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134 FOLLICULAR DYNAMICS OF GYR AND HOLSTEIN OOCYTE DONORS KEPT UNDER TROPICAL CONDITIONS

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Bovine *in vitro* production is highly relevant for dairy systems in Brazil, and the main breeds used as oocyte donors are Gyr (G) and Holstein (H). This study aimed to evaluate the ovarian follicular dynamics of G and H oocyte donors kept under tropical conditions to detect differences that could guide improvement of follicular wave synchronization protocols for ovum pickup. Fourteen cyclic cows (6 H and 8 G), assessed twice each (after a 14-day interval), had their oestrus cycle synchronized by the use of 1.0 g of progesterone via intravaginal device (Ourofino, Brazil) and administration of 2 mg of oestradiol benzoate (EB; Day 0). Withdrawal of progesterone device was followed by 7.6 mg of cloprostenol administration (Day 7); EB (1 mg) was administered after 24 h (Day 8, 0 h), and the animals were evaluated every 12 h by ultrasound for 6 days (0–132 h). All evaluations are reported regarding EB administration (0 h). Videos from each ovary were stored and processed using the ImageJ software (http://rsb.info.nih.gov/ij), by measuring the diameter of each visualised follicle. All procedures were approved by local ethics committee. Ovulation time ($G = 42.0 \pm 8.3$; $H = 42.5 \pm 6.2$), ovulatory follicle (F1) diameter ($G = 11.5 \pm 1.8$; $H = 12.4 \pm 2.0$), and F2 diameter ($G = 7.2 \pm 1.9$; $H = 7.4 \pm 2.7$) did not differ ($P > 0.05$) between breeds. Growth rate (mm day^{-1}) after ovulation was similar ($P > 0.05$) between breeds for each follicle (F1 = G: 0.6 ± 0.2, H: 0.8 ± 0.1; F2 = G: 0.5 ± 0.1 H: 0.4 ± 0.1, F3 = G: 0.2 ± 0.1, H: 0.3 ± 0.1). In H group, the F1 growth rate was higher ($P < 0.05$) than F2 and F3, but there was no difference ($P > 0.05$) in G group. Follicle deviation was identified 120 h after EB in the G group (~78 h after ovulation) and 132 h in the H group (~90 h after ovulation), and at that time F1, F2, and F3 follicle diameters were 8.0 ± 0.3, 6.6 ± 0.5, and 5.3 ± 0.3 for G (120 h), respectively; 8.8 ± 0.7, 7.2 ± 0.4, and 6.2 ± 0.3 for H (132 h), respectively. There was no difference between the size of F1, F2, and F3 between breeds at any time, except at 132 h, when H F3 was higher ($P < 0.05$) than G F3. Regarding the follicular population, follicles smaller than 3 mm were more numerous in G animals at all evaluated moments, and differed at 0 ($G = 7.1 \pm 1.1$; $H = 2.5 \pm 0.5$) and 132 h ($G = 5.6 \pm 0.8$; $H = 1.5 \pm 0.3$). Number of follicles between 3 and 8 mm increased in H compared to G at 24 (14.4 ± 1.0), 36 (15.7 ± 1.3), and 132 h (18.3 ± 1.4). Comparing 3- and 8-mm follicles in G between times, an increase ($P < 0.05$) in number was detected from 36 h onwards, comparedto 0 h (0 h: 9.2 ± 1.0; 36 h: 13.6 ± 1.4). This increase was not significant in H group (0 h: 13.7 ± 1.1; 132 h: 18.3 ± 1.4). The main findings of this study are that the moment of deviation and the population of follicles smaller than 3 mm and between 3 and 8 mm differs from Gyr and Holstein oocyte donors. Those observations suggest ovum pickup is better performed slightly later in Holstein donors than in Gyr, and can contribute to improvement of follicular wave synchronization protocols for each of the breeds in tropical conditions.

