

remodeling process by participating on metalloproteinases (collagenases) regulation mechanisms. The opening and closing of the mammalian cervix are regulated by molecular cervical collagen remodeling with a concomitant increase in the activity of collagenases at oestrus [2]. This suggests that the periovulatory hormonal changes drive the collagen remodeling and dilate the cervical canal. Studies on the role that Hsp27 may play on these molecular changes are scarce. The aim of this work was to investigate if there is a differential expression of Hsp27 in the ovine cervix during the oestrous cycle. Cervical samples were obtained from Corriedale adult ewes at Days 1 (n=4), 6 (n=6) or 13 (n=4) after oestrus detection (Day 0). The Hsp27 expression was assayed by Western-blot and quantified by densitometry using Image J software. We analyzed the data by using ANOVA (Mixed Proc, SAS) considering the fixed effect of day of oestrous cycle. The Hsp27 expression (arbitrary units) tended to be higher on day 1 ( $25.5 \pm 3.2$ ) than on day 6 ( $17.8 \pm 5.1$ ) while it was higher on day 1 than on day 13 ( $13.0 \pm 3.8$ ) of the estrous cycle ( $P < 0.05$ ). To the best of our knowledge, this study shows the first evidence of the expression of Hsp27 on the cervix of ewes during the oestrous cycle. Our previous studies have shown lower concentration of collagen on Day 1 of the oestrous cycle than during the luteal phase with concomitant higher activity of MMP-2 metalloproteinases [2]. Thus, since on this work we demonstrated higher concentration of Hsp27 on Day 1 than 13 we conclude that Hsp27 may have a role on the increased activity of collagenases at oestrus.

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### PW1557 - Hormonal ovulation induction in prepubertal GYR heifers

#### Authors and co-authors:

María da Silva Rosa Paola (1), Abdalla Ferraz de Barros Beatriz (2), Pasolini Renata (3), Jorge dos Reis Camargo Agostinho (4), Varella Serapião Raquel (5), Slade Oliveira Clara (6)

(1) *Embrapa Dairy Cattle, LRA-CESM, 27.640-000, Valença, Brazil*

(2) *Embrapa Dairy Cattle, LRA-CESM, 27.640-000, Valença, Brazil*

(3) *PESAGRO-RIO, LRA-CESM, 24.120-191, Niterói, Brazil*

(4) *PESAGRO-RIO, LRA-CESM, 24.120-191, Niterói, Brazil*

(5) *PESAGRO-RIO, LRA-CESM, 24.120-191, Niterói, Brazil*

(6) *Embrapa Dairy Cattle, LRA-CESM, 27.640-000, Valença, Brazil*

Gyr breed (*Bos indicus*) presents great relevance for Brazil dairy systems, and studies about puberty in these animals are scarce. However, the delayed age at first parturition (approximately 35 months) suggests delayed puberty as a natural characteristic of this breed. Thereby, the hormonal treatment is a strategy to induce puberty, accelerating their reproductive activity and consequently the economic returns. The aim of this study was to analyze the follicular dynamics in response to hormonal treatment to induce puberty in prepubertal Gyr animals. Therefore, 13 heifers with an average age of  $18 \pm 1.44$  months received a vaginal implant (day zero=d0) containing 1.0g progesterone (SINCROGEST®, Ouro Fino Animal Health, Cravinhos, SP, Brazil) for 12 days. At d12, the implant was removed and animals received 0.5 mg of estradiol cypionate (E.C.P.®, Zoetis, Campinas, SP, Brazil) and 200 IU of equine chorionic gonadotropin (ECG - Folligon®, Intervet/Schering-Plough, Cotia, SP, Brazil). The larger follicles and corpus luteum (when present) were measured by transrectal ultrasonography daily from d0 to d18, and twice per week from d18 to d53, to detect later ovulation. Animals were grouped according to their response (ovulation, late ovulation, non-ovulation), in order to associate follicular growth to ovulation outcome (treatment a posteriori). Means were compared by ANOVA and Tukey ( $p=0.05$ ). Our results demonstrate that 31% (n=4) of the animals ovulated until d18 (d15 to d16,  $78 \pm 12$ h after E.C.P.) - classified as group 1 (G1); 23% (n=3) ovulated after d18 - classified as group 2 (G2); and 46% (n=6) of the animals did not ovulate, classified as group 3 (G3). Follicular growth (mm) was assessed daily and divided into two periods: d9-d14, and d14-d18. At the first period (d9-d14), G1 ( $0.94 \pm 0.17$ a) presented



