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 SOCIEDAD DE BIOLOGÍA ROSARIO

ROSARIO BIOLOGY SOCIETY

XXII CONGRESS - XL ANNUAL MEETING

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SYMPOSIUM: “Zoonoses and emerging diseases”

A1

CONTRIBUTIONS TO THE STUDY OF RESERVOIRS OF THE ARGENTINE HEMORRHAGIC FEVER AND HANTAVIRUS PULMONARY SYNDROME

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In the context of COVID-19, we often ask ourselves what conditions favor the spread of zoonoses. Recent reviews point to its direct relationship with the decline in biodiversity due to habitat destruction or land use changes. When this occurs, some species become extinct, but those that survive and thrive, such as some rodents, are more likely to harbor pathogens that can affect humans. Our research focused on the study of molecular systematics and population genetic structure in rodent hosts of *Mammarenavirus* and *Orthohantavirus* affecting humans. From the analysis of phylogenetic relationships in *Oligoryzomys* and *Calomys* in South America, we were able to resolve contradictory taxonomic reports, obtaining the following rodent/viral genotype relationships in the endemic areas of Hantavirus pulmonary syndrome (HPS) in Argentina: Patagonia: *O. longicaudatus*/Andes; northwestern Argentina: *O. occidentalis*/Bermejo, *O. chacoensis*/Oran and *C. fecundus*/Laguna Negra; Misiones: *O. nigripes*/Jujuitiba; Southern Litoral, Parana River Delta and the coast of the Uruguay River: *O. flavescens*/Lechiguanas and exceptionally, *O. nigripes*/Lechiguanas. We also detected the following rodent/mammarenavirus relationships: *C. musculinus*/Junin, *C. venustus* and *C. fecundus*/Latino-like. We observed that, in general, in conserved environments, the abundance of rodents was low although with high species diversity, while in places with greater disturbance, less diversity but a greater abundance of species transmitting zoonoses was found. It is not surprising then that the Argentine hemorrhagic fever endemic area is strongly associated with crops of the Humid Pampas and that HPS endemic areas are located in regions with high deforestation and introduction of crops or invasive exotic species. In times of pandemics, we should think about how diseases arise when our species advances over natural environments.

A2

HEMOTROPIC MYCOPLASMAS: EMERGENT AND REEMERGENT PATHOGENS OF ANIMALS, POTENTIALLY ZONOTIC

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Hemotropic mycoplasmas (HM) (class Mollicutes, family *Mycoplasmataceae*, genus *Mycoplasma*) are epierithrocytic parasites of numerous mammals. Cat, sheep, and pig HM produce severe disease (anemia) more frequently. New HM have been described in animals recently, and HM infection in man have been detected. HM have not been cultured *in vitro* yet. In most cases, infections are clinically inapparent and persist for years. During latent infection, the spleen destroys infected red blood cells (RBC) and prevents symptoms, but splenectomy or immunosuppressive factors produce the appearance of bacteria in the blood, and hemolytic anemia is caused. Transmission of HM depends on the inoculation of infected blood, so, arthropods are considered important, but not all dissemination mechanisms are clarified. HM were named according to the host in which they were first identified considering they were species-specific; however, several HM can infect species other than its own. In stained blood smears they appear as epierithrocyte cocci, bacilli or rings, but one strain of *Mycoplasma suis*, HM of swine, are capable of invading porcine RBC. Mycoplasmas are parasites of the respiratory and urinary epithelium, and HM extend tissue specificity to RBC. Many mycoplasmas have an appendage for adhesion, but the entire surface of MH membrane can adhere to RBC: this is an alternative mechanism of superficial parasitism. Pathogenesis of HM diseases is not fully defined, but it is known that host immune responses play an important role in the appearance of anemia. In Argentina, distribution of *Mycoplasma suis* infection in different populations of pigs was studied (blood samples from pigs of Santa Fe, Córdoba, and Buenos Aires) and a high percentage of infection was detected (64%) using a PCR; clinical cases reported are scarce, but *Mycoplasma suis* can act synergistically with other agents; efficacy of tylosin and ineffectiveness of enrofloxacin, were demonstrated. Distribution of dog HM in Argentina was studied too; blood samples collected in Santa Fe and Córdoba were analyzed by PCR, and 37% of infected dogs were detected: *Mycoplasma haemocanis* (19%), *Candidatus Mycoplasma haematoparvum* (10%) and *Mycoplasma suis* (8%) were identified in dogs without anemia. Also, the distribution of cat HM was studied in Santa Fe and Córdoba using a PCR; samples were analyzed, and the percentage of infected cats was 37%; *Mycoplasma haemofelis*, *Candidatus Mycoplasma haemominutum* and *Candidatus Mycoplasma turicensis* were detected in anemic and not anemic cats. In the word, *Mycoplasma suis* and *Mycoplasma ovis* appear infecting veterinarians and farmers, so extreme biosecurity measures are necessary for farms.

Candidatus Mycoplasma haematoparvum and *Mycoplasma haemofelis* were detected in humans, so, treatments against ectoparasites on pets and the environment are essential.

A3

HYDATIDOSIS, UNATTENDED ZONOSIS OF FORGOTTEN POPULATIONS

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Hydatidosis or cystic echinococcosis is a zoonosis caused by the larval or metacestode stage of the Tapeworm *Echinococcus granulosus*; represents a major public health and economic problem in regions of the world with basically a livestock economy. Chronic disease of slow evolution, potentially serious, due to its capacity for tissue invasion and destruction, which requires expensive and complex treatments, causing absenteeism from work and uprooting of patients. In Argentina, it is spread throughout its territory; there are 5 areas with the highest transmission capacity or risk inhabited by around 3 million people, of which 500,000 correspond to children under 5 years of age. Their geographic and climatic diversity confirms that *Echinococcus granulosus* is a versatile parasite that adapts to very different life conditions. Around 600 cases/year are reported, with an age distribution ranging between 2 and 90 years. The most common locations of hydatid cysts are the liver and lung. In Tucumán, the pathology is endemic in the northwestern sector of the province, in which risk factors predominate such as ancestral habits of the inhabitants of feeding their dogs with raw viscera, close coexistence with them, livestock activity with the breeding of animals that fulfill the role of intermediate hosts and presence of the parasite in the environment; this determines the stability of the *Echinococcus* cycle in the region. It commonly affects several members of the same family, so there would be an apparent "naturalization" of Hydatidosis. They are excluded populations, where the disease provokes crises in their daily life and the general surgical resolutions of the problem, confronts them with the fear of death. The lack of primary and secondary prevention necessary to avoid Hydatidosis, which follows its natural course, would be the result of non-existent Health Policies.

A4

DEMOCRATIZATION OF KNOWLEDGE OF GENETIC AND GENOMIC VARIANTS

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Sharing global initiatives are the support for a first-class genetic-clinical activity, especially in data exchange: "sharing data", which is key to the global development of advances in genetics. Indeed, a very common variant in one ethnic group may be very rare in another and, as such, suspected of malignancy; when it is benign and hardly detected, it is registered as without clinical risk and feasible to be used in any population. As an example, it is important to comment on the reports of BRCA1 / 2 sequencing in our laboratory (the one with the most experience –25 years– in the country), we report less than 2% of the variants of uncertain significance (VUS), including many regional ones. The knowledge of the recurrent pathogenic variants in our population (detected 3 or more times) will come to define them in our patients, and they are 10 variants with a total frequency of 3.89%, very low to be used for clinical purposes. In the USA, a panel called Hispanel was described with 50% detection in the analyzed population and tried to be used in Latin America, failing to do it in our country since by direct comparison of the list it is easily expected a scarce 2.8%, though close to the 3.8% in Brazil where it was published the analysis of this panel since they were not able to anticipate the failing in its application. This great inefficiency is avoided by sharing data since not only is money saved but most importantly: misinforming patients and professionals. Sharing is not the standard, and it is one of the objectives of the Argentine Node of the Human Variome Project, which depositors' centers throughout the country. From the Node, we deposit the variants in the LOVD (Leiden Open Variation Database), where we also have our national page (ar.lovd.org) to have the Argentine deposits gathered on a web page. This generosity is a satisfaction shared by all and pursues the best clinical interest of patients. In addition, it is the essence to democratize the knowledge as a result of classifying the three billion nucleotides of our human genome.

POSTER PRESENTATIONS

A5

TRANSFERRIN AND OXYGEN REACTIVE SPECIES IN HUMAN SEMINAL PLASMA

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Seminal plasma (SP) contains nutrients, signaling molecules, genetic material, and a variety of essential proteins for transportation, protection, and maturation of sperm cells. It also contributes to capacitation and acrosome reaction and can modulate the immune response in the male and female reproductive systems. 1.5% of the total proteins in SP are made up of a metalloprotein called testicular transferrin (TfT), which is secreted by Sertoli cells. The function of TfT is unknown with certainty. According to Griswold's model (1994), it is believed to be involved in the delivery of iron to developing germ cells. Reactive oxygen species (ROS) have the ability to reversibly and irreversibly alter cellular function. These species have been proposed to modify the biochemistry and physiology of spermatids and sperm cells highly vulnerable to oxidative stress. For this reason, accurate ROS measurement provides a vital tool in the initial evaluation and follow-up of infertile male patients. On the other hand, antioxidant mechanisms could protect spermatozoa from damage caused by ROS. The objective of this work was to associate oxidative stress with TfT levels. Forty samples (age: 36.55 ± 10.44) of semen and serum from patients who consulted for infertility were studied. It was avoided to include semen samples with low volume and patients with clinical conditions that could interfere with Transferrin levels in blood plasma. Complete semen analysis was performed following WHO guidelines (2010). TfT in SP was quantified. For this, radial immunodiffusion (RID) assay was adapted for low concentrations. Two techniques to measure ROS in sperm were developed, using thiobarbituric acid (TBA) methods by measuring malonyl dialdehyde (MDA) and NOx by determining the total amount of nitrites (NO^{-2}). When comparing variables concentration of MDA and TfT, a slight inverse relationship was observed between ROS and TfT ($r = -0.39$). The correlation coefficient between nitrite concentration and TfT showed an inverse relationship of medium intensity ($r = -0.53$). An inverse relationship between oxidative stress and TfT levels was evidenced, which could be due to its antioxidant function in SP. Studies have shown that elevated ROS levels can be found in 40–80% of infertile men and up to 11–78.5% of normozoospermic infertile patients. Additionally, ROS levels have been shown to correlate with reduced fertility. Abnormalities of many sperm functions can be due to the action of several factors. Knowledge of the pathophysiological mechanisms of these factors is of great importance for the choice of treatment. A more in-depth study of TfT will allow, perhaps, to consider it as an antioxidant protein that regulates iron homeostasis in testes.