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135 SHORT-TERM OVARIAN EFFECTS OF UNILATERAL OVARIECTOMY IN COWS

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Classical studies established that the removal of one of the paired organs produces a compensatory effect on the remaining organ. In the bovine ovary this aspect has not been examined in detail. We took advantage of follicular and luteal profiles from a previous study to retrospectively examine the effects of ovariectomy before and after ovulation on follicular dynamics of the remaining ovary in cattle. To characterise the prevalence and distribution of tyrosine kinase receptor A in the bovine ovary, the original design involved unilateral ovariectomy of cows at different stages of the periovulatory period. For the purposes of the present study, we combined data into 2 groups, a preovulatory group ($n = 6$ cows) and a post-ovulatory group ($n = 5$ cows), to provide sufficient data for statistical interpretation. The cows were examined daily by transrectal ultrasonography to determine the ovarian status. For the preovulatory group, a luteolytic dose of prostaglandin was administered when the dominant follicle of the second follicular wave reached ≥10 mm, and the ovary containing the dominant follicle was removed within 48 h. For the post-ovulatory group, ovariectomy was performed on the ovary containing the newly formed corpus luteum between Days 2 to 6 (Day 0 = ovulation). Unilateral ovariectomy was performed by colpotomy under caudal epidural anaesthesia using a chain ecraseur. After ovariectomy, cows were examined daily by ultrasonography from ovariectomy to the completion of an interovulatory interval (period between 2 ovulations). Single-point data were compared between groups by *t*-test, and binomial data were compared between groups by Fisher's exact test. Double ovulations were detected in 3/6 ovariectomized in the preovulatory period and 2/5 ovariectomized in the post-ovulatory period. The first ovulation after ovariectomy tended to occur earlier in the preovulatory group than in the post-ovulatory group ($P = 0.08$), which was attributed primarily to the development of oversized persistent dominant follicles (~20 mm in diameter for ≥7 days in absence of a corpora lutea) in 2 of 5 cows in the post-ovulatory ovariectomy group. The interovulatory interval after ovariectomy was shorter in the post-ovulatory group than in the preovulatory group (14.6 ± 0.3 *v.* 20.3 ± 0.6 days; $P = 0.01$). No distinct patterns were detected in follicular and luteal dynamics between the pre- and post-ovulatory ovariectomy groups. The number of follicles ≥3 mm detected by ultrasonography was greater in the post-ovulatory ovariectomy group than in the preovulatory group on Days 6, 7, 8, and 16 of the first interovulatory interval after ovariectomy. In conclusion, results of this retrospective study support the concept that follicular and luteal effects of removal of one ovary are influenced by the timing of ovariectomy relative to ovulation. A prospective study involving a comparison of ovarian dynamics of the same cows before and after unilateral ovariectomy will provide a better understanding of the disruption that take place and the mechanisms controlling it.

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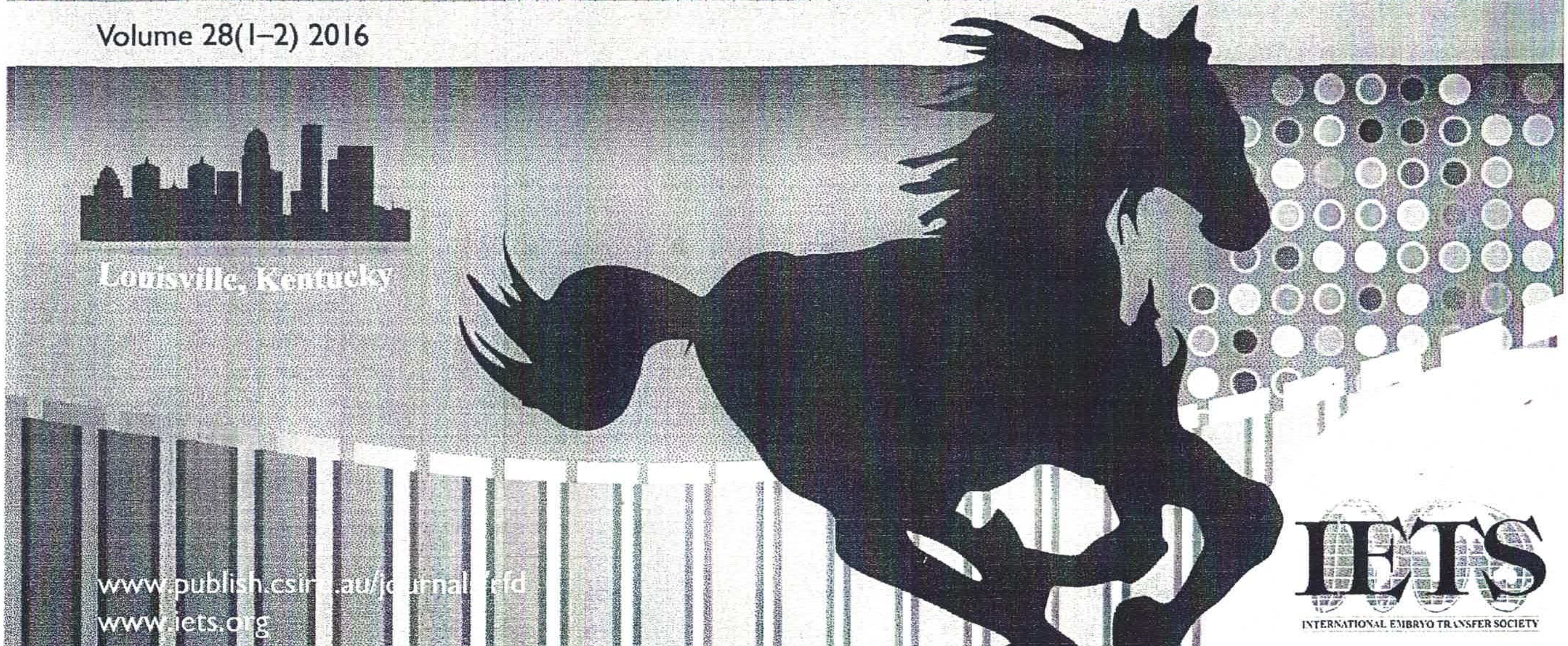

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