

Reproduction in Domestic Animals

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Editor-in-Chief: Heriberto Rodriguez-Márquez
Guest Editor: Manuel Hidalgo

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of the European Society for Domestic Animal
Reproduction (ESDAR)

Cordoba, Spain
27 – 29 September 2018

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P 190 | Effects of acute external stress during parturition on the neonatal adaptation in the horse

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Prolonged labor is often associated with poor neonatal outcome. We hypothesised that an external stressor at foaling increases the duration of labor and affects neonatal adaptation in horses. To apply stress, mares of group stress ($n = 6$) were moved to a novel and totally empty box directly after rupture of the allantochorion while control mares ($n = 5$) stayed in their straw-bedded foaling box. Time from rupture of the allantochorion to complete birth of the foal was recorded. In newborn foals salivary cortisol, plasma epinephrine concentration, heart rate (HR) and heart rate variability (HRV) was evaluated. Statistical analysis was made by ANOVA using a general linear model for repeated measures with time as within and group as between-subject factor. In stressed mares, length of stage 2 of labor was longer than in control mares (10.0 ± 1.6 vs. 5.4 ± 1.0 min; $p < 0.05$). Neonatal HR increased during the first 15 min after birth in both groups but thereafter was higher in control foals ($p < 0.05$). HRV did not differ between groups. During the first hour of life, cortisol concentration was higher in control than in stressed foals (60 min after birth 38.9 ± 5.7 vs. 16.6 ± 2.6 ng/ml). Directly after birth, epinephrine concentration was low in control but high in stressed foals (19.6 ± 2.7 vs. 38.8 ± 28.7 pg/ml). In control foals, epinephrine concentration had increased 30 min after birth while in stressed foals epinephrine remained constantly elevated (time $p < 0.001$, time \times group $p = 0.001$). In conclusion, an external stressor at foaling did not only prolong stage 2 of labor in mares but also affected neonatal adaptation with pronounced sympathetic activation in foals during and after prolonged labor.

P 191 | Effect of the pH pre-adjustment in the freezing and thawing extender on post-thaw boar sperm quality

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The modification of pH of the freezing extender can improve post-thaw sperm quality. The aim of this study was to determine the effect of modifying the pH of the freezing and thawing extender on the post-thaw semen quality. Semen pools from five boars were frozen in 0.5 ml plastic straws (1×10^9 sperm/ml) with lactose-egg yolk-glycerol extender with pH pre-adjusted to 4, 5, 6, 7, 8 and 9; and to the same pH in BTS thawing extender. Total and progressive motile sperm (%TMS and %PMS) and kinetic parameters were evaluated by CASA, live sperm (%LS) by fluorescence microscopy (SYBR14/propidium iodide) and sperm with normal acrosomal ridge

(%NAR) were evaluated by phase contrast microscopy after 90 min post-thawing. Statistical analysis was performed by GLM (SAS 9.0) and the means were compared by Tukey test ($p < 0.05$). The values of %LS, %NAR, %TMS and %PMS increased significantly with the increasing of pH, up to the value of 8 where the sperm showed the highest values for these parameters (%LS: 57.7; %NAR: 53.3; %TMS: 48.7; %PMS: 46; $p < 0.05$). Respect to kinetic parameters the pH 7, 8 and 9 showed better velocity and linearity characteristics, than the rest of pHs tested. In conclusion, the pre-adjustment to pH 8 of the freezing and thawing extender would improve the post-thawing semen quality.

P 192 | Precision supplementation of protein enriched Opuntia cladodes and reproductive outcomes in anestrus goats exposed to the male effect: estrus induction and selected blood metabolites

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The possible effect of protein enriched *Opuntia megacantha* Salm-Dyck cladodes targeted supplementation upon changes in serum concentrations across time of total protein (TP), urea (UR), cholesterol (COL) and glucose (GLU) as related to estrus induction (EI%) in adult anestrus goats exposed to the male effect, was evaluated. Cladodes or prickly pear arise from the stem of opuntia replacing the leaves in the photosynthetic function, having a high content of fiber, water and energy, although a reduced protein content. In early May, anestrus Alpine-Saanen-Nubian \times Criollo adult goats ($n = 38$, 26°N) were randomly assigned to: (1). Protein-enriched Opuntia (PEO; $n = 12$; 44.5 ± 1.7 kg live weight (LW), 2.5 ± 0.14 units body condition score (BC); 29.8% CP, 2.27 Mcal ME kg^{-1}), (2). Non-enriched Opuntia (NEO; $n = 14$; 41.9 ± 1.5 kg LW, 2.5 ± 0.1 units BC; 6.4% CP, 1.8 Mcal ME kg^{-1}), and (3). Control (CC; $n = 12$; 45.1 ± 1.5 kg LW, 2.5 ± 0.1 units BCS). NEO and PEO goats were individually supplemented with cladodes (160 g d^{-1} ; 0900–1000 h), yet, PEO was enriched in a fermentation bioreactor (1% of *Saccharomyces cereveciae*, +1% urea +0.1% of ammonium sulphate). Supplementation included a 10d adaptation period plus 20d of exposition to sexually active males. Neither LW ($p > 0.05$) nor BCS ($p > 0.05$) differed among groups, yet, an increased ($p < 0.05$) EI % occurred in PEO & NEO vs. CONT (100%, 57%, 42%, respectively). However, no differences among treatments occurred neither regarding their general averages