A6

PREVALENCE AND RESISTANCE OF *STAPHYLOCOCCUS AUREUS* IN NASAL SAMPLES IN A POPULATION OF WOMEN DURING THE THIRD TRIMESTER OF PREGNANCY

Bordon M, Tavella D, Massonnat C, Morello B, Catalano F, Brandolisio N, Guzman P, Fogliato S, Revelli L, Sáez B, Córdoba L, Zafra M, Hails I, Bulfoni M, Ombrella A, Ponessa A, Gambandé T
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Staphylococcus aureus (SA) is a microorganism that can be pathogenic for our body, causing a wide spectrum of diseases of diverse severity (infections of the skin, soft tissues, bones, genitourinary tract, opportunistic infections, etc.). These infectious pathologies can occur by dissemination, from the skin and mucous membranes to other sites (approximately 25% of people are carriers), person-to-person through direct contact, or also through direct contact with contaminated fomites. Transmission from a carrier mother to child can occur vertically (passage through the birth canal) and horizontally (through nasal carriage). Both nasal and recto-vaginal SA colonization are risk factors for puerperal and neonatal infections. The main objective of this work was to know the prevalence of nasal colonization by SA in pregnant women between 35–37 weeks of gestation and its sensitivity pattern to antimicrobials. We obtained 101 nasal samples after signing informed consent. These were seeded in Salted Mannitol Agar (Britania®) and incubated at 35°C for 48 h. Suspicious SA colonies were identified by conventional biochemical tests and antibacterial sensitivity was assessed by the Kirby-Bauer diffusion method, according to the *Clinical and Laboratory Standards Institute* (CLSI). Of the 101 pregnant women studied by nasal swab, 21 (20.79%) were colonized with SA. Of the 21 isolates, 18 (85.71%) turned out to be sensitive to methicillin (SAMS), and 3 (14.28%) turned out to be resistant (MRSA) without presenting accompanying resistance, which is why they were interpreted as MRSA acquired in the community (SAMR-AC). Of the other antimicrobials tested, a high percentage of isolates with resistance to erythromycin (34.8%) and clindamycin (21.7%) were observed, for which their empirical use is not recommended. Levofloxacin and cotrimoxazole maintain activity against SA. These results, as we obtained in a previous study, continue to demonstrate the isolations of SA in pregnant women and are promising for this research project.

A7

VEGETATIVE FORMS OF *CLOSTRIDIUM CHAUVOEI* TRIGGERS APOPTOTIC AND INFLAMMATORY RESPONSES ON INNATE IMMUNITY CELLS

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Clostridium chauvoei is a Gram-positive, sporulated and strictly anaerobic bacterium that is the etiologic agent of blackleg, which affects cattle, causing significant losses in livestock production by fulminant myonecrosis. Despite being a globally distributed disease, there is little information about the immunopathogenesis of blackleg. The aim of this work was to study the effect on the macrophage's (M ϕ) viability infected with *C. chauvoei* and its possible mechanism using an in vitro murine model. Primary cultures of inflammatory peritoneal M ϕ s obtained in mice were used. They were infected with different multiplicities of infection (MOI) of *C. chauvoei* (MDI = 5:1, 20:1 and 100:1 for 24 h), and its effect on cell viability was analyzed by the MTT assay. Apoptosis was studied by Giemsa stain, ladder and flow cytometry. Besides, iNOS and TNF- α expression was evaluated by RT-PCR. In all MOIs tested, a decrease in viability was observed with respect to control. At MOI 20:1, a higher ratio of apoptotic bodies was found compared to control without infection, and the ladder pattern was identified by electrophoresis of genomic DNA in agarose gels. The flow cytometry analysis showed a higher percentage of apoptosis than that observed by Giemsa stain, at MOI 20:1. Finally, at MOI 20:1 a significant increase of the expression was observed in both iNOS and TNF- α . Our results indicate that *C. chauvoei* by inducing proinflammatory transcriptomics changes within M ϕ leads to an apoptotic phenotype.

A8

UTILITY OF sPD-1 AND sPD-L1 SOLUBLE MOLECULES AS POSSIBLE BIOMARKERS OF RESPONSE TO METRONOMIC CHEMOTHERAPY (MCT) IN PEDIATRIC CANCER PATIENTS

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Metronomic Chemotherapy (MCT) is characterized by the chronic administration, at regular intervals, of chemotherapeutic drugs in doses significantly lower than the maximum tolerated dose, without extended rest periods, and with low toxicity. Prognostic factors (PF) are variables that can be used to estimate patient evolution and to guide therapeutic decisions. The biomarkers that serve as PF in patients treated with MCT are scarce. The protein of programmed cell death 1 (PD-1) and its ligand (PD-L1), are responsible for the negative regulation of the antitumor immune response. As MCT stimulates the immune response, our objective was to determine in pediatric patients with Ewing Sarcoma (ES), Rhabdomyosarcoma (RS), and Osteosarcoma (OS), treated with MCT as maintenance phase, the serum concentration of the soluble molecules sPD-1 and sPD-L1 as possible PFs. The samples were obtained at the beginning and after 2 months of treatment. Afterward, at 6 and 12 months in ES patients and 10 and 18 months in RS and OS patients; they were distributed into two groups: Responders (R): 6/8 (ES), 4/8 (RB), 2/3 (OS) and Non-Responders (NR): 2/8 (ES), 4/8 (RB), 1/3 (OS). When comparing the first with the last sample of all the tumors, the sPD-1 levels increased (median [range], ng/mL: 51.8 [0–304.7] vs 91.4 [62.1–120.7]) in R patients, while they decreased in NR patients (99.5 [19.2–187.6] vs 64.4 [46.4–194.5]). The opposite behavior was observed for sPD-L1 levels: (30.6 [21.7–182.4] vs 17.9 [14.9–20.9]) for R patients and (19.5 [0–100] vs 23.4 [17.3–28.8]) for NR patients, without reaching statistical significance. When considering each tumor type, sPD-1 did not show variations along with the treatment. On the contrary, for sPD-L1 levels, R/ES patients showed decrease at 12 months ($P = 0.063$, Wilcoxon test), and R/RS and R/OS at 18 months ($P = 0.0313$) respect to their initial value. Conclusions: (1) There was a tendency to increase serum levels of sPD-1 in R and to decrease in NR patients during the treatment for all the tumors, while the opposite tendency was observed for sPD-L1. (2) Responder patients for each tumor type showed significant diminutions of sPD-L1 serum concentration. (3) These preliminary data could be of importance for the follow-up of pediatric patients treated with MCT. However, it is necessary to increase the number of cases in order to reach higher statistical validity.

A9

DETECTION OF HEMOTROPIC MYCOPLASMAS IN CATS USING POCKIT PCR

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Hemotropic mycoplasmas (HM) constitute a special group into the *Mycoplasma* genus. Because of their red blood cells (RBC) affinity, they attach to the RBC membrane surface producing hemolytic anemia, whose severity depends on the type of HM species affecting. Survive infected cats became carriers. Until now, it is known that domestic cats can be affected by three HM species: *Mycoplasma haemofelis* (Mhf) that is the most pathogenic, *Candidatus Mycoplasma haemominutum* (CMhm) and *Candidatus Mycoplasma turicensis* (CMt) that generally cause anemia if previous immunosuppression status is present. The disease includes anemic signs and compatible HM structures (CHMS) as coccus, rings, or little rods can be seen on RBC in stained blood smears observed under the microscope, but this technique has very low sensitivity, and molecular methods as polymerase chain reaction (PCR) are necessary for an accurate diagnosis. Pockit PCR is a type of PCR: the reaction takes place into an R-tube put into a Pockit analyzer. It has never been done a characterization of the presence of cat HM species and the number of infected HM cats in this geographic area (localities of South of Santa Fe and Southeast of Córdoba, Provinces of Argentina). The aim was the detection of these three cat HM species using Pockit PCR. Samples of cat blood with EDTA were collected: 12 from Isla Verde, 4 from Corral de Bustos, 2 from Chañar Ladeado, and 1 from Camilo Aldao location. Colored blood smears were done from each sample, and CHMS were looked for. Then, extraction of DNA was made from 200 µL of each blood using a commercial kit (PetNAD™), and finally, Pockit PCR was carried out using specific HM primers and controls (GeneReach Biotechnology Corporation). No CHMS was observed in the blood smears, except in one case in which the PCR was negative: this could be due to an infection with a different HM species, other than those investigated; it is known that, for example, dogs can be infected with *Mycoplasma suis*, a pig HM. It resulted that 7 cats were infected, which is 37%: this percentage is higher than those obtained in other studies (infections of 10 to 20% in healthy cat populations are common). The sampled cats came from veterinary clinics, and a statistical method was not used for sampling, so, final results could be altered. CMhm was detected in 5 cats, CMt in 3 cats, and Mhf in one; in 2 cats, coinfections were found: CMhm plus CMt. It is accepted that co-infections are frequent in HM infections. CMh was the most prevalent in studied cats: the same was found in other investigations, which could be derived from the fact that Mhf is more pathogenic and causes more deaths and fewer carrier cats. Although the few numbers of studied animals, the presence of all three domestic cats HM species was demonstrated in this region.

