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Does the addition of cow serum during the recent post partum period influence the initial embryonic development?

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The transition period of dairy cows, which is characterized by multiple metabolic disorders, extends from the last three weeks of gestation until the first three weeks of lactation. During this period, the food intake is not sufficient as to supply all the nutritional needs, which will be enhanced, leading to negative energetic balance (NEB). It is known that this NEB holds direct influence over fertility, affecting in a negative way the oocyte maturation, the "cumulus" cells expansion, and consequently the initial embryonic development. The objective of this study was to evaluate the effect produced by the addition of dairy cows blood serum in the maturation environment during the recent post partum and the end of lactation periods over the initial embryonic development. Bovine ovaries coming from local slaughterhouses, were collected and aspirated. The oocyte cumulus complexes (COCs) were randomly divided into three treatments groups of 50 COCs each: T0: ovine serum as control, T1: 10.8±4.8 days-post partum cows serum, T2: 35.4±3.8 days-post partum cows serum. Later, the COCs were incubated on at 39°C with 5% CO₂ for 24 hours in the maturation medium (TCM 199 Gibco®, LH/FSH, pyruvate and antibiotics) enriched with serum (10%). The insemination was proceeded with a concentration of 1x10⁶ at spermatozoon/ml using gradient Mini-Percoll® for the spermatid selection. After the insemination, the COCs were incubated for 18 hours. The zygotes remained in the SOFaa medium supplemented with ovine serum (5%) and pyruvate (0,33mmol) in the same conditions as the MIV for 7 days. The day of the insemination was considered as day 0, the cleavage rate was assessed on day 3 and the global embryonic development rate (blastocysts/number of inseminated) on day 7. According to preliminary results of three routines, the cleavage rate was lower than T1 at T0 and T2 (P < 0.001) the percentage of cleavage of T0 was of 81.6±14.0%, of T1: 44±12.1% and of T2: 70±9.8. The embryonic development rate (blastocysts/inseminated) on T0 was of 16,0%±5.5, T1: 21%±2.92, and T2: 16,0% ±13.0. From this data it can be suggested that the addition of cows serum during the recent post partum in the maturation medium showed a lower cleavage rate and similar embryonic development, compared to the other treatments. Overall, a bigger number of routines and complementary analysis are necessary to better understanding of the effects of supplementation with cow serum during the post partum over the bovine oocyte's maturation in vitro and later initial embryonic development.