shown a reduction in the competence of prepubertal oocytes can be partly attributed to the smaller size of the oocyte, differences in protein synthesis and energy metabolism, delayed migration of cytoplasmic organelles and reduced activity of some enzymes. The aim of this study was to evaluate the influence of injectable long-acting progesterone in embryonic development of prepubertal Nelore females. The OPU and treatments were carried out on the farm João Martins, in the county of Guatapará, São Paulo, Brazil, and laboratory stages of production *in vitro* embryo, the Department of Preventive Veterinary Medicine and Animal Reproduction, UNESP-Jaboticabal. They were select 21 heifers, Nelore, prepubertal of 127 animals. The selection was based on age, bodyweight, and absence of corpus luteum. The selected animals were aged 18 to 20 months and not pregnant with average bodyweight was 268 kg. The donor oocytes were divided into 3 experimental groups crossover design as follows: Group (P0, $n = 21$), animals in this group received 2 placebo oily solution applications (1 mL), interval of 7 days beginning 14 days (Day 14) before the first aspiration (Day 0); Group (P7; $n = 21$): the animals received a placebo solution oily application (1 mL), 14 days (Day 14) and progesterone (P4) injection (150 mg) 7 days (Day 7) before aspiration; Group (P14, $n = 21$), animals in this group received 2 injections P4 applications (150 mg) with an interval of 7 days, the first 14 days (Day 14) and the second 7 days (Day 7) before aspiration. There were a total of 3 OPU an interval of 28 days. After the first follicular aspiration groups were divided again so that all the animals go through all treatments. After confirming the homoscedasticity (BoxCox) and normal (Cramér-von Mises test) data, was conducted the analysis of variance (ANOVA). The Tukey test was used for comparisons of mean variables. The groups P0, P7, and P14 had an average of 4.04, 5.03, and 4.43 embryos produced by session. To assess embryonic development, it was observed that the treated groups (P7 and P14) and control (P0) produced a greater amount of expanded blastocyst, 3.40 ± 3.74, 2.57 ± 2.67 and 3.14 ± 3.41, respectively ($P > 0.05$). It was observed differences ($P < 0.05$) in the early blastocyst production in the treated groups produce a greater amount. The use of long-acting injectable progesterone improved did not delay embryo development *in vitro* but did not alter the production of embryos from prepubertal Nelore heifers.

175 CONSEQUENCES OF *IN VITRO* PRODUCTION OF EMBRYOS WITH OR WITHOUT COLONY-STIMULATING FACTOR 2 IN CULTURE MEDIUM ON MORPHOMETRIC FEATURES OF THE BOVINE CONCEPTUS AT DAY 86 OF GESTATION

L. G. B. Siqueira[A,B], *P. Tribulo*[A], *A. C. Denicol*[A], *M. S. Ortega*[A], *V. M. Negrón-Pérez*[A], *J. Kannampuzha-Francis*[A], *and P. J. Hansen*[A]

[A]University of Florida, Department of Animal Sciences, Gainesville, FL, USA;
[B]Embrapa Gado de Leite, Juiz de Fora, MG, Brazil

In vitro production (IVP) of embryos can disrupt fetal and placental development and increase risk of abnormal fetal growth. Maternal factors play a role in developmental programming of the early embryo. Colony-stimulating factor 2 (CSF2) is present in the oviduct and endometrium and has improved competence of the pre-implantation embryo to establish pregnancy in cattle. The objective was to determine whether CSF2 during embryo culture alters fetal development and alleviates abnormalities associated with IVP. Holstein oocytes were matured and fertilised *in vitro* with X-sorted semen from a Holstein bull. Putative zygotes were cultured in SOF-BE1 at 5% CO_2 and 5% O_2 for 5 days and then randomly assigned to receive vehicle (IVP-control) or 10 ng mL^{-1} CSF2 (IVP-CSF2). Grade I blastocysts were transferred on Day 7 to Holstein recipients that were previously randomised to receive an IVP-control or an IVP-CSF2 embryo. A third group of cows included in the randomization was assigned to be artificially inseminated on Day 0 using the same bull as for IVP (AI). Pregnancy was terminated on Day 85 or 86. Statistical analysis was performed by analysis of variance using the GLM procedure of SAS with contrasts for AI *v.* (IVP-control+IVP-CSF2) (contrast 1; C1) and IVP-control *v.* IVP-CSF2 (contrast 2; C2). Results are least squares means ± s.e.M. A total of 23 morphometric measurements of placenta and fetus were made on 9 AI, 12 IVP and 7 CSF2 female singletons. Conceptuses derived by IVP (IVP-control and IVP-CSF2) differed from those derived by AI for 4 characteristics including fetal bodyweight (142.9 ± 4.7, 157.2 ± 4.4, and 162.6 ± 6.1 g for AI, IVP-control and IVP-CSF2, respectively; C1, $P = 0.0237$), eviscerated weight (102.9 ± 3.4, 113.6 ± 3.2, and 112.2 ± 4.4 g; C1, $P = 0.0602$), crown-rump length (CRL) (13.7 ± 0.2, 14.0 ± 0.2, and 14.7 ± 0.3 g; C1, $P = 0.0434$; C2, $P = 0.0631$) and umbilical cord diameter (0.85 ± 0.08, 1.1 ± 0.08, and 0.91 ± 0.1 cm; $P = 0.0519$). Note that while IVP-CSF2 conceptuses were generally similar to those for IVP-control, CRL tended to be highest for IVP-CSF2. Also, umbilical cord diameter for IVP-CSF2 was similar to AI and lower than IVP-control. Data from 1 fetus in the IVP-CSF2 group was excluded from analysis because it had a phenotype consistent with large offspring syndrome. Bodyweight (354 g) was 2-fold larger than other fetuses (average = 155 g) and placental weight was 7-fold greater (1505 *v.* 211 g). In addition, organs were enlarged and severe ascites and hemorrhagic cotyledons were observed. In conclusion, IVP resulted in increased fetal size and umbilical cord diameter without other significant effects on placental morphometry. CSF2 did not alleviate adverse effects of culture on fetal growth, exacerbating effects on CRL, but did reduce effects of IVP on umbilical cord diameter. Gene expression analysis may be useful for further characterisation of effects and elucidation of mechanisms involved.