A10

CHARACTERIZATION OF HEMOTROPIC MYCOPLASMA INFECTED CATS

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Mycoplasma haemofelis (Mhf), *Candidatus Mycoplasma haemominutum* (CMhm) and *Candidatus Mycoplasma turicensis* (CMt) are hemotropic mycoplasmas (HM) that cause hemolytic anemia in domestic cats. Transmission occurs through infected blood, so blood-sucking arthropods such as fleas (*Ctenocephalides felis*) are involved. The severity of anemia depends on age and co-infections. The aim of this investigation was to characterize HM infected cats (detected by PCR) from the South of Santa Fe and Southeast of Córdoba, Provinces of Argentina. Cat blood with EDTA and information about sampled animals were collected. Nineteen cats from localities from Santa Fe and Córdoba were performed using Pockit PCR (GeneReach Biotechnology Corporation reagents) for detection of cat HM; hematological studies and characterization of positive PCR cats were made too; FIV and FLV infections were searched in 5 HM infected cats using an immunochromatography test (Bionote). Seven of 19 cats were infected with one or more MH: in 5 cats CMhm was detected, CMt in 3 cats, and in Mhf only in 1; 2 of these cats presented coinfections with CMhm plus CMt. All infected cats were males, 4 of them whole males and 5 were older than one year. Four infected cats had outdoor habits, only 1 had a complete health plan (rabies and triple feline vaccines, and deworming), and fleas were detected only in 2 animals. Two of the infected presented some sign of anemia (adynamia, paleness, fever, loss of weight, or anorexia); 1 adynamic cat was injured at the time of sampling; the remaining 4 positives (including one with HM coinfection) were clinically healthy; 1 of healthy infected cats had a history of anemia with recurrences (clinical episodes took place in November 2019 and April 2020) and treatments with doxycycline for 21 days, were made on those occasions. Four infected cats presented normochromic and normocytic anemia. Two out of 5 infected cats result positive for FIV infection. The fact that the infected were especially whole males, older than one year, with outdoor habits and without a complete sanitary plan, was expected for HM infected cats, but these characteristics were also seen in negative HM cats. In the same way, some signs of HM disease were recorded in both infected and non-infected. Contrary to expectations, ectoparasites were detected in 42% of the negatives and in 28% of positive HM cats. Statistically significant differences between HM infected cats and not infected cats consisted in the detection of more anemic cats among the positive (66%) than among the negative (41%) (Chi-square method), and the registration of recurrent anemia only in the history of those infected. In those cats with repetitive episodes of anemia, it was verified that treatments failed to remove carrier status according to PCR. Coinfected HM cats, one of whom was also positive for FIV, were not anemic at the time of the study, but it is accepted that the probability of suffering severe anemia if immunosuppression appears is very high in them.

A11

PREVALENCE OF *STAPHYLOCOCCUS AUREUS* IN ANOVAGINAL SAMPLES IN A POPULATION OF WOMEN DURING THE THIRD TRIMESTER OF PREGNANCY

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Staphylococcus aureus (SA) is a Gram-positive, round-shaped bacteria. It is found on the skin and mucous membranes as part of the normal microbiota in approximately 25% of healthy people (carrier status), from where it can spread to other locations in the organism, causing infectious diseases of diverse severity. The transmission has also been reported from one individual to another by direct contact, as can happen from mother to child during the passage through the birth canal and postpartum period. The importance of genital colonization by SA is becoming greater, increasing the risk of neonatal infection by vertical and horizontal transmission. Both recto-vaginal and nasal SA colonization are risk factors for puerperal and neonatal infections. The main objective of this investigation was to determine the prevalence of SA vaginal and anal colonization in pregnant women between weeks 35 to 37 of gestation and evaluate SA antimicrobial sensitivity. We obtained 262 anovaginal samples, previously signing informed consent. These samples were seeded in Mannitol Salt Agar (Britania®) and incubated at 35°C for 48 h. The suspicious SA colonies were identified by conventional biochemical tests and sensitivity to antibacterials was tested by the Kirby-Bauer diffusion method, according to the standards of the *Clinical and Laboratory Standards Institute* (CLSI). Of the 262 samples obtained, 18 (7%) were colonized by SA. Of the latter, 15 (83.3%) were considered SAMS (methicillin-sensitive *Staphylococcus aureus*) and 3 (16.6%) as AC-SAMR (acquired in the community methicillin-resistant *Staphylococcus aureus*) according to the same criteria mentioned above. We also obtained resistance to Gentamicin in 1 isolate (5.5%), to Erythromycin in 11 isolates (61.1%) and Clindamycin in 8 isolates (44.4%). According to these findings, the use of Erythromycin and Clindamycin as empirical treatment of puerperal and neonatal infections due to SA would not be recommended. Levofloxacin and Trimethoprim-Sulfamethoxazole maintain their activity versus SA. Detection of this microorganism in pregnant women could be of great utility to avoid both vertical and horizontal transmission. While the results are preliminary to an ongoing research project, the possible implications of this organism in puerperal and perinatal infections, as well as the rising of antimicrobial resistance, encourage us to continue with this research.

A12

FRUIT MORPHOLOGY AS A POTENTIAL CHARACTER OF TAXONOMIC VALUE TO DIFFERENTIATE SPECIES OF THE GENUS *CELTIS* (“TALAS”) IN ARGENTINA

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The genus *Celtis* L. (Celtidaceae) comprises around 70 trees and shrub taxa distributed in temperate and tropical regions. In Argentina, it is represented by around five species, all belonging to the subgenus *Mertensia* Planch. The great inter- and intraspecific variability and the similarities between these taxa have generated important taxonomic problems. A case in point is the *Celtis pallida* Torr. and *Celtis tala* Gillies ex Planch., both considered synonymous with *Celtis ehrenbergiana* (Klotzch) Liebm.; in addition to other entities of doubtful taxonomy such as *Celtis brasiliensis* (Gardner) Planch., *Celtis chichape* (Wedd.) Miq. and *Celtis iguanaea* (Jacq.) Sarg. The morphology of the fruit, mainly pyrene, which is the innermost layer, can be decisive for the differentiation of these species. After an extensive sampling in the north-central provinces of Argentina, a detailed morphological study of 50 pyrenes (measurements of length, width, surface, shape, and presence of apiculate) and a Principal Component Analysis (CP1 43.46% and CP2 31.36%), it was concluded that the characteristics of pyrenes are important characters of taxonomic value. The dimensions (length and width) and the presence of apiculate are the most important characters that allow differentiating the species of the genus which are presented in Argentina. We were able to perfectly differentiate *C. tala*, *C. pallida*, and *C. iguanaea* from each other, and also, they were well-distinguished from *C. chichape* and *C. brasiliensis*. We were not able to differentiate *C. chichape* from *C. brasiliensis*, possibly due to the immaturity of its fruits.

A13

RELATION BETWEEN DRYING RATES AND MYCOTOXINS CONTAMINATION IN LATE SOWN MAIZE

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Maize grain innocuity can be affected by the presence of mycotoxigenic fungi of the *Fusarium* genus producing fumonisins (FBs), zearalenones (ZEA) and deoxynivalenol (DON), and *Aspergillus* genus producing aflatoxins (AFL).

The tolerable levels in grains recommended by the WHO are 2000ppb for FBs; 1000 ppb for DON, 100 ppb for ZEA and 20 ppb for AFL. Recent studies in the Rolling Pampas Region showed different susceptibility of hybrids to ear pathogens and proposed that extended field drydown could increase mycotoxin content. Drying of late sown maize from physiological maturity (MF) is typically described with a bilinear pattern. In the first phase (F1) the loss of moisture is rapid due to the greater difference between the water content of the grain and the atmospheric demand. Then, after an inflection point (Pi) a second phase (F2) is observed, where the drying rate is a fraction of the F1 rate. The objective of this work was to determine the relationship between drying rates and mycotoxin content. In order to do so, the drydown parameters obtained in seven commercial hybrids sown in two years with contrasting environmental conditions were analyzed: 2019 (Year1) and 2020 (Year2). The design used was randomized complete blocks with three repetitions. During 100 days after MF, grain moisture (%H) was determined on a weekly basis. The samples at two harvest moments (MC), Pi and at the end of F2, were ground and mycotoxins content was determined by NIR spectroscopy (Pegasus®). A correlation analysis was carried out using the Pearson test. The rates in F1 and F2 differed from each other, although they were not affected by Year or by hybrid. The differences observed in the length of drydown period were attributed to variations in %H MF and %H Pi. A correlation was found between the %H at MF and the length of F1 (0.64; $P = 0.01$); and in the same way the %H Pi was correlated with the %H F2 (0.51; $P = 0.06$). AFL and DON were always found below tolerable levels, like most of the ZEA samples, except for specific cases. With the exception of two hybrids in Pi, all FB samples greatly exceeded tolerable levels. There were significant differences between years for the content of FBs: in Year 1 there was 50% more FBs than in Year 2 (4356 ppb). Year x MC interaction was observed for FBs and ZEA. In Year 1 the content of FBs in F2 doubled Pi, while in Year 2 the increase was 20%. In the case of ZEA, in Year1, MC F2 had 50% more than in Pi while in Year2 it was + 13%. A high correlation was found between the content of ZEA and the F1 rate (0.67; $P = 0.01$) while the final content of FBs was correlated (0.60; $P = 0.02$) with the length of F1. No correlation was found between drydown parameters and DON or AFL content. The drying rate may be determined by the combination of environmental conditions and morphophysiological characteristics of the hybrids, while mycotoxin content would depend on the susceptibility of hybrids, the presence of inoculum, and environmental conditions. The delay in MC increases the mycotoxin content, affecting the innocuity of the grains.

