



A143 OPU-IVP and ET

Influence of breed composition of crossbred cows between Gir and Holstein breeds in performance as oocyte donors

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The aim of this study was to investigate the effect of the breed composition on the quality of oocytes obtained from Gyr and Holstein crossbred donors used in embryo IVP system. Crossbred cows were assigned to two groups: Gh (lower Holstein composition, between 40.2 and 46.6%; n=10) and Hg (higher Holstein composition, between 71.4 and 87.5%; n=10). Donors were subjected to ultrasound guided ovum pick up (n=10 OPU sessions per group) performed by the same technician in which cumulus-oocyte complexes were collected and classified morphologically (according to number of layers of cumulus cells and homogeneous cytoplasm) in Grades I, II, III and nonviable. The evaluated parameters compared between groups were: mean number of GI, GII, GIII, and total oocytes obtained per procedure, viable oocyte rate, oocyte recovered rate, mean number of follicles between 2 and 8 mm detected and number of follicles detected at right and left ovary. Means were compared between groups using Student T test and the rate of viable and recovered oocytes by Chi-square test. Statistical analysis was performed using GraphPad InStat 3 software, considering the significance level of 5%. 474 COCs (294 for the Gh group and 180 for the Hg group) were collected. No significant differences ($p>0.05$) between groups Gh and Hg, respectively, were observed for the mean number of GI (0.1 ± 0.32 vs. 0.1 ± 0.32), GII (1.9 ± 1.73 vs. 0.9 ± 1.60), and GIII (7.2 ± 4.52 vs. 4 ± 3.83) oocytes, mean viable oocytes (9.2 ± 5.92 vs. 5 ± 5.08), rate of viable oocytes (31.94 vs. 27.78%), mean of visualized follicles in the right ovary (16.9 ± 5.30 vs. 13.3 ± 4.69) and left ovary (12.5 ± 6.15 vs. 11.5 ± 6.08), and recovered oocyte rate (128.41% vs. 109.27%). Regarding the number of 2-8mm detected follicles, a difference ($p<0.05$) between Gh (22.6 ± 6.22) and Hg (15.4 ± 5.42) groups was observed. We conclude that no differences were detected in most characteristics, except on the average of 2-8mm follicles, which was increased in donors with lower Holstein composition. It is possible that the high rate of recovered oocytes for both Hg and Gh groups are due to puncture of follicles smaller than 2 mm, which ultrasonographic visualization is difficult due to technical limitations. Therefore, the results suggest that the degree of Holstein breed do not affect the quality or retrieval of oocytes from crossbred donors, considering the parameters and breed compositions evaluated, however, we observed a positive effect of Gyr breed on visualized follicular population.

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