericarp SA accumulation between 0 and 33 days after harvest suggest that this hormone may not act as mediator in the dormancy maintenance of B123.

55. PREVALENCE OF Listeria spp IN NON-PASTEURISED WHOLE COW MILK
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Listeria spp. strains have been isolated from a variety of living organisms and complex ecological niches such as crops, vegetation, forages, foods and soil, among others. Non-pasteurised dairy products have been identified as one of the main vehicles for listeriosis. The aim of this study was to evaluate the prevalence of Listeria spp. in non-pasteurised whole milk. A total of 362 milk samples from 128 different dairy cows were analyzed. A selective enrichment of Listeria spp. was done in triptic soy broth added with ceftazidime and tryptaflavine incubating cultures for 48 h at 37°C. A second enrichment procedure was done keeping the enrichment broth at 4°C for 48 h. Finally, each culture broth was streaked on Oxford agar and incubated for 24-48 h at 37°C. Colonies showing typical morphology of Listeria spp. were picked and tested for biochemical characteristics. Listeria species were isolated from two milk samples from two different cows (1.56%) and they were confirmed as L. welshimeri and L. innocua according to biochemical characterization. These results partially agree with Jamali et al. (2013). This study showed a low prevalence of Listeria spp. in milk. However the presence of these species indicates a low hygienic level in food, since L. welshimeri is currently considered potentially pathogen for humans.

56. COMPARISON OF Listeria monocytogenes GROWTH IN WHOLE AND SKIM MILK
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Listeria monocytogenes is a foodborne pathogenic microorganism able to growth at diverse environmental conditions. Milk constitutes a rich culture media for listerial growth because of its water content, near neutral pH and the presence of several nutrients. The aim of this study was to compare L. monocytogenes growth in whole and skim milk. A L. monocytogenes inoculum from a 18 h culture was added into 200 ml of whole milk and 200 ml of skim milk (final concentration 3x10^4 CFU/ml) and incubated for 24 h at 37°C. Then, listerial counts were determined in Palcam agar supplemented with ceftazidime and tryptaflavine. Results were expressed in CFU/ml. After 24 h of incubation, listerial counts in whole milk and skim milk were 1.5x10^6 CFU/ml and 4.7x10^5 CFU/ml, respectively. The difference was found to be statistically significant (P<0.05). While skim milk is a culture media that allows the microorganism growth, L. monocytogenes recovery was higher in whole milk. These results may be related to the protective effect exerted by fat globules on bacterial cells. These results agree with Rodriguez Gonzalez et al. (2010).
57. **HISTOMORPHOMETRIC CHANGES IN GUT ASSOCIATED LYMPHATIC TISSUE (GALT) IN Escherichia coli K88 IMMUNIZED HEN**

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The gut associated lymphatic tissue (GALT) is well developed in hens, immunized with *Escherichia coli* K88. Twenty two Lohmann hens were immunized with bacterins from the most prevalent strain which produces diarrhea in piglets farms in south of the province of Córdoba (N=11, K88 group) or with the adjuvant (aluminium hidroxide) (n=11, Control group). At 44 weeks old, the avian were sacrificed and GALT samples were removed and processed for conventional technique and stained with hematoxin-eosin. Into the villus, height, area and perimeter were measured by Axio Vission Release program. We registered hight height in villus gut (p<0.05), anastomosed villus in apical border and decreased number of goblet cells and epithelial cells increased (p<0.05) in hens of K88 group. Also, we noticed a mucosa well developed, with hight Lieberkn cript number (p<0.05). Into cecal tonsilsae of K88 hen’s group, we register follicles more developed. (p<0.05) These changes, in conclusion, being presupposing a Galt activated, specially into cecal tonsilsae.

58. **HEMOLYTIC ACTIVITY OF Listeria monocytogenes ISOLATED FROM BREWER’S GRAINS**

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*Listeria monocytogenes* is a pathogenic bacteria of human and animal species. The most important virulence factor of these microorganisms is listeriolysin O (LLO). This toxin is responsible for the hemolytic activity of the bacteria. The aim of this study was to detect and quantify hemolytic activity of *L. monocytogenes* LM1, a strain isolated from brewer’s grains an alternative feedstuff used in swine production. Well diffusion assay on horse blood agar plate was used to detect LLO and microplate method with human erythrocytes was used to quantify LLO. *L. monocytogenes* LM1 showed a hemolytic activity of 1.32 (hemolytic diameter/growth diameter) in horse blood agar. The hemolysin quantification showed 2 complete hemolysis units (the reciprocal of the highest dilution at which 100% hemolysis was observed) and 8 minimum hemolysis units (the reciprocal of the highest dilution at which hemolysis was detected). These results differ from those found by Gallego et al. (2007), who found *Listeria* strains with a higher hemolytic activity. In conclusion, the methods used showed the active virulence of *L. monocytogenes* LM1 isolated from brewer’s grains, representing a potential risk of infection for pigs that consume these feeds.