A14

DETECTION OF THE SEROLOGICAL RESPONSE TO INFECTION BY *LEPTOSPIRA* SPP. IN DOGS AND CATS WITH RENAL PATHOLOGIES

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Leptospirosis is an infectious disease caused by *Leptospira* spp. with about 250 pathogenic serovars. Transmission occurs through contact with the urine of infected animals. Leptospire multiply in the kidneys causing nephritis. The aim of this work was: to determine the seropositivity rates to *Leptospira* spp. and serovars, in dogs and cats with clinical symptoms of pathologies at the renal level, using the microscopic agglutination technique (MAT). Ninety samples of blood serum from domestic cats (*Felix silvestris catus*) and 90 from dogs (*Canis familiaris*) of different races, ages, and sex, with symptoms of kidney failure, from veterinary offices in Southern Santa Fe, were analyzed with their owners' consent. The felines had hunting habits. The canines used to go out of their houses. Blood samples were obtained by venipuncture and the sera were refrigerated at -20°C . Reference strains of serovars of *Leptospira* spp.: Pomona Pomona; Icterohaemorrhagiae Copenhageni M 20, Canicola Canicola Hond Utrech IV, Australis Bratislava Jez bratislava, Pyrogenes Salinem, Sejroe Hardjo type Prajitno Hardoprajitno, Autumnalis, Autumnalis Akiyami A, Bataviae Bataviae Swart de L. *interrogans*; Grippotyphosa Moskva V and Cynopteri Cynopteri 3522 C from L. *kirschneri* and Ballum Castellonis Castellón 3 from L. *borgpetersenii* were used. The cut-off point was 1:25. Of the total of dogs, 20 were found positive, with a seropositivity rate of 22.22%. In 7 (35%) sera, cross-reactions between serovars were observed, of which Icterohaemorrhagiae and Canicola participated together in 3 (3/7), with titers that varied for Icterohaemorrhagiae from 1:25 to 1: 6400 and for Canicola from 1:50 to 1: 1600. The remaining 13 (65%) sera reacted to one serovar. In these cases, Canicola was detected in 8 (8/13), Icterohaemorrhagiae in 4 (4/13) and Bratislava in 1 (1/13), the highest titer was 1: 800 for Canicola. Of the cat samples, 48 were positive, with a seropositivity rate of 53.33%. Within this group, 29 (60.41%) sera presented cross-reactions, 18 (18/29) between Castellonis and Autumnalis, with titers from 1:25 to 1,200. In 11 (11/29), the highest titer was 1: 6400 for Pomona. The remaining 19 (39.59%) reacted to a single serovar, those detected were: Autumnalis in 7 (36.84%) sera, Bratislava in 5 (26.31%), Castellonis in 4 (21.05%), Icterohaemorrhagiae in 2 (10.52%) and Pomona in 1 (5.26%), the highest titer observed was 1:50. The seropositivity rate and the serovars detected for canines were similar to those previously reported in the region. The high seropositivity rate found in cats could be due to the fact that animals with clinical suspicion of the disease were analyzed. The rate and serovars found coincided with the findings of authors of similar studies in other countries.

A15

ROLE OF EOSINOPHILS IN THE ANTITUMOR RESPONSE INDUCED BY METRONOMIC CHEMOTHERAPY WITH CYCLOPHOSPHAMIDE AND LOSARTAN IN MURINE MODELS OF TRIPLE NEGATIVE (TN) MAMMARY ADENOCARCINOMAS

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Metronomic Chemotherapy (MCT) consists of the chronic administration of chemotherapeutic drugs in doses significantly lower than the maximum tolerated dose, without extended rest periods. Drug repositioning refers to the employment of drugs designed for other uses, which have shown antitumor activity. The combination of Cyclophosphamide (Cy) and Losartan (Los) for the treatment of M234-p and M-406 TN mammary tumors produced inhibition of tumor growth, normalization of vascular architecture, reduction of tissue hypoxia, and survival increase. It was postulated the possible influence of eosinophils (Eo) as acute phase components with antitumor activity. The number of mitotic figures (MF) is an indicator of proliferative potential. Our objective was to evaluate the relationship between the Eo infiltrate and the MF in tumors of mice treated metronomically with Cy+Los. Balb/c and CBI mice were challenged with M-234p and M-406 tumors, respectively, and distributed in the experimental groups: **Control**: without treatment; **Cy**: 25 mg/kg/day in drinking water; **Los**: 200 mg/kg/day in drinking water for M-234p and 150 mg/kg/day for M-406; **Cy+Los**: the same as CY+LOS, (N = 6/group). On day 31 (M-234p) and 22 (M-406) tumors were excised, fixed, and paraffin-embedded. It was determined in hematoxylin-eosin stained slides the peri- and intratumor infiltrate of Eo/mm² and MF/mm² (5 fields, 400X). The correlation between Eo and MF was negative for M-234p ($P < 0.0001$; Pearson's test) and M-406 ($P = 0.0065$). For M-234p: Eo/mm² in **Cy+Los** [66.65 (52–79.4)] was higher than in **Control** [21.7 (17–31.2)] ($P < 0.05$; Kruskal-Wallis test). M-406 showed no significant variations with the same tendency. M-234p showed lower MF/mm² in **Cy+Los** [38.55 (26.9–55.8)] than in **Control** [68.7 (62.4–72.8)] ($P < 0.05$), and a value even lower in M-406: **Cy+Los** [15.8 (14.2–26)] and **Control** [90.5 (70.9–98.3)] ($P < 0.0001$). The comparison of Eo between both tumors showed no differences among **Control** groups, while it was much higher in M-234p than in M-406 for **Cy** and **Cy+Los** ($P = 0.0079$; Mann-Whitney test) and for **Los** ($P = 0.0238$). Conclusions: (1) A tumor microenvironment with the presence of Eo would participate in antitumor response. (2) The negative and significant correlation between Eo and MF would indicate the importance of Eo in innate immunity, which could be induced by MCT. (3) The different efficacy of MCT in both tumor models could be due, at least in part, to the differences in the Eo infiltrate.

A16

TREATMENT FOR 7 DAYS WITH THE EXTRACT ENRICHED IN PROANTOCIANIDINS FROM *LIGARIA CUNEIFOLIA* ON THE PLASMA FACTORS THAT INTERACT WITH THE KINETICS OF ERYTHROCITARY AGGREGATION IN BLOOD OF HIGH-FAT DIET WISTAR RATS

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In folk medicine, *Ligaria cuneifolia* (Lc) is used to increase blood fluidity by lowering plasma (Cho) cholesterol. A fraction enriched in proanthocyanidin (PLc) was obtained that led to a decrease in Cho and Triglycerides in rats fed a high-fat diet (HFD). So far, the effect of treatment with PLc on blood fluidity at low flow rates, estimated by the kinetics of erythrocyte aggregation (EA), has not been studied. We evaluate the effect of treatment with PLc on blood fluidity at low flow rates, estimated by the kinetics of erythrocyte aggregation (EA) in HFD rats, characterizing plasma factors. Wistar rats fed a standard diet added with 40% of first bovine juice for 28 days, then were injected i.p. every 24 h for 7 days with physiological solution (HFD; N = 6) or with PLc 3 mg/100 g body weight (T10; N = 6). On the eighth day, the rats were anesthetized with Ketamine/Xylazine (100 mg/kg/3 mg/kg, i.p.), obtaining blood by cardiac puncture. In Plasma Cho and triglycerides (TG) were determined by enzymatic methods and plasma fibrinogen (FB) by coagulometry. In whole blood, the kinetics of EA by an optical method was assessed, obtaining two parameters that estimate: the size of aggregates (T) and aggregation speed (V). Plasma: Cho (mg %): HFD: 191.7 ± 3.8; T10: 105.8 ± 4.2*; TG (mg %): HFD: 333.5 ± 20.2; T7: 148.8 ± 9.7*; FB: HFD: 271.4 ± 16.64; T7: 340.9 ± 36.83; Blood: T: HFD: 2.042 ± 0.02, T7: 1.667 ± 0.133*; V: HFD 0.110 ± 0.003, T7: 0.006 ± 0.002* (mean ± EE; * $P < 0.05$ vs HFD; Student's *t*-test for unpaired data). PLc-treatment for 7 days showed a lipid-lowering effect, with a significant decrease in the AE and no changes in FB. We have obtained a fraction of Lc, which decreases total Cho and TG in plasma, causing improving blood fluidity at low flow rates.

A17

MOLECULAR CHARACTERIZATION USING SRAP AND SSR MARKERS OF 24 VARIETIES OF ROUGH TYPE PEAS (*PISUM SATIVUM* L.)

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Genetic variability is the prerequisite of any effective breeding program, and if it is not present, must be created by hybridizing divergent parents at both phenotypic and genotypic levels. Analyzing the genetic diversity among the possible parents plays an important role in plant breeding since hybrids between lines of diverse origin generally show greater heterosis and make it possible to obtain superior recombinants in the segregating generations. Due to the strong environmental influence implied in the presence of low heritability values, quantitative morphological descriptors are unreliable for evaluating germplasm diversity. In contrast, molecular markers accurately represent the underlying genetic variation. In order to select possible parents to start a breeding program, 24 varieties of rough-type pea from the Department of Plant Breeding and Seed Production (FCA-UNR) were subjected to a molecular analysis using 7 SSR markers with at least one polymorphic band (AA5, AA18, AA23, AB23, AC58, AD148 and AD61) and 6 SRAP markers (me2-em1, me3-em5, me4-em2, me5-em2, me5-em4, me5-em5) obtaining a total of 121 polymorphic bands. Comparison of individual profiles was performed using the modified Rogers geometric distance. The following diversity indices were calculated: Percentage of polymorphic loci (P), Effective number of alleles (Ne), Expected heterozygosity (She), Shannon index (SH), and Rarity of a genotype (R). Clustering analysis was performed using Ward's minimum variance method, calculating the diversity within each group and between groups or Wright's F statistic. The statistical program BIO-R Version 1.0 was used for all molecular data analyzes. The P found was 90%, while the He value varied between 0.30 and 0.50 with an average value of 0.46 ± 0.01 . The Ne varied between 1.44 and 2.00 with an average of 1.85 ± 0.03 and the SH Index varied between 0.69 and 1.00 with an average value of 0.93 ± 0.02 . The R-value for each genotype, defined as the average specificity of the alleles it contains, ranged from 4.32 for Super Scout to 2.68 for American Wonder. In the Cluster Analysis, 6 clusters can be differentiated: Cluster 1 formed by Accord, American Wonder, Avon, Bolero, Cuarentona and Duke of Albany; Cluster 2 formed by Dante, Rois des Conserves, Gypsy and Panga; Cluster 3 formed by Early Perfection, Eaton, Filigreen afila, Granada, Green Sugar, Leo and Rapid; Cluster 4 formed by Early Sweet and Multiviral resistant; Cluster 5 by Super Scout and Withan Wonder and Cluster 6 formed by Suttons, Telephone and Trianon. The shortest distance was 0.43 between Panga and Gypsy varieties, while the greatest distance was 0.73 between Rois des Conserves and Super Scout varieties. Cluster 5 was the most homogeneous, and a very large differentiation between clusters was observed since the F statistic value was greater than 0.25. Consequently, the varieties integrating Clusters 2 and 5 could be selected as parents to generate segregating populations with high variability.

