Proceedings of the 31st Annual Meeting of the Brazilian Embryo Technology Society (SBTE); Cabo de Santo Agostinho, PE, Brazil, August 17th to 19th, 2017. Abstracts.

A243 Embryology, developmental biology, and physiology of reproduction

Maternal breed influence in Holstein-Gyr reciprocal F1 embryos

Clara Slade Oliveira[1], Raquel Varella Serapião[2], Agostinho Jorge dos Reis Camargo[2], Célio Freitas[1], Lílian Tamy Iguma[1], Luiz Sérgio de Almeida Camargo[1], Rui da Silva Verneque[1]

[1]EMBRAPA Gado de Leite, Valença, RJ, Brasil; [2]Pesagro-Rio, Niterói, RJ, Brasil.

Since several reproductive particularities exist between Bos taurus and Bos indicus, a common question is whether maternal contribution affects embryo developmental capacity. We compared reciprocal embryo development, in order to detect the most efficient maternal breed for F1 production in tropical conditions, and understand possible origins for any disparities. Crossbred embryos were produced by fertilization of Gyr oocytes with Holstein semen (HGyr) or by fertilization of Holstein oocytes with Gyr semen (GHol). Blastocysts were transferred to recipients and post-transfer development was assessed until birth. Spermatozoids bearing X-chromosome were used in all replicates of the experiment for IVF, and only viable oocytes (grade I, II and III). Mean number of viable oocytes and blastocysts were compared between groups using Mann Whitney Test. Rates of viable oocytes (percentage of viable oocytes in regards to total oocytes), cleavage, blastocyts, and pregnancy 30 and 60 days, calving, and embryonic loss were compared between groups using Fisher's Exact Test. Gestation length was compared between groups using T Test. We performed 88 OPU sessions in Gyr and 90 OPU sessions in Holstein donors, and retrieved 1040 Gyr oocytes and 609 Holstein oocytes. Oocyte quality, assessed by mean viable oocyte number (Gyr=8.94±0.69, Holstein=4.20±0.33; P<0.0001) and viable oocyte rate (Gyr=74.73%; Holstein=62.07%; P<0.0001), were decreased in Holstein oocytes. Embryo cleavage (HGyr, 562/694 – 80.97%; GHol, 255/343 – 74.34%; p=0.015) was decreased in GHol group. Overall, we observed a reduction of 2.39 fold in the total number of F1 blastocysts obtained in GHol group in this experiment (GHol 106 vs HGyr 254), and comparison of mean blastocyst number per OPU revealed decreased numbers for GHol (GHol 1.36±0.15, HGyr 3.34±0.35; P<0.0001). Blastocyst rate (per cleaved embryos) was similar between groups (GHol 41.56, HGyr 45.19; p=0.36). Post implantation development revealed similar pregnancy rates 30 days after IVF (GHol 38.57, HGyr 47.92; p=0.24) and 60 days after IVF (GHol 31.43, HGyr 44.44; p=0.08), but decreased calving rates for GHol group (GHol 22.86, HGyr 40.97; p=0.01). Embryonic loss was increased for GH group (GHol 40.74, HGyr 14.49; p=0.01). Gestation length of F1 embryos was affected by reciprocal cross (GHol 281.23±0.71, HGyr 286.72±0.96; P<0.0001). We conclude despite similar genetic background, maternal/paternal breed has deep influence on embryo development in bovine. We acknowledge CNPq (Grant 309271/2009-6), Embrapa (Grant 01.13.06.001.05.01.003), Faperj (Grant 111.466/2014) and Fapemig (Grant PPM 00167/15) for financial support.