59. **BIOCONTROL OF Listeria monocytogenes BY LACTIC ACID BACTERIA**

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*Listeria monocytogenes* is a foodborne pathogen and is the causative agent of listeriosis in humans and in several animal species. Lactic acid bacteria (LAB) are safe microorganisms that produce antimicrobial metabolites. The aim of this study was to study the antilisterial activity of LAB isolated from brewer’s grains, an alternative swine feed. The antimicrobial activity of LAB was assayed by well diffusion test. Cell free supernatant (CFS), containing antimicrobial metabolites, was obtained by centrifugation at 8000 rpm for 20 min at 4ºC. The CFS of all strains assayed (n=5) (L. brevis B20, L. plantarum B29, L. plantarum B54, L. plantarum B57, L. brevis B131) inhibited *L. monocytogenes* LM1, isolated from brewer’s grains. The mean of inhibition halos ranged between 12.5 y 22.5 mm. The neutralized CFS of B20, B54 and B57 retained their inhibitory effect; therefore these strains produce acids and other metabolites. These results differ from those found by Botina et al. (2008) and Mazaini et al. (2009), who found that CFS of LAB did not show antimicrobial activity on *L. monocytogenes*. It is remarkable the isolation of LAB in brewer’s grains with antilisterial activity. Further studies with larger number of listeria strains could support the possible use of these LAB as biocontrol agents.

60. **ENVIRONMENTAL CONDITIONS OF THE MOTHER PLANT AND THE PEANUT SEEDS QUALITY**

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The crop establishment may be affected by different factors such as the genotype characteristics and the seeds physiological quality determined by environmental conditions during the mother plant growth-development. The aim of this study was to evaluate the physiological quality of peanut genotypes grown in different environments. Cultivars were Utre-UNRC and Granoleico and the environments generated by three sowing dates: 08/10/10, 10/11/10 and 12/12/10 in Rio Cuarto (Córdoba, Argentina). The physiological quality of seed was evaluated in different seed sizes. In the laboratory, we quantified the germination and vigor using cold test, accelerated aging, conductivity test, seedling evaluation, and at field the seedling emergence. The cycle duration and growth habit of the cultivar used as mother plant and the environmental conditions during seed development, affected the seed physiological quality. Thus, the cultivar with the longest cycle and more indeterminate growth habit (Granoleico) required the whole growing season (early sowing date) to produce seed with good physiological quality, while the less indeterminate and shorter cycle cultivar (Utre-UNRC) produced a similar result at different times (sowing dates) of the crop season. The physiological quality of seeds was also affected by seed size.
61. USE OF BIOSTIMULANTS IN CROPS. I SOYBEAN

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The biostimulants are natural or synthetic compounds that can be applied to plants (leaves, fruits, seeds) causing changes in physiological and structural processes in order to improve the physiological quality and the crop establishment and grain yield. The aim of this study was evaluate the effect of biostimulant Stimulate®, which formulation includes 0.005% indol butyric acid (auxin), 0.005% gibberellic acid and 0.009% kinetin (cytokinin), applied to the seed and leaf, on the soybean crop establishment and yield (Maturity Group MG V) in Rio Cuarto. Treatments were 5: Stimulate® applications on seeds (300 ml/100 kg) and foliage (250 ml/ha) in R1 and R3 stages, their combinations, and a control during the 2012/13 growing season. The seed coating significantly increased main root length, secondary roots and leaves unfolded number at 15 and 32 days after sowing. At harvest the crop showed higher biomass per plant and increase the fruits and seeds number and weight (per plant and area), and grain yield when biostimulant was applied on seeds, without effect of foliage application in reproductive stages or interaction between the types of applications. The changes found in grain yield are mainly due to the number of seeds per area, without significant effects on the individual seed weight and harvest index.

62. BROMEGRASS POTENTIAL PRODUCTION IN THE RIO CUARTO REGION

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In order to choose a forage species it is important to know its growth dynamics and production levels. Due to the complexity of the interactions between crops and environmental factors, documented information on the behavior of certain species is not always available. The aim of this study was to characterize the growth and production of bromegrass (Bromus catharticus) in the region of Rio Cuarto under potential conditions. The study was carried out in the experimental field of the UNRC during 2011 under conditions of irrigation and fertilization. In order to achieve physiological maturity, 233ºCd (Tb = 0ºC) were necessary. Production was 10121 kg ha⁻¹ of total dry matter during the grain filling and 9573 kg ha⁻¹ at physiological maturity. To achieve this, in the 2012/13 growing season the region.

63. PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-TETRAKIS[4-(N METHYLPYRIDYLOXY)] PHOTODYNAMIC ACTIVITY OF ZINC (II) 2,9,16,23-

Di Palma MA, Álvarez MG, Ochoa AL, Milanesio ME, Durantini EN.

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The basic principle of PDT is the administration of a photosensitizer, which accumulated in the microbes. Subsequent irradiation with visible light results in the formation of reactive oxygen species (ROS) that lead to cell death. In this study we evaluated the photodynamic properties of the cellular uptake and the photodynamic action of Zn(II)2,9,16,23-tetrakis[4-(N-methylpyridyloxy)]phthalocyanine (ZnPPc°) in Candida albicans. ZnPPc° intensely absorbs at 678 nm and emits fluorescence at 687 nm. Also, it produces singlet oxygen with a quantum yield of 0.59. The amount of cell bound phthalocyanine depends on the concentration (1-10 μM) and cell density (10⁶-10⁸ cell/ml), decreasing with the washing steps and under pretreatment with azide and 2,4-dinitrophenol. The bound phthalocyanine at 37°C and 4°C was similar to short incubation times (<5 min), however at long times, the binding agent was greater at 37°C. Cell survival after irradiation was dependent on the concentration of ZnPPc° (1-10 μM) and the irradiation time (15 and 30 min), resulting in a decrease of 5 log (> 99.999%) with 10 μM and 30 min irradiation. Therefore, the results indicate that ZnPPc° presents potential applications as a phototherapeutic agent for fungal inactivation.
65. USE OF BIOSTIMULANTS IN CROPS. II PEANUT