A18

RELATIONSHIP BETWEEN MORPHOLOGICAL ALTERATIONS AT THE HIPPOCAMPAL REGION AND THE BASAL AND POSTPRANDIAL GLYCEMIA EVOLUTION IN eSS RATS

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The rat line eSS develops type 2 diabetes mellitus (DM2) spontaneously. Many diabetic patients have cognitive disorders and motor dysfunctions known as diabetic encephalopathy (ED), which can be associated with neurological problems due to complications of DM2. The objective was to establish the relationship between basal (GB) and postprandial (GP) glycemia levels of eSS rats and the presence of morphological alterations at the hippocampal region, a brain area that is related to memory consolidation. 6 eSS rats and 6 Wistar rats (non-diabetic controls) of 60 days (d) were studied until 225 d. Blood samples were taken every 30 d by venipuncture of the lateral tail vein to determine glycemia using an AccuCheck brand glucometer. The GB was measured after fasting for 4 h. Then they were given an anhydrous glucose solution (3 g/kg of body weight) in tap water by gavage. After 2 h, the GP was determined. The GP-GB difference was studied (each animal was self-control) and statistically analyzed with a mixed general linear model (significant when $P < 0.05$). At 225 d (consolidated diabetic syndrome), they were anesthetized and euthanized by transcardiac perfusion with 4% paraformaldehyde in 0.1 M PBS at pH 7.40 to fix the brains. The brains were then extracted for frozen and cut. The brains of both rat lines were cut to a thickness of 40 μm using the Paxinos Atlas, and the sections were stained with Congo red to identify the presence of amyloid substance (AS). The analysis was done with bright field and polarization microscopy. Age-line interaction of rats ($P < 0.0001$) was seen for GP-GB. Wistar showed no change in differences over time. In eSS, the GP-GB differences increased with the age of the rat. There were no significant differences between lines at 60 d ($P = 0.4499$). At 101, 132, 162, 198 and 225 d, the differences were statistically significant between lines (P -values = 0.0099, 0.0484, 0.0042, <0.0001 and <0.0001 respectively), the difference values for eSS were always greater. In the brains of eSS rats, the presence of scarce deposits of AS was observed in the hippocampal region, but not in Wistar rats. We conclude that eSS rats increased the GP-GB difference continuously with the age of the animals, and the AS found in their brains would indicate a possible alteration of the morphology of the hippocampus, which could lead to cognitive disorders in this line of rats.

A19

SOLID BIOFUEL: "USE OF CARDOON BIOMASS FOR ELECTRICAL ENERGY GENERATION"

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For decades, the use of fossil fuels has generated different types of gases that causing the "greenhouse effect". This phenomenon produces alterations in the climate, such as the increase in the Earth's temperature. For this reason, alternatives that allow mitigating the consequences of the problem have been developed. One of the most relevant alternatives is the use of biofuels for electrical and heat energy production. Electric energy is one of the most used forms of energy. Despite its low relative performance, electric energy generation from biofuels has a high social impact. Cardoon is considered a perennial energy crop that requires few inputs, has high rusticity, fast-growing, and its lignocellulosic biomass production ranges between 10–20 t/ha/year. The objective of this work was to evaluate the potential of cardoon lignocellulosic biomass to generate electrical energy on a small and medium scale. A sample of 2 kg of crushed lignocellulosic biomass was used to evaluate the following physicochemical parameters: apparent density (DA) and moisture percentage (%M) on a wet basis, ash content (%Cz), volatile matter (%MV), fixed carbon content (%CF) and lower calorific value (on a dry basis). The estimated theoretical consumptions in conventional technologies of medium and small generation in the Rankine cycle were calculated (superheated steam). The cardoon biomass showed a DA = 139.88 kg/m³, slightly lower than the recommended value (150 kg/m³). Other values obtained were %M = 16.08% m/m, Cz = 7.60% m/m, MV = 74.98% m/m, and CF = 7.41% m/m. The lower calorific value was 3.62 kW/kg. The estimation of the generated energy, using a medium-scale generation system (SGM with boiler power = 5.30 MW) was 2,085 MW/year. This result represents a demand of 42,181 t of biomass/year. For the small-scale case (SGP with boiler power = 50 kW), the energy generated was 24.825 MW/year, presenting a biomass demand of 1,150 t/year. It can be concluded that, in the evaluated scales, the energy yields are acceptable and promising to consider the pelletization of cardoon biomass in order to increase the apparent density and, in addition, the other energy parameters. Moreover, pelletization would give important logistical advantages for its distribution and storage.

A20

ANTHROPOMETRIC INDICATORS TO DETERMINE THE OBESITY AND ITS RELATIONS WITH THE CARDIOVASCULAR RISK IN MEDICAL STUDENTS

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It has been demonstrated that indirect indicators of adiposity are associated with metabolic disorders, including cardiovascular risk factors. In a previous work, we came upon a high percentage of self-reported overweight and obesity in medical students of the Facultad de Ciencias Médicas, UNR. The objective was to evaluate the association of body mass index, and waist-to-height ratio and waist-to-hip ratio with cardiovascular risk factors in medical students of UNR. A cross-sectional analytical study in which 1268 volunteer students, under 30 years old, were interviewed, the mean age was 21.83 ± 3.08. Considering all ethical requirements, weight, height, waist and hip circumference were measured, and waist-to-hip ratio (WHR), waist-to-height ratio (WHI), and body mass index (BMI) were calculated. The average BMI was in men (M) (N = 455): 24.4598 ± 3.8539 and in women (W) (N = 813): 23.3383 ± 3.9759 (*P* = 0.000). The prevalence of overweight (OW) found (BMI 25–30) was 23.0% (CI 95% 20.6–25.4); similar to that reported in the "4^o Encuesta Nacional de Factores de Riesgo (ENFR)", obesity (BMI > 30) 7.4% (6.0–8.8) significantly lower than the ENFR and excess weight (EW) of 30.4% (28.0–33.1) (*P* < 0.05). The BMI was related to sex (*P* = 0.000) and nationality (*P* = 0.027). The average WHI was in M: 0.4780 ± 0.0564 and in W: 0.4600 ± 0.0632 (*P* = 0.000). According to WHI categories, 17.6% of M are at risk, OW (WHI: 0.53–0.57): 10.8% (7.8–13.7), OW high (EW) (WHI: 0.58–0.62): 5.3% (3.4–7.4) and morbid O (WHI > 0.63): 1.5% (0.5–2.7). There is no relation with N (*P* = 0.620), nor with the year of study (Y) (*P* = 0.407). In W 30.1% are at risk, OW (WHI: 0.49–0.53): 18.6% (15.9–21.4), OW high (EW) (WHI: 0.54–0.57): 6.8% (5.0–8.7) and morbid O (WHI > 0.58): 4.7% (3.4–6.3). Neither is there relation with N (*P* = 0.312) or with Y (*P* = 0.149). The average WHR was in M: 0.8325 ± 0.0597 and W 0.7623 ± 0.0673 (*P* = 0.000). The prevalence of high risk in M (WHR ≥ 1): 0.9% (0.2–1.8) and in W (WHR ≥ 0.85): 9.6% (7.7–11.6). According to BMI in Argentinians, the OW was 13.1%, and the O was 5.0%; higher than foreigners with a percentage OW of 8.8% and 3.7% of O. Although among our student population under 30 years of age, the prevalence of excess weight is lower than that reported nationally at the same age, there are cardiovascular risk factors related to obesity and overweight. It should be noted that, because it belongs to this age range, it is a population excluded from cardiovascular risk scores.

