

Reproduction in Domestic Animals

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heights and weights were taken. Ovarian ultrasonography records were used to evaluate follicular and luteal development. Puberty was defined as the time a corpus luteum (CL) was first observed. A minimum of two separate CL structures were observed for verification. Overall, heifers fed the canola diet tended ($p = 0.09$) to be heavier between 8 weeks of age and puberty, but there were no differences in their heights ($p = 0.13$). At 24 weeks of age, heifers fed the canola diet tended to be heavier than heifers in the soy group (183.4 ± 5.9 kg vs. 164.9 ± 5.8 kg; $p = 0.07$), however there were no differences in their heights (109.4 ± 1.2 cm vs. 106.8 ± 1.2 cm; $p = 0.20$). The maximum follicle diameter observed at 24 weeks of age was 11.6 ± 0.7 mm vs. 10.7 ± 0.6 mm ($p = 0.39$) for canola and soy treatments, respectively. Heifers fed the soy diet were older (42.4 ± 1.2 weeks vs. 35.7 ± 1.2 weeks; $p = 0.0004$) and tended to be heavier (285.8 ± 7.6 kg vs. 259.5 ± 7.9 kg; $p = 0.06$) at puberty compared to the canola fed heifers. The precise effect of phytoestrogens on reproductive function has not been fully elucidated and is dependent on the level of inclusion, basal diet, and stage of physiological maturity of the female being supplemented. It is critical to understand how a diet high in phytoestrogens may affect the attainment of puberty in dairy heifers as this can influence age at first breeding and subsequent age at calving. In summary, heifers fed a soybean calf starter diet achieved puberty later and tended to gain weight slower than heifers fed a canola calf starter diet.

Key Words: Sexual maturation, heifers, phytoestrogens, soybean, canola

2404

Expression of kisspeptin neurons in the arcuate nucleus of the goat during the follicular and luteal phases – A preliminary study

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Hypothalamic kisspeptin (KP) is regarded as a key factor regulating GnRH release from the hypothalamus. Using immunohistochemical staining techniques, neurons expressing KP have been identified in the hypothalamus of many species. However, there seems to be no report on the change of expression of KP in the female goat hypothalamus over physiological stages. A preliminary trial was therefore carried out to study the pattern of KP expression in the arcuate nucleus of sexually mature native goats (Abadeh goats: age: 3–5 year, mean BW: 40 kg) during the follicular ($n = 2$) and luteal ($n = 2$) phases of the ovarian cycle, as determined by plasma progesterone analysis. The diencephalons were removed following fixation of the brain using 10% formalin solution. Sections ($30 \mu\text{m}$) were prepared from the cranial (rostral), middle and caudal regions of the arcuate nucleus, and stained immunohistochemically using the AC#566 kisspeptin antibody. The data, subjected to the test of normality and homogeneity of variance, were subsequently analyzed by Proc Genmod of the SAS, using a model in which the effects of the stage of cycle, region of the arcuate nucleus and their interaction were included. No significant interaction was found between the phase of the cycle and the region of the arcuate nucleus ($p = 0.420$). A higher number of KP-containing neurons was identified in the arcuate nucleus in the follicular (185 ± 90) compared to the luteal (117 ± 71) phase of the cycle ($p < 0.03$). The distribution of KP neurons was different between the regions of arcuate nucleus ($p < 0.0001$). A higher number (mean \pm SD) of KP neurons was recorded in the caudal region (229 ± 46) than in the middle region (143 ± 46), which was higher than in the cranial region (43 ± 13). In a subsequent trial, using a larger number of animals, we intend to study the distribution of KP neurons, in cyclic and anestrus goats.

Key Words: Goat, kisspeptin, follicular phase, luteal phase, arcuate nucleus

2405

Transrectal ultrasonography in measurement of uterine diameter in ewe lambs after progestagens stimulus

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The beginning of sexual activity for both males and females is very important when it comes to animal rearing, especially due to the profit gains that only begins when the animals return to the productive phase (Monteiro et al., 2010). At puberty progesterone cyclical changes occur followed by estrogen stimulation and it is likely that previous exposure to progesterone change the mechanisms by which tissues respond to estrogen in the female prepubertal causing the final development of the reproductive tract (Lewis & Berardinelli, 2001). The aim of this study was to evaluate the response of prepubertal Santa Ines ewe lambs to exogenous administration of norgestomet (CRESTAR[®]). Eighteen Santa Ines prepubertal ewe lambs with average of 160 days-old and 29.6 ± 0.32 Kg of weight and 91.6 ± 2.5 of corporal mass index (Monteiro et al., 2010) were used. The females were randomly assigned to three different groups. In the first group (G1) the ewe lambs were isolated from the other two groups and were not subjected to any treatment. In the second group (G2) the females were submitted to the insertion of ear implants of 1.5 mg norgestomet (CRESTAR[®]) for 12 days. In the last group (G3), the females were submitted to the insertion of ear implants of 1.5 mg norgestomet (CRESTAR[®]) for 24 days (two consecutive insertions). After treatments (first removal (M1) and second removal (M2) of the implants), during 5 days, every 24 h all females were submitted to transrectal ultrasound exams to measurement the diameter of uterus. For rectal examinations the Aloka Prosound[®] was used with a 7.5 MHz prostatic probe. Data was analyzed by ANOVA followed by SNK test (Student Newman Keuls $p < 0.05$). The means and standard deviations of measurements of diameter of the uterus in the right and left in M1 were 0.93 ± 0.10 and 0.95 ± 0.06 for G1, 1.16 ± 0.12 and 1.10 ± 0.17 for G2 and 1.11 ± 0.11 and 1.2 ± 0.10 for G3, respectively. In M2 were 1.02 ± 0.04 and 0.98 ± 0.05 for G1, 1.11 ± 0.01 and 1.10 ± 0.08 for G2 and 1.17 ± 0.07 and 1.2 ± 0.12 for G3, respectively. In the first and second moments measures of right and left uterine diameter of G1 were statistically different from G2 and G3 ($p \leq 0.05$) but G2 and G3 did not differ between them. It can be deduced that the Santa Ines lambs subjected to administration of a norgestomet promoted final development of the reproductive tract but no difference between one treatment (12 days of exposure) or two treatments (24 days of exposure) was observed. Financial support of FAPESP (2009/15270-8 and 2009/18419-2).

Key Words: Ewe lambs, progestagens, puberty, ultrasound, uterus

2406

Effect of melatonin treatment on plasma IGF-I level, and gene expression of β -lactalbumin, BCL2, BAX, and BCLX in the mammary epithelium in sheep

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Long-term melatonin treatment used for cycle induction affects negatively milk production in lactating dams. One of the proposed way of action is that persistent melatonin signal has inhibitory effect on the growth hormone (GH) – insulin-like growth factor-I (IGF-I) – mammary gland axis. On the other hand significant data from literature showed the favorable, anti tumor-growth impact of melatonin treatment when used for estrogen-sensitive breast cancer, both in