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Numerous factors affect the seed physiological quality and peanut crop establishment. The biostimulants can be used to intervene in physiological and morphological crop processes as the seed germination and initial vegetative growth with potential effect on the grain yield. These products favor hormone balance in the plant and produce a suitable ratio of the root system. The aim was to evaluate the effect of biostimulant Stimulate®, which formulation includes indol butyric acid (auxin) gibberellin acid and kinetin (cytokinin), applied to peanut seed, on crop establishment and pod yield. Treatments were Stimulate® application at 300 cc/100 kg seed and control. Assessments were carried out at laboratory and field -including different sites (11) in Cordoba province, and years (5), between 2007/2012. In laboratory, the biostimulant increased seed germination and vigor; while at the field significantly increased the final number of plants established, the main root length, and secondary roots and leaves unfolded number per plant. This improved crop establishment had a positive impact on the pod and grain yield. The application of biostimulant in the seed significantly increased pod yield regardless of site and year, 402 kg/ha on average (p <0.0001). These results validate the technique use in peanut crop region of Cordoba, Argentina.

66. PRENATAL STRESS EFFECTS ON LIPID AND GLUCOSE METABOLISM IN MALE RATS

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There is evidence that prenatal stress (PS) generates low birth weight, which is a risk factor for developing diseases encompassed within the Metabolic Syndrome in adulthood. The aim of this study was to determine the effect of prenatal stress on lipid metabolism parameters and their relation with the activity of the Hypothalamic-Pituitary-Adrenal axis in adult male rats. 90 days old Wistar rats were used, divided into 2 groups: prenatal stressed (PS) by chronic immobilization in wooden boards during the last two weeks of pregnancy and controls (CP) from unstressed mothers. Blood plasma was collected to determine: corticosterone (COR), total cholesterol, HDL cholesterol and LDL cholesterol and triglycerides. Prenatal stress levels increased COR and also increased plasma levels of total cholesterol, HDL-col, LDL-col and triglycerides, compared with their controls. In conclusion, the PS alters the studied parameters of the metabolic syndrome, indicating that prenatally stressed animals are more prone to suffer diseases within the Metabolic Syndrome, in adulthood.

67. EFFECT OF POSTNATAL ACUTE STRESS BY FORCED SWIM IN RATS PRENATALLY STRESSED ON THE LYMPHOCYTE FUNCTIONALITY

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Prenatal stress (PS) produces in young adults, altered distribution of leukocytes and decreased functional response of T lymphocytes at baseline and versus postnatal stress. There are precedents that during exercise changes occur in the immune response in adults. The objective was to investigate the effect of acute physical stress, by forced swimming (FS) in adult male rats with PS, on the immune response and its relation to the activity of the Hypothalamic-Pituitary-Adrenal axis. 90 days old Wistar rats were used, stressed in uterus by chronic immobilization (IMO) and unstressed controls (CP). The PS postnatal acute stress was performed in water at 35 ± 2°C. Corticosterone (COR), neutrophils (N), lymphocytes (L) and lymphocytes T proliferation were determined. The FS on adult male PS rats produces: increased levels of COR, % of N and N / L ratio; decrease in % of L and lymphocytes T proliferation. The results indicate that FS stress alters the number and redistribution of leukocytes, as well as the functionality of the lymphocytes Tin the PS animals.

68. ANTIOXIDANT SYSTEM INDUCTION IN RESPONSE TO DROUGHT STRESS IN PEANUT

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Drought stress is an abiotic factor responsible for growth limitation. Under this condition, peanut plants accumulated reactive oxygen species (superoxide anion (O2-) and hydrogen peroxide (H2O2)), abscisic acid and revealed oxidative damage in macromolecules. The aims of this work were to evaluate the electrophoretic protein profile and antioxidant system responses in peanut leaves exposed to drought stress and rehydration. Assays were conducted with peanut seeds (cv Granoleico) inoculated with Bradyrhizobium sp. SEMIA6144 growing in volcanic sand during 30 days. Plants were divided into three groups: control: normal watering; drought stress: withhold irrigation; and rehydration: re-watering of stressed plants. Results revealed that electrophoretic profile changed, evidenced by two stains with different mobility in drought stressed and rehydrated leaves. Regarding antioxidant enzyme activities, superoxide dismutase (SOD) increased, but catalase (CAT) and glutathione peroxidase (GPX) involved in H2O2 removal remained unaltered. Besides, ascorbate-glutathione cycle enzymes, ascorbate peroxidase (APX) and glutathione reductase (GR) were induced and those responses were reversed upon rehydration. Thus, antioxidant system induction in response to drought stress condition was not sufficient to prevent oxidative damage but contributed to metabolism restoration upon a short period of rehydration.
VIABILITY OF SUNFLOWER NATIVE BACTERIA