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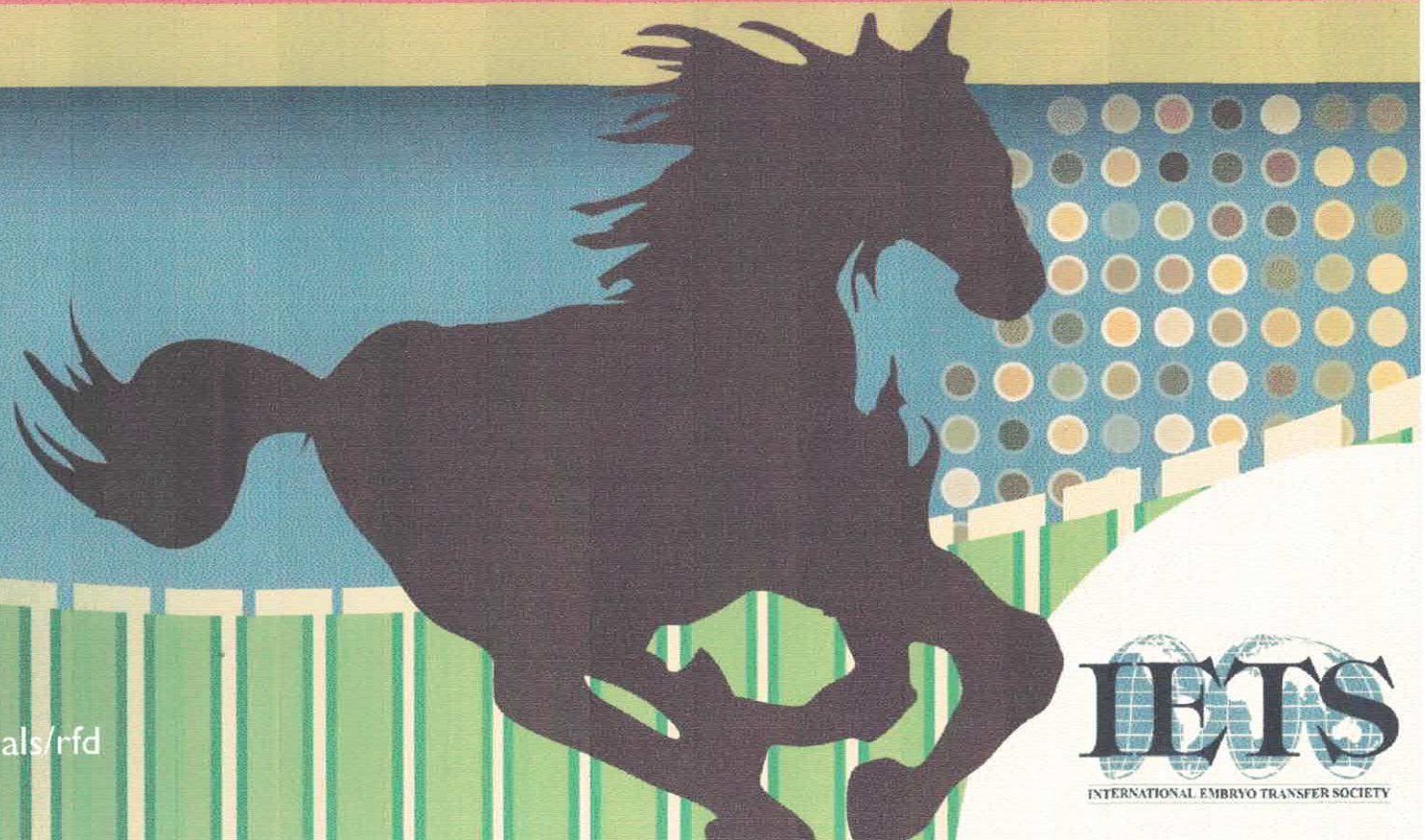

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