

**Sociedad de  
Biología de Cuyo**

**XXXVII Reunión  
Científica Anual**  
5 y 6 dic 2019 - San Luis

**Ciencia**



**Educación**

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*XXXVII Reunión Científica Anual de la Sociedad de Biología de Cuyo, San Luis, Argentina.*

# **Libro de Resúmenes**

## **XXXVII Reunión Científica Anual**

### **Sociedad de Biología de Cuyo**



**5 y 6 de Diciembre de 2019**  
**Centro Cultural José La Vía**

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the shortening of the fattening cycle, inferring lower greenhouse gases production (GHG), due to the lower total DM intake of the MEJ. The replacement of the 2.7 Tn of corn diminished the production of 1389.85 Kg CO<sub>2</sub> Eq. (equivalent carbon dioxide) of GHG, without even considering the positive costs of using second generation material as the filter residue. It is concluded that filter earth residues can be used as a component of bovine finishing rations and increasing efficiency in more than 20% in the MEJ category; that impact on environmental, social and economic benefit of the beef production process.

## 125. SEASONAL STUDY OF THE EXPRESSION OF THE S-100 PROTEIN IN PITUITARY PARS NERVOSA OF VISCACHA (*Lagostomus maximus maximus*)

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The pars nervosa (PN) of the neurohypophysis is mainly constituted by pituicytes and other neuroglial cells such as microglial cells, astrocytes and oligodendrocytes, endothelial cells of blood vessels and amylinic axons. The PN pituicytes express the S-100 protein that has a regulatory role within the cell and on different target cells. The aim of this work was to study the seasonal expression of S-100 protein in pituitary PN of adult male viscachas (*Lagostomus maximus maximus*). The animals were captured in their habitat during the most representative months of their annual reproductive cycle. This cycle has three periods: reproductive (RepP), gonadal regression (RegP), and gonadal recovery (RecP). Four pituitary glands of each period were removed and processed for optical microscopy. The S-100 protein was used as markers of pituicytes and their expression was detected by immunohistochemistry. The primary antibody used was the rabbit polyclonal anti-S-100 protein. Immunohistochemical staining was performed using a streptavidin-biotin-peroxidase complex method with the 3, 3'-diaminobenzidine tetrahydrochloride (DAB) as chromogen. A morphometric study was performed and the percentage of immunopositive area for S-100 (% IA-S-100) was measured. The results obtained from these periods were statistically analyzed. Most of the pituicytes presented a cytoplasmic immunostaining pattern. However, some of them also exhibited nuclear staining. The nuclei were round, oval and irregular in shape, with varying density of chromatin and an evident nucleolus. Numerous immunostained cytoplasmic processes in contact with blood vessels were observed. The % IA-S-100 varied throughout the annual reproductive cycle. The % IA during the RepP (13.09 ± 1.49) and RegP (9.77 ± 1.56) were significantly lower than in the RecP (25.61 ± 2.36; P < 0.001). These results demonstrated that the highest expression of S-100 protein was in the RecP. This period agrees with the increase of seasonal rainfall pattern during spring, so the viscachas have greater water availability in the environment. It is likely that the pituicytes participate in the seasonal regulation of the neurohormonal secretion through the expression of the S-100 protein. This protein is associated with functions such as modulation of enzymatic activity, stimulation of adenylate cyclase, maintenance of cell shape and mobility. However, further research is needed to elucidate the relationship between S-100 expression and the neurohormonal PN secretion of *Lagostomus*.

## 126. LEVELS OF METALS IN *Caracara plancus* NESTLINGS NEAR AN OIL PRODUCTION PLANT

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In Southern Patagonia, Argentina, one of the main production activities is the oil and gas industry. This type of industry is has been associated to increased heavy metals concentrations in the surrounding environment and biota. Birds are widely used to assess metal pollution in the environment, usually by determining heavy metals in blood, a non-invasive method. The objective of this study was to determine the levels of selected metals in the blood of the Southern Caracara (*Caracara plancus*) nestlings and evaluate the relationship between these levels and the distance between their nests and an oil production plant in Guer Aike Department, Santa Cruz province, Argentina. Blood samples were collected from 26 nestlings, between 3 and 6 weeks old, belonging to 8 Southern Caracaras' nests on November - December 2010 and December 2011. Blood levels of Pb, As, Zn, Se, Ni, Cu, Cr and V were determined using an inductively coupled plasma mass spectrometer (ICP-MS). Relation of blood heavy metal levels and the distance to the oil production plant was evaluated by a linear regression for each metal and date of sampling. Linear correlation of Pearson was performed to assess the relationship between metals blood concentrations. Additionally, a repeated measure analysis of variance (RMANOVA) was performed to compare the blood metals levels of nestlings between sampling sites. Associations were found between the blood levels of As, V and Cr and between Zn, V and Cr. No relationship was found between the distance to the oil production plant and the concentration of heavy metals in blood of Southern Caracara nestlings (p > 0.05). There was no difference in the concentrations of metals between sites (RMANOVA p > 0.05). In conclusion, the results of this study provide evidence that Southern Caracara nestlings are exposed to these metals, although the distance of the nests to the oil plant did not relate with variations in their blood levels. This is the first report of the blood levels of heavy metals in nestlings of *C. plancus* inhabiting Southern Argentine Patagonia and constitutes the baseline that provides a diagnosis of the environmental situation and alerts on the exposure of other species to these potentially toxic compounds.