To encourage the development of plants can be used pre-selected beneficial bacteria cultures (“native strains”). In sunflower, identify bacterial strains *Achromobacter xylosoxidans* (strain SF2) and *Bacillus pumilus* (strain SF3 and SF4). With the purpose of use as sunflower seed inoculant we evaluate the viability of the strains in culture media Luria Bertani (LB), Glucose Yeast (GY) and Ommafuvbe (OM), and counts performed to different storage times. The viability of the strain SF2 was similar in all three media, reaching 8.10^6 ufc.ml⁻¹ at 365 days (colony forming units). SF3 strain showed viability of the strain SF2 exposed 15 min to TTAB, the levels the FA 18:0 and the FA 17:0 increased about 10% and 70%, respectively, while the amount of cis-18:1Δ9 and 16:1Δ9 decreased significantly (95%). Consequently, the SFA/FA relationship increased 7 fold (reached value 44.32), indicating decreased the degree of fluidity of the cell membrane. Based in the AGS/AOI ratio, we conclude that the modifications of FA contents could bepart of the rapid response to TTAB, contributing significantly to increase of the rigidity membrane necessary to counteract the effect and to maintain the integrity of the cell envelope.

SEMN QUALITY IN PATIENTS WITH FERTILITY PROBLEMS IN THE CITY OF SAN LUIS
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According to the new Manual for the examination and processing of human semen (WHO 2010), is really important unify globally the reference values (RV) for all the laboratories and reproductive research institutions. The aim of this study was to evaluate semen quality in patients with fertility problems that attending to a laboratory in the city of San Luis. During the years 2010-2011-2012 semen samples from 80 patients (aged 20-40 years) were analyzed. The spermograms were classified in two categories: normozoospermic (n = 44) and altered (n = 36). The parameters evaluated were: volume, motility, concentration and morphology (according to Kruger criteria). Statistical analysis was performed using Kruskal-Wallis test (InfoStat). Differences were statistically significant at p < 0.05. The 55% of the samples analyzed were normozoospermics, their average values were: volume (4.13 ml), concentration (107.3 million / ml); progressive motility (51.4%) normal morphology (19.6%). The 94% of the abnormal samples showed teratozoospermia (RV < 14%, average value 7.6%). The 22.2% had astenozoospermia (progressive motility RV < 32%, average value 4.6%), the 25% showed oligozoospermia (RV <15 esperm million / ml, average value 4.2 million / ml) and the 19.4% had hypospermia (RV <1.5 ml, average value 1.2 ml) and the 11.1% were azoospermics. Considering the evaluated parameters decreased semen quality observed in 45% of the patients analyzed.
73. ANDROGEN RECEPTOR IN PITUITARY PARS DISTALIS OF VIZCACHA: QUANTITATIVE ANALYSIS DURING LONG AND SHORT PHOTOPERIODS

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The viscacha is a seasonal reproduction rodent. The environmental photoperiod synchronizes the annual reproductive cycle of male adults. They have variable androgen levels during the annual reproductive cycle. The androgen receptor (AR) is activated by high affinity binding of testosterone. The aim of this work was to study the expression of AR in different areas of pituitary pars distalis (PD) of adult male viscacha during long (summer, n = 4) and short (winter, n = 4) photoperiods. AR were immunostained with anti-AR (N-20) and the biotin-streptavidin system. Labeled nuclei were counted and expressed as percentage of the total number of cells/microscopic field. It was shown that AR localization in pituitary PD was most abundant at the caudal end during the reproductive period. There were seasonal variations between LP (reproductive period) and SP (gonadal regression period) in some PD zones. These results suggest that the pituitary expression of AR varies with testosterone levels, probably by regulating the activity of pituitary cells involved in the reproductive axis.

74. GFAP EXPRESSION IN PINEAL GLAND OF VIZCACHA DURING LONG AND SHORT PHOTOPERIODS

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The viscacha is a seasonal breeding rodent photoperiod dependent. The pineal gland of this rodent shows marked changes in the ultrastructural morphology of pinealocytes according to the length of the days. The aim of this work was to study the expression of glial fibrillary acidic protein (GFAP) in pineal gland of adult male viscacha during long (LP, summer, n = 4) and short (SP, winter, n = 4) photoperiods. This protein is part of intermediate filaments and is used as a marker of astrocytic and glial cells. Anti-GFAP and the biotin-streptavidin system (DAB chromogen) were used. The percentage of immunopositive area (%AI) was measured by image analysis. GFAP localization was only observed in the pineal interstitial cells mainly in cytoplasmic projections. The morphometric analysis revealed significant differences between LP (% AI = 5.21 ± 0.99) and SP (% AI = 20.33 ± 4.53), p < 0.001. These results demonstrate variations in the expression of GFAP in interstitial cells, with maximum values in winter (LP), according to changes previously reported in pinealocytes and in the melatonin synthesis. Therefore we suggest that the interstitial cells of the pineal gland of viscacha, in addition to being supporting and nutritional elements as was described in other species, these cells are actively involved in glandular function.