A21

HIGHER LEVELS OF UNCONJUGATED BILIRUBIN ARE ASSOCIATED WITH A LESS ATHEROGENIC LIPID PROFILE IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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Bilirubin is an endogenous bile pigment generated in the mononuclear phagocytic system, from the degradation of the heme group, through the sequential action of heme oxygenase and biliverdin reductase enzymes. Historically, it has been considered not only a waste product but also a potentially toxic compound. However, bilirubin is currently regarded as a potent endogenous antioxidant with cytoprotective properties, both *in vitro* and *in vivo*. It has been demonstrated that unconjugated bilirubin (UB) bears a higher antioxidant potency than conjugated bilirubin, due to a system of conjugated double bonds that confers the ability to donate hydrogen atoms to a radical species. Dyslipidemia (DLP) is highly prevalent in patients with type 2 diabetes mellitus (DM2), and the characteristic pattern of DM2 DLP includes elevated levels of total cholesterol (TC) and triglycerides (TG), low levels of HDL-cholesterol (HDL-C), and eventually, elevated levels of LDL-cholesterol (LDL-C), thus constituting a clearly atherogenic profile. Recent studies have demonstrated a direct association between elevated levels of UB and a lower risk of cardiovascular disease, arterial hypertension, chronic kidney disease and death in subjects with Gilbert syndrome, a genetic condition of mild and transient unconjugated hyperbilirubinemia. In this study, we proposed to evaluate the lipid profile in patients with DM2 as a function of their plasma levels of UB. For this, samples of 24 individuals with DM2 (who had previously signed the informed consent) were processed, 62% female and 38% male, aged [median (range)]: 71 (55–88) years old. These patients were divided into 2 groups, according to their levels of UB: high UB: when UB >0.5 mg/dL (N = 10) and low UB: when UB ≤0.5 mg/dL (N = 14). All biochemical parameters analyzed were assessed by means of a Cobas c311 autoanalyzer (Roche, Argentina). The obtained results [median (range); mg/dL] for high UB vs low UB were, respectively: TC: 159 (120–209) vs 202 (139–308); LDL-C: 88 (51–142) vs 130 (51–203); TG: 93 (65–135) vs 121 (101–291); HDL-C: 57 (50–75) vs 50 (41–60). All the parameters of the lipid profile showed significant differences between both groups ($P < 0.05$). Besides, in high UB group, 30% of the patients presented DLP, while in the low UB group, this percentage was 71%. A significant association was found between the presence of DLP and the levels of UB ($P < 0.05$). We conclude that, within the physiological range of UB (≤0.8 mg/dL), those patients with DM2 and higher levels of UB, e.g., nearer the upper limit of the reference range, bear a less atherogenic lipid profile and a lower probability to develop a clinically evident DLP. This protection exerted by UB could be a direct consequence of its antioxidant and cytoprotective capacity.

A22

ALTERATIONS OF THE VISCOELASTIC PARAMETERS OF GLYCATED RED BLOODS TREATED WITH INFUSION OF *PHYLLANTUS SELLOWIANUS* LEAVES AND BARK

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The objective of this work was to study the effect on glycated Red Blood Cells of aqueous extracts obtained by infusion of leaves and bark of *Phyllanthus sellowianus*. The surface viscosity of the glycated samples presented values higher than the non-glycated ones and equal to each other, regardless of the presence of the plant extract, indicating a direct effect of glucose on cell rigidity. These results will contribute to a better understanding of the mechanisms of action in order to determine under what conditions the extracts of this species or its components could be used in the treatment of diabetes.

A23

CYSTATIN C AS A MARKER OF RENAL FUNCTION IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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The global prevalence of diabetic nephropathy (DN) is 25–45% in both types of diabetes mellitus (DM) and it is the most common cause of end-stage renal disease, thus representing 40% of patients undergoing renal replacement therapy. Parameters currently available to predict and monitor the progression of DN include proteinuria, glycemic,

and blood pressure control. Measurement of the Glomerular Filtration Index (GFI) is the best method to evaluate renal function. Cystatin C (Cys) is a low molecular weight protein, synthesized by nucleated cells and it is found in body fluids, including the serum. Since it is formed at a constant rate and is freely filtered in the kidneys, its serum concentration is inversely correlated with the GFI. Previously, our research group demonstrated that lower levels of vitamin D are associated with higher mean glycemic values. The aims of our study were: (1) To determine the utility of Cys as a marker of renal function in patients with type 2 DM (DM2) and (2) to analyze the possible association between the serum levels of vitamin D and Cys in these subjects. For this, samples of 21 individuals with DM2 (who had previously signed the informed consent) were processed, 62% female and 38% male, aged [median (range)]: 71 (55–88) years old. Plasma levels of creatinine (Cr) and HbA1c were assessed by means of a Cobas c311 autoanalyzer (Roche). Plasma concentrations of Cys were determined by means of a CM 250 autoanalyzer (Wiener Lab) and those of 25-hydroxy-vitamin D (25-OH-D) were quantified by an electrochemiluminescence immunoassay. The GFI was estimated by using the CKD-EPI formula, which is based on plasma levels of Cr, age, sex, and race of the subjects. The obtained results (mean \pm SD) were: Cys: 1.11 ± 0.15 mg/L; CKD-EPI: 67 ± 14 mL/min/1.73 m²; Cr: 0.94 ± 0.10 mg/dL; HbA1c: 7.0 ± 1.0 % y 25-OH-D: 25.7 ± 8.5 ng/mL. A significant correlation was found between: (a) Cys and CKD-EPI ($r = -0.6$; $P = 0.002$); (b) Cys and Cr ($r = 0.6$; $P = 0.008$); (c) Cys and HbA1c ($r = 0.6$; $P = 0.008$); and (d) Cys and 25-OH-D ($r = -0.5$; $P = 0.025$). In the sample analyzed, the determination of Cys would be of utility to evaluate renal function in patients with DM2 since a significant negative correlation was found between the levels of this protein and CKD-EPI. Renal management of Cys differs from that of Cr. Although both freely filter in the glomeruli, Cys, unlike Cr, is reabsorbed and metabolized in proximal renal tubules, thus not appearing at a significant concentration in urine in normal conditions. Serum concentration of Cys remain unaffected during infectious, inflammatory, or neoplastic states and it is not affected by body mass, diet, or drugs, thus resulting in a more reliable marker of renal function as compared to Cr. The positive correlation between Cys and HbA1c confirms that hyperglycemia is the main factor involved in the development of DN. The negative correlation between Cys and 25-OH-D suggests that lower levels of this vitamin are associated with a greater loss of renal function, in accordance with our preliminary finding that lower levels of 25-OH-D are associated with higher levels of glycemia.

A24

OSMO- AND HORMO-PRIMING IN SOYBEAN EMBRYONIC AXES

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Under appropriate germination conditions, quiescent seeds show a typical three-phase imbibition dynamic. The start of Phase III is determined by cell expansion in the elongation zone of the embryonic axes (E), thus completing germination. The *priming* practice consists of repressing Phase III keeping seeds partially hydrated for a time, and following by dehydration. It accelerates germination once seeds are re-hydrated and it is so commercially used to increase the velocity and uniformity of germination. The physiological regulation of *priming* is not completely known, and it has been postulated that the metabolic activation on seeds during the *priming* would be responsible for the fast response after re-hydrating. In this sense, the incubation of seeds in a medium of low water potential or the presence of a hormonal germination inhibitor is known as osmo- and hormo-*priming*, respectively. In previous work, we identify the mRNA of the main expansin (*EXP1*) responsible for the cell wall loosening in the elongation zone of soybean (*Glycine max.* L. Merr) E during germination. Also, we found that *EXP1* was *up-* and *down-*regulated under inhibitory germination conditions in -1 MPa polyethyleneglycol 8000 (PEG) and 50 μ M abscisic acid (ABA), respectively. In the present work, we evaluate both PEG and ABA as possible solutions in *priming* practices. Three replicates of 10 E were incubated in distilled water (control), -1 MPa PEG or 50 μ M ABA for 24 h at 27 ± 1 °C in the dark. Then, the E incubated in PEG and ABA were transferred to distilled water during the following 24 h to induce them to germinate. The E were periodically weighted to evaluate the water uptake (μ LH₂O. E⁻¹) during the respective incubations. It was compared the time of the start of Phase III and the rate of water uptake (slope in Phase III) after the transference of E to water. The E pre-incubated in PEG or ABA spent 3 and 12 h, respectively, in re-starting Phase III. Whereas the rate of water uptake was similar ($P = 0.4386$) for E in PEG (0.5357 μ L H₂O. E⁻¹. h⁻¹) and ABA (0.4558 μ L H₂O. E⁻¹. h⁻¹), it was significantly higher ($P < 0.05$) than that of E in the control condition (0.2167 μ L H₂O. E⁻¹. h⁻¹). It is concluded that both PEG and ABA accelerated germination of soybean E after re-hydration, so both media could be useful in *priming* treatments. Additionally, results also showed that different physiological mechanisms would be involved in the response to PEG and ABA *priming*. The expression levels of *EXP1* in PEG suggest that the accumulated *EXP1* could contribute to the faster commencement of Phase III after the transference, whereas it would be necessary longer incubation time in the water to revert the repressor effect of ABA on *EXP1* expression and to allow the cell expansion by completing germination.

A25

RISK FACTORS ASSOCIATED WITH NASAL PORTATION OF STAPHYLOCOCCUS AUREUS IN A GROUP OF WOMEN DURING THE THIRD TRIMESTER OF GESTATION

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Staphylococcus aureus (SA) is a Gram-positive bacterium that can colonize skin and nostrils in healthy people from where it can be responsible for many infections of varying severity. Person-to-person transmission of this bacteria has been reported in the literature, especially between people who have close and prolonged contacts. Maternal nasal carrier status plays an important role in the colonization of the newborn. The main objective of this investigation was to determine the prevalence of SA in nasal samples of pregnant women between weeks 35 to 37 of gestation and evaluate the possible risk factors associated. Were studied 68 pregnant women, after signing informed consent, by nasal swabbing and a dichotomous questionnaire (yes/no) in search of possible risk factors (active/passive smoking, asthma, sinusitis, rhinitis, skin infections, immunosuppressants, systemic antibiotics, previous surgeries, diabetes, use of nasal sprays as decongestants or local corticosteroids). The samples were obtained from both nostrils and were seeded in Mannitol Salt Agar (Britania®). After being incubated for 48 h at 36°C, the suspicious SA colonies were identified by conventional biochemical tests. Of the 68 pregnant women studied, 14 (20.6%) were colonized with SA. With regard to the risk factors analyzed, we highlight 2 variables that were statistically significant in relation to colonization by SA, smoking, and living with smokers ($P \leq 0.05$). The other risk factors studied did not yield statically significant results. Detection of this microorganism in the nostrils of pregnant women (carrier status) is of great usefulness to avoid horizontal transmission and prevent possible dissemination from the carriers to the newborns. Decolonization with locally used mupirocin is a therapeutic possibility for carriers, although there is always the possibility of recolonization.