## 127. ARE THERE HISTOLOGICAL CHANGES IN THE INTESTINE OF BIRDS IN A STRESS SITUATION?

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Any alteration of homeostatic stability is a stressful situation for living beings. This alteration triggers physiological changes in response to a stress situation. In birds this response is related to the release of glucocorticoids. Glucocorticoids influence the function of several tissues. Although there are a large number of studies that have investigated histological alterations of glucocorticoids in mammals, the knowledge of this area in birds is limited. The main glucocorticoid in birds is corticosterone (CORT). In previous experiments our research group found a marked relationship between treatment with CORT and an increase in the heterophil to lymphocyte index (H/L), an indicator of stress in birds. We found a decrease in body mass when the birds were treated with CORT; however, the intestine mass was not affected by CORT treatments. The objective of this work was to determine histological alteration in the intestine of *Passer domesticus* in response to different doses of exogenous CORT. To achieve our goal, 16 sparrows were acclimated to a laboratory condition with water and food *ad libitum*, then separating randomly in four groups and each group were exposed to a different concentration of CORT in drinking water *ad libitum* (control, 20, 40 and 80 mg/l) for 72 hours emulating a long-term stress situation. After the exposition the intestine was removed and a portion of proximal section was fixed in Bouin solution. Then the intestinal pieces were dehydrated and embedded in paraffin. Histological studies were performed on 5µm sections, stained by hematoxylin-eosin coloration, and examined by a light microscope. A morphometric analysis was performed using the software Image Pro Plus 5.0. The measured parameters were: intestinal perimeter, muscle layer, mucosa thickness, crypt width, villus width and villus height. The data were statistically analyzed by ANOVA with Tukey post-hoc test ( $p < 0.05$ ). Our results showed a proportional increase in the H/L index in concordance with CORT treatments. The crypt width significantly decreased in birds exposed to 80 mg/l of CORT. However, the other parameters did not show significant variation. In conclusion the effect of CORT in the H/L index checks the effectiveness of the treatment. The decrease in the width of the crypts could be related to an effect at the level of enterocyte renewal. This fact may indicate the first event of a histological alteration in the intestine of *Passer domesticus*. Supported by CyT-UNSL PROICO 2-0516 and FONCYT PICT-201-0595.

## 128. DETERMINATION OF CHEMICAL AND PHYSICAL QUALITY IN MEAT FROM HEAVY LAMBS

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Ovine meat production in central region of Argentina is profitable activity and allows faster return on investment than cattle breeding, however is a secondary production with low meat consumption per head. Promote the production of heavy lamb will allow increase the consumption by sale in cuts. Breed is a factor that affects the physical and instrumental quality of meat. The objective of this work is to evaluate the influence of two racial biotypes in heavy lambs on the physical and instrumental characteristics of meat. Twenty male lambs were studied, 10 from Corriedale breed (C) and 10 from Hampshire Down (HD). Weaning was carried out at 19-20 kg of live weight; then lambs were fed for 60 days on grazed in oats, alfalfa hay and supplemented with corn (220gr/animal/day). Sacrifice was made between 31-36 kg of live weight, after 12 hours of rest and fast. Hot carcass weight (HCW) was determined and after 24 hours at 0-4°C cold carcass weight (CCW) was taken. Temperature and pH were measured in left *Longissimus dorsi* (LD), (5th-10th rib) at 3 times post sacrifice: 0 hour, 45 min. and 24 hours. Left LD muscle samples (5th-13th rib) were taken to determine color by colorimeter, cooking losses (CL%), water retention capacity (WRC%) and tenderness with Warner Bratzler shear forces. Statistical analysis was performed using ANOVA. The results show average HCW values were  $14.11 \pm 1.38$  kg in C and  $14.00 \pm 0.86$  kg in HD and CCW  $13.82 \pm 1.44$  kg in C and  $13.59 \pm 0.75$  kg in HD. Chemical and physical determinations of meat quality did not showed significant differences between breeds in the majority of the analyzed parameters. Both genotypes presented pH 24 hours values above the optimum (5.6-5.9); therefore factors pre and post-slaughter should be evaluated. Tenderness results were acceptable according to standardized values (below 4.5). These meats showed lower values of WRC and CL than those observed in other studies. The color indicator a\* showed significant differences between biotypes ( $p < 0.05$ ), C exhibited higher values than HD. Racial type only influenced meat color, where C lambs showed a more reddish color than HD; the rest of meat quality characteristics evaluated were not affected by breed type and both exhibited acceptable meat quality values.

## 129. APOPTOSIS IN PITUITARY PARS DISTALIS OF MALE VISCACHAS: QUANTITATIVE ANALYSIS DURING THE REPRODUCTIVE CYCLE

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Apoptosis, or programmed cell death, is a genetically controlled cell process whereby cells induce their own death in response to certain stimuli. The balance between this process and cell proliferation is key to maintaining tissue homeostasis in pituitary gland during physiological endocrine events. A series of cysteine-dependent proteases, called caspases, participate in the intracellular mechanisms involved in apoptosis. The aim of this work was to localize and quantify apoptotic cells that express cleaved caspase 3 (CASP3) in different regions of pituitary pars distalis (PD) of adult male viscachas during their annual reproductive cycle (reproductive, gonadal regression and gonadal recovery periods). In each period, four pituitary glands were collected and processed for light microscopy. CASP3 was detected by immunohistochemistry and morphometrically quantified by image analysis. The immunoreactive