75. INVOLVEMENT OF TWO ACID HIDROLASES IN THE FOLLICULAR ATRESIA IN Dipetalogaster maxima (HEMIPTERA: REDUVIIDAE)

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In insects, unfavorable nutritional conditions induce changes in the ovarian tissue that in turn, promote follicular atresia. In this process, early degradation of vitellin (Vt), the main oocyte protein, and oocyte resorption take place. In the vectors of Chagas’ disease, follicular atresia is poorly understood. The aim of this work was to study the biochemical and molecular events that take place during follicular atresia induced by nutritional deprivation in Dipetalogaster maxima, with special focus on two acid hydrolases, cathepsin D (CD) and acid phosphatase (AP). The study included enzymatic and western blot assays, RT-qPCR and in vitro assays of Vt proteolysis. The results showed that in the ovary, CD is expressed in all reproductive stages, being the active form more expressed during atresia, in correlation with its activity profile. AP was differentially activated throughout the reproductive cycle and most of such activity corresponded to a tyrosine phosphatase. In vitro assays demonstrated that AP was important in promoting Vt degradation, which in turn was mediated by CD. Our findings suggest that early activation of CD and AP during follicular atresia may be important in the homeostasis of ovarian tissue to either, increase female lifespan or maintain younger oocytes until improvement of nutritional conditions.

76. BIOCHEMICAL AND MOLECULAR ASPECTS OF VITELLOGENIN AND ITS RECEPTOR DURING THE REPRODUCTIVE CYCLE OF Dipetalogaster maxima

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In insect females, vitellogenesis is a central event of reproduction that elicits a massive synthesis of yolk protein precursors in the fat body, mainly vitellogenin (Vg). Vg is taken up by developing oocytes by receptor mediated endocytosis and stored as vitellin (Vt) in yolk bodies. Unfavorable nutritional conditions may impair Vg uptake by oocytes to favor follicle degeneration to an atretic stage. The aim of this work was to better understand the roles of Vg and its receptor, RVg, through the reproductive cycle of Dipetalogaster maxima, a vector of Chagas’ disease. The experimental approaches included western blot, ELISA, RT-qPCR and in vivo Vg-FITC uptake assays. The expression of Vg in the fat body and the stores of Vt in the ovaries increased during vitellogenesis, in correlation with an active process of Vg uptake by developing oocytes. By contrast, Vg synthesis and uptake diminished at early follicular atresia until it was undetectable in late atretic stages. It was shown that the levels of RVg transcript were significantly high during vitellogenesis, although RVg was also expressed during follicular atresia. At present, our results strongly suggested that RVg may play an important regulatory role in the initiation and progression of follicular atresia.
77. CHANGES OF NUTRITIONAL RESOURCES IN OVARIAN TISSUE OF Dipetalogaster maxima DURING THE REPRODUCTIVE CYCLE

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In hematophagous insects, each gonadotrophic cycle is associated with the intake of a blood meal, which must be appropriated in quantity and quality of nutrients to promote vitellogenesis. Under unfavorable nutritional conditions, changes in ovarian tissue promote follicular atresia and the redistribution of stored nutrients. In this study, we have analyzed the changes of ovarian resources in Dipetalogaster maxima at pre-vitellogenesis, vitellogenesis and fasting-induced early and late atresia (post-vitellogenesis). The amounts of ovarian lipids, proteins and glycogen increased significantly from pre-vitellogenesis to vitellogenesis and then, diminished during atresia. Specific lipid staining of ovarian tissue sections evidenced remarkable changes in the shape, size and distribution of lipid droplets throughout the reproductive cycle. Cellular approaches demonstrated that lipid delivery to oocytes occurred at all reproductive stages, privileging the non-endocytic pathway of lipophorin, the main insect lipoprotein, during the degenerative stage. The results indicated that in females, nutritional deprivation during post-vitellogenesis is relevant in the progression of follicular atresia to either, facilitate insect lifespan or sustain the energetic demand of another gonotrophic cycle.

78. MORPHOLOGICAL DESCRIPTION OF EPIDIDYMAL CORPUS OF VISCACHA (Lagostomus maximus maximus) IN RELATION TO AGE

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The main epidydimal function is to provide an microenvironment suitable for sperm maturation, transport, and storage. The objective of this study was to evaluate the possible morphological changes of corpus in animals at different ages and observed the reached sexual maturity. Epididymal tissue samples from viscachas at different ages (n = 10) captured in summer, were removed and processed by conventional optical microscopy. The age of the animals (immature, prepubertal, adult) was determined by the weight of them, the serum testosterone levels and testicular histology. Epididymal parameters were quantified: luminal diameter and epithelial height showed an increase in more mature animals, while the thickness of the lamina propria decreased. The number of principal, basal and clear cells varied with age of the animal, while halo cells remained constant. Only in prepubertal animals were observed apical cells. These results suggest that the epididymis expresses structural changes and variations in the distribution of the different cell populations, to facilitate a suitable microenvironment for the capacitation and sperm maturation.

79. OVARIAN DEVELOPMENT IN FEMALES OF Triatoma sordida UNDER FASTING CONDITIONS

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Triatoma sordida is a secondary vector of Trypanosoma cruzi, epidemiologically important to be present in intra and peridomicile environments. Evaluate aspects of the reproductive capacity of this species is relevance because they have with the colonization of a new habitat. In order to characterize through morphometric and histological studies different stages of ovarian development of T. sordida females in the absence of food and mating, the insects were killed between 2 and 10 days post-ecdysis. Morphological changes of ovarian tissue were estimated by morphometric analysis of basal follicle (FB) of each ovariode and oocytes number in pre-vitellogenesis (PV), vitellogenesis (V) and coriogenesis (C). T. sordida presents a quantitative pattern appropriate to identify the 3 phases of oogenesis. FB size increased from PV to C. At the 2nd day post-ecdysis 100% of the females showed PV oocytes and 50% showed V oocytes at the 4th day. The coriogenesis and ovulation process began at 6th and 8th day post-ecdysis respectively, it is suggested the end of the first gonadotrophic cycle. Morphological changes of the FB were consistent with the histological analyses. These results indicate that at 6 days post-ecdysis females of T. sordida without feeding have eggs ready to be oviposited.