A26

EVALUATION OF DIET EFFECT ON CHRONIC CHAGASIC CARDIOMYOPATHY (CCC) DEVELOPMENT

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Chagas disease, also known as American trypanosomiasis, is a parasitic infection that affects 17 million people in Latin America. Approximately 20 to 40% of these patients develop Chronic Chagasic Cardiomyopathy (CCC). The influence of the patient nutritional status and the effect of the intake of certain foods on the development and evolution of CCC are unknown. The aim of this study was to estimate the influence of dietary factors on CCC development in individuals over 18 years old infected with *Trypanosoma cruzi*. One hundred fifty patients with positive serology for Chagas disease, attending the Cardiology Service of the Hospital Centenario de Rosario, were studied. Once the informed consent forms were signed, interviews were conducted to determine patients' nutritional status and food consumption patterns. The patients were divided into two groups according to CCC presence or absence. Daily food consumption was compared between both groups applying General Linear Models, adjusting for total diet caloric value. Furthermore, multivariable Logistic Regression (LR) analysis was applied to compute Odds Ratios (OR) and their corresponding 95% Confidence Intervals (CI). Statistically significant differences were found between both groups according to age ($P = 0.008$). Thirty-four percent of CCC patients are 60 years or older, while in the group without CCC, this percentage is 18%. So, age-adjusted analyses were applied. Regarding mean daily dietary intake, significant differences between both groups were found for beef consumption ($P = 0.03$), chicken intake ($P = 0.001$), and sugars and sweets consumption ($P = 0.04$). Regarding dietary micronutrient intake, statistically significant differences were found for iron and B1, B2, B5, B6, and C vitamin consumption. At multivariable LR analysis on CCC, chicken consumption ≥ 72.9 g per day (OR = 3.52; CI = 1.64–7.56), and phosphorus intake ≥ 962.5 g per day (OR = 4.36; CI = 1.64–11.55) were found as risk factors. In this sample, it stands out that both groups of patients had a mean daily phosphorus intake that exceeded the recommendations. As regards chicken, the intake that increases the risk is the equivalent of a small portion with a consumption frequency of 3 times a week. It is important to highlight these findings since there are very few nutritional epidemiological studies evaluating Chagasic patients' diet. The findings of this study suggest that certain nutrients and foods could influence MCC development.

A27

HEALTH AND SOCIAL VULNERABILITY IN ELDERLY OF SAN LORENZO DEPARTMENT, SANTA FE PROVINCE, IN JUNE OF 2020

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Elders are a population at risk from infections in general and particularly from Covid-19. Influenza vaccination is a precise indication in this age group, in which the prevalence of comorbidities exceeds that younger. San Lorenzo Department, Santa Fe province, is one of the most populated in this province and a part of the Rosario metropolitan area. The general objective of this work was to determine the underlying pathology prevalence and vaccination presence among elderly of such Department in comparison to younger; besides, to assess other indicators of vulnerability such as the lack of work activity or retirement income in the same group in June 2020. It was performed a cross-section study, for which was collected information from the towns of the San Lorenzo Department. In each town and during a day a strategic place was chosen due to high pedestrian traffic to carry out a survey, in the context of a search for indicators for Covid-19, under the supervision of a pharmacist. It was collected information on age, sex, reference to influenza vaccine, pneumococcal disease, and employment status. Data analysis was performed using relative frequencies and 95% confidence intervals (95% CI). Inferences were performed using the Chi-square test; in addition, odds ratios (OR) with their confidence intervals to trend calculation. The means were presented with their standard deviations. $P < 0.05$ was considered significant. Information was collected from 700 passers-by over 18 years of age, among them, 28.1% (24.9–31.7%) were elderly (60 or more years). Adults' age mean was (mean \pm SD; years) (42.4 \pm 13.3) and that of the elderly was (67.9 \pm 6.1). The elders were a chance more than three times than adults to be vaccinated against influenza [OR: 3.6 (CI = 2.6–5.1)] and against pneumococcus [OR = 3.4 (2.4–4.9)]. However, 35.5% of the elderly did not have the influenza vaccine and 52.8% did not have the pneumococcal vaccine. Underlying pathologies were significantly associated with elderly ($P = 0.0001$); thus, 50.8% of the elderly had some associated pathology, while among adults 23.3% had it. Older adults were a chance of 1.8 times more to have an income, in this case, due to retirement, in comparison to adults [OR = 1.8 (1.2–2.7)]; however, 20.9% of elderly and 32.4% of adults did not have retirement or paid work. In conclusion, the elders refer to some underlying pathology. Influenza vaccine is one of the health requirements for older adults; however, a third of them did not have it. A fifth of older adults and almost a third of adults have not income, showing another element of vulnerability.

A28

INDICATORS TO POTENTIAL INFECTION AND CONDITIONS PREDISPOSING TO COVID-19 IN THE SAN LORENZO DEPARTMENT, SANTA FE PROVINCE, IN JUNE OF 2020

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Early detection of Covid-19 compatible signs-symptoms has been a resource to face the pathology and enable timely treatment and early isolation of affected person and their group of relationships, in order to control disease spread. The San Lorenzo Department, Santa Fe province, is one of the most populated in this province and a part of the Rosario metropolitan area. The general objective of this work was to assess indicators to potential infection Covid 19 and detect conditions predisposing to this disease risk in passers-by in the Department of San Lorenzo towns in June 2020. It was performed a cross-section study, for which was collected information from the towns of Capitán Bermúdez, Carcarañá, Fray Luis Beltrán, Puerto Gran San Martín, Roldán, San Lorenzo, Aldao, Cnel Arnold, Fuentes, Luis Palacios, Ricardone, San Jerónimo Sud, Timbúes and Villa Mugueta. In each town and during a day a strategic place was chosen due to high pedestrian traffic for the measurement of temperature and oxygen saturation to passers-by, carried out under the supervision of a pharmacist. In addition, information on age, sex, reference to influenza vaccine, and underlying pathologies were collected. Data analysis was performed using relative frequencies and 95% confidence intervals (95% CI). The Chi-square test was used to inferences. $P < 0.05$ was considered significant. Information was collected from 743 passers-by, so this involves an average of 14.1 individuals per 1000 inhabitants. The 94.6% (92.6–96.1%) were adults (18 years or older). The 10.1% (8.1–12.6%) of total presented a body-temperature between 37.0 and 37.6 °C while the rest was below 37°C. Oxygen saturation level was found on average at 96%. The protocol for Covid-19 was activated in a single person. Among the adults, 38.8% (35.2–42.5%) were male, 42.1% (38.4–45.8%) referred to the application of the influenza vaccine, and 31.7% (28.1–35.5%) presented some pathological condition. Arterial hypertension 54.9% (47.8–61.9%), diabetes 15.7% (11.0–21.4%), followed by respiratory conditions 11.3% (7.3–16.4%) and hypothyroidism 10.3% (6.5–15.3%) were the most frequent pathologies. Among people that reported underlying pathologies, approximately half were elderly (60 years or older) and although they reported significantly more influenza vaccine immunization than younger ones with underlying pathologies ($P = 0.00003$); 23% of elders with pathology did not have influenza vaccine. In conclusion, this work enables the activation of the Covid-19 protocol in a suspected case. Almost a third of the adult passers-by reported some pathological condition, particularly arterial hypertension. Almost a quarter of the elderly with underlying disease did not have influenza vaccine.

A29

DETECTION OF FACTOR V LEIDEN AND PROTHROMBIN G20210A IN PATIENTS WITH THROMBOSIS

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Thrombosis is a multifactorial disease, resulting from the interaction of acquired and inherited factors. Among the latter, two polymorphisms have been implicated more frequently, factor V Leiden (FVL) mutation and prothrombin gene (PT) *G20210A* mutation. The aim of this study was to evaluate the prevalence of these polymorphisms in patients with arterial and venous thrombosis, as well as patients with obstetric pathology who attended our service. Genomic DNA was obtained from peripheral blood samples of 134 patients with venous thrombosis (55), ischemic stroke (19), and obstetric pathologies such as recurrent miscarriages, preeclampsia, and placental thrombosis (60). Detection of FVL and prothrombin *G20210A* mutations was performed by polymerase chain reaction–restriction fragment length polymorphism (PCR–RFLP) method. FVL was found in a heterozygous state in 10 patients (7.5%), while PT 20210 was found in a heterozygous state in 8 of the studied patients (6%). Among the patients with obstetric pathology, the prevalence was 3.3% for FVL and 5% for PT 20210; among patients with venous thrombosis, the prevalence of these mutations was 10.9% for FVL and 7.3% for PT20210. Meanwhile, in patients with ischemic stroke, the prevalence was 10.5% and 5.3% respectively. We conclude that despite the low number of patients studied, we found an increase in the prevalence of these polymorphisms, especially in patients with thromboembolic disease, compared with the published prevalence for the general population of our country. (1.5–3% for FVL and 2% for PT 20210). This is consistent with other published studies that have evidenced an association between these genetic defects and venous thromboembolism.

A30

ANTI-CD20 AS A THERAPEUTIC OPTION IN CHILDHOOD ACQUIRED HEMOPHILIA A

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Acquired hemophilia A (AHA) is a rare disorder due to the production of autoantibodies against factor VIII procoagulant function. Clinical manifestations are extensive cutaneous purpura and internal hemorrhages in patients without previous coagulopathy. As it is an extremely rare disorder in pediatrics (0.045 cases/million/year), there is no treatment protocol. Although glucocorticoids are the first-line drugs, there is no consensus on other therapies. We report a case of a 2-year-old boy with a spontaneous hematoma in the left iliac flank, forearm, and legs. Neither he nor his twin brother and parents had a history of bleeding disorders. The presence of an inhibitor to Factor VIII was detected (32 BU/mL). As the patient did not respond to prednisolone (the inhibitor increased to 1363 BU/mL after five months of treatment), he was switched to Anti-CD20 (375 mg/m²) with a gradual titer decrease (1.2 BU/mL) in six months. We conclude that Anti-CD20 could be a good therapeutic option in AHA pediatric patients who do not respond to corticosteroids.