higher follicular growth than G2 ( $-0.08 \pm 0.026b$ ) and G3 ( $0.09 \pm 0.06b$ ). At the second period (d14-d18), G2 ( $0.36 \pm 0.45a$ ) showed higher growth than G3 ( $-1.14 \pm 12.16b$ ). The average size of d14 follicles was increased in G1 ( $11.52 \pm 0.51a$ ), comparing to G2 ( $10.13 \pm 0.48b$ ), and G3 ( $9.73 \pm 0.40b$ ). For G1 animals, the ovulatory follicle size was  $10.69 \pm 1.78$ , and corpus luteum mean size at the day after ovulation was  $12.05 \pm 2.44$ . The average weight (kg) of the animals did not differ between groups (G1:  $243.5 \pm 20.8a$ ; G2:  $228.5 \pm 28.78a$ ; G3:  $243 \pm 13.3a$ ). In this study, we found that it is possible to induce puberty in approximately half (54%) of Gyr animals and furthermore, the weight is not associated with response to treatment. Considering time after ECP injection, ovulation in pre pubertal Gyr heifers occurs later than would be expected for pubertal animals, and follicle growth and follicle size in d14 are related to ovulatory response.

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### PW1558 - Effects of blood $\beta$ -hydroxybutyric acid (BHBA) levels on the response to Ovsynch protocol in primiparous cows

Authors and co-authors:

SALAR Seckin (1), BASTAN Ayhan (1)

(1) Ankara University/Faculty of Veterinary Medicine, Department of Obstetrics and Gynecology, 06110, Ankara, Turkey

The aim of this study was to investigate the effects of blood BHBA levels of primiparous cows with  $<1200$  mmol/L blood BHBA levels during the early postpartum period on follicle development and pregnancy rate after the Ovsynch protocol.

In the study, 156 primiparous healthy Holstein cows were used. In order to determine blood BHBA levels, blood samples were taken from the coccygeal vein in all cows, and samples were evaluated using rapid ketometer (Precision Xtra®, Abbott). The animals were divided into two groups as low-BHBA ( $n = 85$ ;  $400-799$  mmol/L) and moderate-BHBA ( $n = 71$ ;  $800-1199$  mmol/L). Cows having  $\geq 1200$  mmol/L blood BHBA levels were not included in the study. All cows were treated with the Ovsynch-48 (GnRH-7d-PGF2 $\alpha$ -48h-GnRH-16h-TAI) at 52 DIM and inseminated regardless of whether they showed estrus or not by the same practitioner. Ultrasonography was performed to determine dominant follicle diameter and presence of corpus luteum at the day of GnRH1, PGF2 $\alpha$ , GnRH2 and 24 and 48 h after 1st GnRH and PGF2 $\alpha$  injections, response to the GnRH1 and pregnancy status after 27-30 days post-insemination. Continuous variables were checked for normality and homogeneity of variance using the Kolmogorov-Smirnov and Levene tests, respectively. The association between groups with continuous variables was analyzed by Student's T-test (using the assumption of parametric test) and the Mann-Whitney U test. The association between categorical variables and the study groups was analyzed using the Chi-square test.

Although differences of age and DIM between the groups were not significant ( $p > 0.05$ ), differences of milk yield at day 0 of Ovsynch and the average milk yield in the last seven days between groups were statistically significant ( $p < 0.001$ ). DF diameters between groups on the day of, 24 and 48 h after GnRH1 were not different ( $p > 0.05$ ). Although differences of DF diameter between the groups on the day of, 24 and 48 h after PGF2 $\alpha$  were not statistically significant ( $p > 0.05$ ), differences of DF diameter were observed between the groups at the time of AI ( $p = 0.039$ ). It was determined that the ovulation response to GnRH1 was 62.4% ( $53/85$ ) and 50.7% ( $36/71$ ) in low-BHBA and moderate-BHBA groups, respectively. Percentage of cows ovulated with GnRH1 was similar ( $p > 0.05$ ) between the groups at 24 and 48 h after GnRH1. The atresia rate of follicles in low-BHBA (17.6%) and moderate-BHBA (21.1%) animals was similar ( $p > 0.05$ ). Pregnancy rate (P/AI) was 30.77% ( $48/156$ ) in all animals at 27-30d post-inseminations. When compared, P/AI in the low-BHBA group (38.82%;  $33/85$ ) was higher ( $p = 0.039$ ) than that of the moderate-BHBA group (21.13%;  $15/71$ ), respectively.

Consequently, blood BHBA level negatively affects the DF diameter at the time of insemination in the Ovsynch protocol and higher BHBA levels in primiparous cows (with  $< 1200$  mmol/L blood BHBA concentrations with the Ovsynch protocol applied) adversely affect the pregnancy rates after the protocol.





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