80. CHARACTERIZATION OF NITRIC OXIDE SYNTHASE IN SPECIALIST AND PARASITIC SOLITARY BEES

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Nitric oxide (NO) is recognized as a signaling molecule in the insect nervous system. Several experiments in Apis mellifera suggest an important role of this molecule in the processing of olfactory information as well as in learning and memory formation. To localize the presence of NO synthase (NOS), we carried out immunocytochemistry, histochemistry and western blot (WB) experiments in pollen collecting (NP) and parasitic (P) bees. Using an antibody directed to the C-terminal sequence of the enzyme, WB experiments revealed a band at approximately 130 kDa in both NP and P species. NOS activity was evaluated in brain homogenates by following spectrophotometrically the oxidation of oxyhemoglobin to methemoglobin. This activity varies from 40,3 to 27,9 nmol/min/mg protein in NP bees whereas in P insects, it ranged from 7,8 to 16,9 nmol/min/mg protein. NADPH diaphorase histochemistry allowed detection of positive somata and fibers in the mushroom body calices and the antennal lobes. These results suggest that NO production is mainly present in olfactory brain areas, NP females showed higher levels of NOS activity than P females. In conclusion, NO might be related with the detection and processing of olfactory information during foraging.
81.
FUNCTIONAL ANALYSIS OF β-ATP SYNTHASE AS A LIPOPHORIN-BINDING PROTEIN IN THE MIDGUT OF Panstrongylus megistus (HEMIPTERA: REDUVIDAE)
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Lipophorin (Lp), the main insect lipoprotein, is a “reusable shuttle” that takes up or delivers lipids to tissues without being internalized and degraded. The process of lipid transfer involves the interaction of Lp with specific sites in the plasma membranes of the cells. Despite the relevance of this event in the physiology of the insects, the identification of non-endocytic Lp receptors is still lacking. The aim of this work was to characterize the role of the β subunit of the ATP synthase (β-ATPase) as an Lp-binding protein in the midgut as well as its involvement in the transfer of lipids. Fifth instar nymphs of Panstrongylus megistus, an important vector of Chagas’ disease, were used for the experiments. Ligand blotting followed by mass spectrometry allowed to identify the β-ATPase as an Lp-binding protein. After subcellular fractionation and western blot assays, β-ATPase was detected in cell membranes. The immunofluorescence analysis evidenced co-localization of β-ATPase and Lp in the membrane of midgut cells. Functional in vivo studies injecting anti-β-ATPase to block the Lp-β-ATPase interaction resulted in an important inhibition of the lipid transfer from Lp to the midgut. Taken together, these findings supported the role of β-ATPase as a non-endocytic Lp receptor in the midgut of P. megistus.

82.
CHANGES IN THE FATTY ACIDS OF Pseudomonas putida INDUCED BY ALUMINIUM
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P. putida A ATCC 12633 grown in presence of 0.1 mM of the toxic metal aluminum (Al). The metal is adsorbed in the membrane through the formation of Al-phosphatidylcholine (PC) complexes. The isogenic mutant, P. putida PB01, which is devoid of PC, adsorbs less Al and is sensitive to the metal. The aim of this work was to establish if the response to Al stress involves changes in the fatty acids (FA) composition of P. putida A ATCC 12633. In absence of Al, the membrane of P. putida wild-type shown high levels of the saturated FA (SFA: 86.68%) and low amounts of the unsaturated FA (UFA: 13.02%). In P. putida PB01, in concordance with the absence of PC and in order to maintain stable bilayers, the UFA decreased 90% (cis-vaccenic acid (18:1cis−Δ11) and palmitoleic acid) while the SFA increased 10% (pentadecanoic acid (15:0)). In relation to parental strain, the SFA/UFA ratio in the mutant strain increased 11 fold, indicating increment the rigidity of membrane. In presence of Al, in P. putida wild-type the FA 15:0 increased 7% and the 18:1cis−Δ11 decreased 75%, leading to 4 fold increase the SFA/UFA relationship, while, in the mutant strain, the SFA/UFA ratio was similar to detected in the absence of ion. Since the changes in the SFA/UFA relationship indicate modification in membrane fluidity, these results suggest that the modifications of FA contents could be part of a defense or/and repair mechanism aimed at reducing the damage caused by Al.

