THE TIME INTERVAL BETWEEN FSH-P ADMINISTRATION AND OVARIAN ASPIRATION INFLUENCES THE DEVELOPMENT OF CATTLE OOCYTES.

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It was recently shown that depriving the ovary of exogenous FSH for 1, 2 or 3 days following a bolus injection of FSH influences the quality of the recovered oocytes at slaughter (Blondin and Sirard, Theriogenology 47:184. 1997). The objective of this new study was to compare the developmental competence of oocytes from cows which were stimulated for 3 days with FSH-P (Folltropin-V™) followed by a time interval of 36, 48 or 60h (n=11, 11 and 12 respectively) before blind transvaginal aspiration. The ovaries of heifers with a palpable or functional corpus luteum (day 3-15) were aspirated to remove all large follicles 2 days prior to being injected with either 6 doses of saline (S), 6 doses (20 mg/ml) of FSH (F) (Folltropin-V™) or a decreasing regimen (3,3,2,2,1,1 ml) (Fd). Follicles were counted and classified (medium; 5-10mm and large; >10mm) with ultrasonography before each aspiration. The oocytes were recovered at the farm and transferred to pre-equilibrated maturation medium upon recovery. Oocytes were classified, matured, fertilized, and developed in vitro in groups using techniques described previously (Blondin and Sirard, Mol Reprod Dev 42:114-121. 1995). Oocytes obtained at the slaughterhouse the same day (9 repetitions, n= 374) served as weekly control. On a per animal basis, a total of 6.8, 18.8 and 18.1 follicles were counted for S, F and Fd respectively including 1.5, 5.7, 5.7 large and 1.5, 10.7 and 10.7 medium follicles. Recovery rates were similar across treatments (42 to 50 %). A mean of 3.4, 9.2 and 7.6 oocytes were recovered for treatments S, F and Fd respectively and 1.5 (44 %), 7.8 (85 %) and 6.2 (82%) were enclosed in a non-expanded cumulus or a corona layer. Development rates of these oocytes were calculated by counting embryos with 32 nuclei or more at day 6.5. When oocytes were recovered 36h after the last injection, an average of 1, 2.6 and 2 embryos were obtained with S, F and Fd respectively, when recovered at 48h, 0.75, 4.25 and 1 embryos and when recovered at 60h, a total of 0, 2.5 and 2.7 embryos were obtained per animal. Development rates with these selected oocytes varied from 0 (S 60h) to 63% (F 48h). Variance analysis was performed and T test analysis indicates that embryonic rate with treatment F is significantly higher than Fd at 48h ($P<0.05$) and S (all times) ($P<0.05$). The reduced effect of the Fd regimen could be due to the decreasing FSH support during follicular growth or the lower total amount of FSH given. In conclusion, these results indicate an advantage of using moderate (3 days) follicle stimulation followed by a period of FSH starvation to obtain maximal embryonic production.

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