A31

EVALUATION OF THE WELFARE OF GROWING-FINISHING PIGS IN DEEP BED SYSTEMS AND OUTDOORS DURING THE WARM SEASON. PRELIMINARY RESULTS

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The objective was to evaluate the welfare of pigs in the growth-finishing phase in two production systems ("Outdoor" and "Deep bedding") through positive behaviors in the warm season of the year for different hours of the day. This experiment was carried out in the Swine Production Module of the Faculty of Agrarian Sciences-UNR. Animals weighing 24 ± 4 kg (castrated males and females) were randomly distributed: Outdoor (AL) (N = 63) and Deep bedding (CP) (N = 64). The CP sheds were composed of a dirt floor with barley bedding (1.4 m²/animal). In LA, the animals were housed in an 80 m x 66 m lot with a plant mat and a shelter (1.4 m²/animal) with barley straw. To evaluate welfare, qualitative behavioral indicators from Welfare Quality © (2009) were used: active (Ac), happy (C), friendly (A), and busy (O). Ac: animals that are not at rest; C: animals that ran, jumped, pivoted, or played with the bed shaking their heads; A: animals that are at least one meter from the evaluator; O: animals eating and drinking. The observations were made from October to January, two days a week at three different times (08:30, 11:30, and 18:30). The data were analyzed by means of a contingency Chi-square test using the statistical software GraphPad Prism. The results show that a greater number of animals in CP were C (X² = 8.224, *P* < 0.004) and A (X² = 8.668, *P* < 0.0032) in the afternoon (06:30 pm). In the morning there were no significant differences. On the other hand, it was shown that more AL animals were Ac (X² = 8.673 *P* < 0.0032) and O (X² = 140.1 *P* < 0.0001) in the afternoon. Although at 08:30 a.m. there were a greater number of Ac animals (X² = 78.83 *P* < 0.0001) in CP, a greater number of AL animals were O (X² = 12.80 *P* < 0.0003). During the noon hours, a greater number of CP animals were Ac (X² = 50.85 *P* < 0.0001), but they did not differ significantly between treatments in O. It is concluded that in CP systems, more animals show positive behaviors than AL. As there are more animals eating or drinking AL in the early morning and late afternoon, these

behaviors should be related to the temperatures to which they are subjected, and inquire if these behaviors could explain productive differences between the two systems.

A32

STAPHYLOCOCCUS AUREUS AND STREPTOCOCCUS BETA HEMOLYTICS GROUP B (*S. AGALACTIAE*) RECTOVAGINAL CO-INHABITATION, IN A PREGNANT WOMEN POPULATION DURING THE THIRD TRIMESTER OF GESTATION

Tavella D, Massonnat C, Morello B, Bordon M, Catalano F, Brandolisio N, Guzman P, Fogliato S, Revelli L, Sáez B, Córdoba L, Zafra M, Hails I, Bulfoni M, Ombrella A, Ponessa A, Gambandé T
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Staphylococcus aureus (SA) is one of the main pathogenic microorganisms which is the object of Public Health's interest, being responsible for a wide variety of infectious pathologies –both local and systemic–. SA may colonize the skin and mucosal sites in approximately 25% of healthy people (carrier status) and, in the literature, it is reported the possibility of direct contact transmission from the carrier to another individual, as occurs between mother and child during the passage through the birth canal. Furthermore, there exists a possible association among the colonization via *Streptococcus* β -hemolytic Group B (GBS/EGB) and SA. This bacteria's growing resistance towards antimicrobial agents (AMB) reduces the existing therapeutic arsenal, for which the SA rectovaginal colonization would become a risk factor for puerperal and neonatal infections. The purpose of this work was to study the vaginal and anal colonization with SA and GBS/EGB prevalence in pregnant women among 35–37 weeks' gestation. 262 rectovaginal samples were collected, with previously informed consent signature, and a survey regarding possible risk factors (surgery/in-hospital stay, AMB systemic use, nasal corticosteroids or other nasal sprays, tobacco use, bacterial skin infection, contraceptive methods, use of tampons and ovule, immunosuppressors, asthma, rhinitis, sinusitis, diabetes, genital herpes) with the objective of linking them with the carrying of SA. All samples were grown in MSA (Mannitol Salt Agar) (Britania®) and Todd- Hewitt Broth with antibiotics, which was in Columbia agar ovine blood 24 h later. Suspicious colonies were identified through conventional biochemical tests: mannitol fermentation, DNase presence and coagulase presence in cases of SA; and the Bile Aesculin, CAMP and/or antigen detection in cases of GBS/EGB. Sensitivity towards AMB was assessed through the diffusion Kirby-Bauer Method, according to the standards of the *Clinical and Laboratory Standards Institute (CLSI)*. Of the 262 rectovaginal studied samples, 18 (6.9%) turned out to have been colonized by SA and 23 (8.7%) colonized by GBS/EGB, proving co-inhabitation in 2 women, not finding any association with previously presented risk factors. Of the 18 SA positive cases, 3 turned out to be resistant to Methicillin (SAMR), not showing any parallel resistance. In consequence, they were interpreted to have been acquired in the community (SAMR-CA). Although these results are preliminary of ongoing work, there is a considerable percentage of SA isolation in pregnant women, which encourages us to continue with this research project.

A33

SOYBEANS: HOW SEEDTIME DELAY AFFECT THE HARVEST YIELD AND SOME ASPECTS OF THE INDUSTRIAL QUALITY OF THE GRAIN

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In our country, soybean crops (*Glycine max*) take place from the end of March until May, this depends on the productive region and if it is first or second seedtime. One relevant characteristic of this crop is the dehiscence that the pods which protect the seeds present; this is emphasized as time goes by after the crop's physiological ripening. The main causes of the delay in harvest are the climatic conditions and, especially, the rainfalls that produced important delays in the recollection, this caused yield losses, a decline in the seed's quality, and a dehiscence increase. This study aims to evaluate the effect of the crop's delay on yield (REND) and other variables related to the seed's industrial quality. This crop was sowed on 6/12/2018 (double-cropped soybeans) in Zavalla (33°01'S and 60°53'O), applying Cv DM 4615. The design used was a randomized complete block model with three replicates, and 4 row's plots (0.52 m x 6 m). The treatments consisted of 4 harvesting times: M1, commercial ripeness (CR) based on Fehr and Caviness scale (1977); M2, 21 days after CR; M3, 50 days after CR; and, M4, 78 days after CR. For each treatment, REND (kg/ha), PG (1000 weight gr.1000 weight⁻¹) test weight (PH; kg. hL⁻¹), oil percentage (Oi %), and protein (Pr %) in the seeds and Profat (%) were evaluated. The Oi % and Pr % measurements were obtained based on near-infrared spectroscopy (NIR5000, Foss, Denmark) over seed dry weight. All data were processed with ANOVA, comparing the averages using Duncan's test ($P < 0.05$). For Oi %, Pr% y Profat % Friedman's test was used ($P < 0.05$). It was observed that, for the season and Cv. analyzed, the crop's delay produced a yield and PG decline. The variables related to the bean's industrial quality Ac% and Profat were also affected by the delay when it was extreme, there were no substantial differences in Pr%. PH decrease might be caused (among other factors) by a higher respiration rate and the possible presence of fungal pathogens (which use the seeds as a substrate for their own growth). The higher dehiscence observed for the crop's

delay, in addition to the found and quantified losses in this study, indicated that it is necessary to provide the means to ensure cropping time when the soybean reaches CR, therefore avoiding losses in quantity and quality.

A34
**PRELIMINARY STUDY OF MORPHOMETRY IN BIRDS OF THE ACCIPITRIDAE
FAMILY**

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The morphometric data of the birds are useful to quantify their size in scientific studies. Measurements and weight vary between species, populations within the same species, between sexes, and depend on the age and condition of the individual. The objective of this work was to determine the morphometric values of three species of the Accipitridae family: mixed hawk (*Parabuteo unicinctus*), black eagle (*Geranoaetus melanoleucus*), and common harrier (*Geranoaetus polyosoma*). The study was carried out at the facilities of the Mendoza Ecopark (32 ° 53'04 " S 68 ° 53'21 " W) located on the eastern slope of Hill of Glory within the General San Martín Park property and in the Center SOS Wild Action Rescue located in the town of San Carlos (33°46'19"S 69°02'25"W). The raptors were captured with flakes and leather gloves inside their enclosures. Tape measure was used to measure total length, folded brim, extended brim, and tail length; gauge for tarsal length. The calculations were made using Microsoft Excel. The mean (\bar{X}) and standard deviation (SD) were calculated, they were expressed in millimeters. The results obtained were: male mixed hawk (N = 6) total length 272.5 ± 28.2, tail length 230 ± 12.6, tarsal length 82.5 ± 5.1, extended wing length 200 ± 18.9, folded wing length 295 ± 22.5; female mixed hawk (N = 7) total length 294.2 ± 9.7, tail length 245.7 ± 9.3, tarsal length 84.2 ± 4.4, extended wing length 211 ± 20.3, folded wing length 350 ± 8.1; male common harrier (N = 1) total length 270, tail length 190, tarsal length 80, extended wing length 210, folded wing length 390; female common harrier (N = 6) total length 315 ± 8.3, tail length 226.6 ± 23.3, tarsal length 82.5 ± 5.2, extended wing length 231.6 ± 19.4, folded wing length 430 ± 20.9; male black eagle (N = 9) total length 353.3 ± 20.6, tail length 255.5 ± 25, tarsal length 98 ± 5.7, extended wing length 269.4 ± 25.3, folded wing length 474.4 ± 12.3; female black eagle (N = 10) total length 408 ± 31.1, tail length 249 ± 21.3, tarsal length 103.7 ± 7.5, extended wing length 302 ± 31.1, folded wing length 507.5 ± 82.7. A difference in values is observed between males and females of the three species studied, with females having the highest values, particularly in wing lengths. Given the scarcity of morphometric data in living specimens, this is considered an important contribution that can serve as a reference for future research.

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