83.
DEGRADATION OF BENZALKONIUM BY CELLS OF Pseudomonas putida ATCC 12633 FREE AND IMMOBILIZED IN CALCIUM ALGINATE
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The Cl- benzalkonium is a cationic detergent widely used as industrial disinfectant and antistatic softening. In this study we evaluated the degradation of two of its components: Cl-benzyltetradecyl(dimethylammonium (BTDDMA) and Cl-benzylhexadecyl(dimethylammonium (BHDDMA)) by cells of P. putida A ATCC 12633 free and immobilized in calcium alginate. The degradation process was evaluated with free cells in M9 medium and, for immobilized cells, in 20 mM Tris-HCl pH 7.4, 44 mm and 85 mm KCl NaCl, supplemented with Cl-BHDDMA and Cl-BTDDMA as sole C and N sources. To an initial concentration of 35 mg/l, free cells degrade in 48 h, 18 to 24 mg/l of both compounds added individually. Mixing the two compounds leads to cell death. Immobilized cells (0.6 g of alginate beads containing 200 mg of cells (wet weight)) degraded, 90% of 315 mg/l Cl-BTDDMA and Cl-BTDDMA and 83% of the mixture of both compounds together. Also the immobilized cells are able to degrade 90% of 12 mg/l of detergent present in an industrial effluent. We conclude that the immobilization of P. putida in alginate beads provides protection to cells which allows for greater efficiency of degradation and its use for treatment of wastewater containing cationic detergents.

84.
IDENTIFICATION OF GENES FOR CARDIOLIPIN SYNTHASE IN Pseudomonas putida ATCC 12633
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Under stress conditions, bacteria respond modifying the content of cardiolipin (CL) of the membrane. The cardiolipin synthase (Cls) catalyzes the condensation of two phosphatidylglycerol molecules to form cardiolipin (CL) and glycerol. The aim of this work was to identify the genes of P. putida ATCC 12633 involved in the synthesis of CL. We have cloned and sequenced two orfs of P. putida ATCC 12633 that encodes a homologous to cardiolipin synthase genes (cls and cls2) from P. putida KT 2440. Singles and double mutants were obtained. The CL content in the wild type strain and in the single mutants P. putida GP01 (clsΔaacC1 GmR) and P. putida RH01 (cls2Δ::aph(3')-IIa, KmR) was similar. In the double mutant P. putida RH02 (clsΔaacC1, cls2Δ::aph(3')-IIa) the CL content represented only 2.9% of total phospholipids. The trace amounts of CL detected in the double mutant could be attributed to the action of phosphatidylserine synthase. The decrease in levels of CL of P. putida RH02 was compensated with a 120% increase in the relative amounts of phosphatidylglycerol, which is consistent with the CL synthesis pathway. Only the cell-free extracts of P. putida RH02 did not contain Cls activity, when it was determined using the fluorescent substrate NBD-PG. These results highlight that in P. putida A ATCC 12633, at least two genes are responsible for the synthesis of CL.
Trimethylamine chloride (TMA) degradation by immobilized *Pseudomonas putida* A ATCC (12633) and free cells suspension was studied under controlled conditions. For suspended cells culture, exponentially growing cells were added to Erlenmeyer flasks containing HPI-BSM medium. For immobilized cells, 20mM HCl-Tris pH 7.4 plus KCl 44mM, NaCl 85mM, was used. In both conditions, TMA 2.5-20 mM was added. The degradation process was carried out at 30°C on a rotary shaker at 100 rpm. Samples from the culture were withdrawn under sterile conditions at different incubation period for the analysis of residual TMA. The free cells degraded 90-100% of TMA after 24 h of incubation from an initial 2.5-5 mM TMA. The alginate-immobilized cells degraded 90-100% of TMA after 24 h of incubation from an initial 2.5-5 mM of TMA and 80-100% after 72 h from 10-15 mM TMA. An inhibitory effect of TMA from degradation was observed in free cells and immobilized cells when the initial concentration was increased to 80-100%. The free cells showed activity in the pH range between 7 and 8, while the immobilized cells showed activity between 25 and 30 ºC. The free cells outperformed activity between 25 and 30 ºC. The free cells showed activity in the pH range between 7 and 8, while the immobilized cells showed activity in the pH range between 7 and 8. Overall, these results revealed that the immobilized cell systems are more efficient than suspended cells for TMA degradation, indicating that alginate is a promising method of immobilization of *P. putida* for TMA degradation.

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**86. TRANSFECTION OF FETAL BOVINE FIBROBLAST WITH CATIONIC POLYMERS**

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The objective was to evaluate transfection efficiency and cytotoxicity of two cationic polymers: polyalilamine (PAA) and 25 KDa polyethylenimine (PEI) in bovine fetal fibroblasts (BFF). Cells were seeded on 24-well plates in DMEM/10% SFB. Different PAA and PEI/plasmidic DNA (encoding GFP) ratios were studied (2:1, 1:1 w/w). Percentage of green fluorescent cells was determined by flow cytometry 48 h after transfection. Cell viability was determined by MTT assay. A higher proportion of GFP-expressing cells was detected at PEI/DNA of 2:1 compared to 1:1 (1 µg of DNA; 38.4±1.9% vs 13.5±1.4%). Doubling the amount of DNA did not improve transfection efficiency (38.4±1.9% vs 32.4±1.9%). PEI at 2 and 4 µg/well caused significant cytotoxicity (54.7 ± 3.4% and 18.5 ± 5.7% of viable cell, respectively). Transfection efficiency of PAA at 0.5 and 1 µg/well was marginal (~3% of GFP-positive cells) and the cytotoxic effect was similar to that caused by PEI. Using 2 µg DNA/2ug polymer per well, the percentage of fluorescent cells was higher in PEI transfected cultures (32.4±1.9%) than those observed in PAA treated cells (12.7±1.3%). These results indicate that PEI 25KDa outperforms PAA’s ability to deliver plasmidic DNA into BFF.

