

COMPARISON OF OOCYTE AND EMBRYO PRODUCTION AMONG *Bos taurus*, *Bos indicus*, AND *indicus-taurus* DONOR COWS

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In the recent years, Brazil has become the leading country in the world for the number of embryos produced *in vitro* (Thibier M 2009 IETS Embryo Transfer Newsletter **22**, 12-19). This is partly due to the large numbers of *Bos indicus* in Brazil, making up about 80% the total cattle. The mean oocyte production per ultrasound-guided follicular aspiration from *Bos indicus* is higher those for European breeds (Pontes JHF *et al.* 2009 Theriogenology **71**, 690-697). In the present study, we analyzed 5,407 ovum pick up (OPU) and compared the production of total ($n = 90,086$) and viable ($n = 64,826$) oocytes and the number of embryos produced *in vitro* from Gir (*Bos taurus indicus*), Holstein (*Bos taurus taurus*), 1/4 Holstein x 3/4 Gir, and 1/2 Holstein-Gir crossbreed cows. To obtain oocytes OPU was repeated from 4 to 7 times (5.7 ± 2.4) in each donor cow aged from 3 to 7 years (5 ± 2.3) during a 12-mo period. COCs ($n = 90,086$) obtained were classified according to the presence of cumulus cells and the oocyte cytoplasm aspect. The viable oocytes ($n = 64,826$) were *in vitro* matured for 24 hours at 38.8 °C and atmosphere of 5% CO₂ in air. Frozen sexed semen (Gir and Holstein, 2×10^6 /mL) was used for fertilization. The fertilization was carried out (18-20 hours) and the presumed embryos were cultured for 7 days in the same conditions than IVM. Data were analyzed by ANOVA. On average, 16.7 ± 6.2 oocytes were obtained per OPU/IVF procedure and 71.96% were considered viable. The mean numbers of total oocytes per OPU/IVF procedure were 17.1 ± 4.4 for Gir cows ($n = 617$), 11.4 ± 3.9 for Holstein cows ($n = 180$), 20.4 ± 5.8 for 1/4 Holstein x 3/4 Gir ($n = 44$), and 31.4 ± 5.6 for 1/2 Holstein-Gir crossbreed females ($n = 37$, $P < 0.01$). The mean numbers of viable oocytes per OPU/IVF procedure were 12.1 ± 3.8 for Gir cows, 8.0 ± 2.6 for Holstein cows, 16.8 ± 5.0 for 1/4 Holstein x 3/4 Gir, and 24.3 ± 4.7 for 1/2 Holstein-Gir crossbreed females ($P < 0.01$). The average number of embryos produced by OPU/IVF were 3.2 (12,243/3,378) for Gir cows, 2.2 (2,426/1,138) for Holstein cows, 3.9 (1,033/267) for 1/4 Holstein x 3/4 Gir, and 5,5 (1,222/224) for 1/2 Holstein-Gir. The average number of embryos produced per IVF session from 1/2 *taurus* x *indicus* donor cows was greater ($P < 0.01$) than from *Bos indicus* cows. The number of recoverable and viable oocytes and the number of embryos produced *in vitro* from *Bos indicus* donors were higher than *Bos taurus* females. Therefore, the highest oocyte yield collected and the greatest embryo production was obtained from 1/2 *taurus* x *indicus* females.

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