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**87. QTL MAPPING FOR A MULTIDIMENSIONAL INDICATOR OF THE REACTION TO MAL DE RÍO CUARTEL VIRUS IN FAMILY F2:3 OF MAIZE**

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The Mal de Río Cuartito (MRC) is one of the most destructive diseases that reduce yield, quality and economic value of maize in Argentina. The disease severity index (DSI), as a multidimensional indicator of reaction to Mal de Río Cuarto Virus (MRCV), is a weighted average of the severity and incidence of this viral disease. The objective of this study was to map quantitative trait loci (QTL) for reaction to MRCV. A population of 208 families F2:3 derived from a cross between resistant line (LP116) and susceptible line (B73) was phenotyping for DSI in three environments where the disease is endemic. Simple and composite interval mapping were applied for QTL detection using a previously constructed linkage map with SSR markers. The investigation resulted in the identification of five QTL for DSI, which were detected on chromosomes 1, 8 and 10. These QTL explained 4% to 11% of the phenotypic variance total. Most of the QTL for reaction to MRCV detected in the present study were mapped to genome regions of the maize containing genes conferring resistance to various pathogens.

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**88. DIFFERENTIATION OF HYBRIDS CORN ACCORDING TO FORAGE POTENTIAL**

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The maize germplasm available commercially show variation in the ability for making up into fodder reserves. The aim of this study was to differentiate twenty eight corn hybrids according to their forage potential. The field trial was performed in the area of Rio Cuartito (64º20’W, 33°8’S, 334m asl) during growing season 2013. The experimental design was a randomized complete block design with two replications. The traits measured were days to flowering (DF), interval between male and female flowering (IMF), spike insertion height (SH), plant height (PH), number of leaves (NL), green stuff (GS), dry matter (DM), crude protein (CP), acid detergent fiber (ADF) and metabolic energy (ME). The multivariate methodologies applied for the data analysis were principal components analysis (PCA) and cluster analysis. The first two components of PCA explained 75% of the variation. The C1 allowed the differentiation of two hybrid groups according to the time of flowering, one with the medium maturity cycle and another with late maturity cycle respectively. Temperate genotypes formed three subgroups and were associated with greater values of IMF, DM and ME. Tropical hybrids were associated with higher values of DF, SH, PH, NL, GS, CP and ADF. Cluster analysis allowed us to establish three groups by four, five and seventeen hybrids, respectively. Two hybrids were none clustered. Techniques used were adequate to visualize relationships between the different corn hybrids evaluated for their potential forage.
89. **2,4-DB AND IMAZETHAPYR EFFECTS ON LEAF ANATOMY OF *Adesmia bicolor* (Poir.) DC.**

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*Adesmia bicolor* (Poir.) DC. is a native legume. This species has good potential for the introduction and domestication in production systems, with good forage attributes and nutritional for livestock feed. In Argentina, Uruguay, Chile and Brazil is being investigated to introduce in the agroecosystem. The aim of this work was to evaluate the effect on *Adesmia bicolor* leaves of different doses of the herbicides 2,4-DB and Imazethapyr. The study was conducted on a plot of the UNRC. The experimental design was a split-plot with 3 replications. Application rates were 0,25X, 0.5X, 1X, 2X, 4X, 8X, being X for 2,4-DB 250 g.i.a.ha⁻¹ and for Imazetapir 100 g.i.a.ha⁻¹. *Adesmia bicolor* showed irreversible damage at all doses used 2,4-DB. For imazethapyr doses 0,25X, 0.5X and 1X presented temporal chlorosis in leaf and with doses 2X, 4X and 8X presented persistent leaf chlorosis, necrotic areas and detachment of leaflets.

90. **ANNUAL CORTISOL LEVELS AND WEANING EARLY IN INTENSIVE SYSTEM BREEDING PORCINE**


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The extreme temperature seasonal would generate stress as an adaptive response, therefore, housing conditions are an important variable in porcine intensive breeding systems. In the shed 1 (birth to weaning) the temperature is lowered 1ºC every day from 24ºC to 20ºC at weaning. In the shed 2 (weaning and rearing) with temperature to 26ºC starting to enter the litters and lowered 1ºC per day up to 22ºC lower limit. We analyzed plasma levels of cortisol as an indicator of animal welfare throughout the year in early weaned piglets (14 days). Blood samples were taken in piglets (n = 50 for each season) the day before weaning (shed 1) and 7 days after weaning (shed 2) in each season. We measured the levels of cortisol by RIA (Coat-A KIT -Count Siemens). The values obtained were statistically analyzed with one-way ANOVA and Tukey test a posteriori. No significant differences before weaning in the four seasons. After weaning the values found were: 2.72 μg / dl, spring 2.12 μg / dl, summer 2.72 μg / dl and winter 3.58 μg / dl. Winter. While cortisol levels in winter was higher than in the other seasons, had significant difference only between winter and spring (p = 0.003). However, these values (3.58 g / dl) are not considered stress levels. Increased cortisol in winter probably will may due to physiological mechanisms in response to small misalignments nocturnal in temperature at the shed during the winter. This would indicate that the temperature control is suitable for young piglets as in the early weaning in 14 days, without affecting their welfare.
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