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Superstimulation prior to *ovum pick-up* to improve *in vitro* embryo production in buffalo donors

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The aim of this study was to evaluate follicular population and oocyte and embryo production of buffalo donors submitted to superstimulation with FSH prior to *ovum pick-up* (OPU) and *in vitro* embryo production (IVEP). A total of 54 buffalo donors (18 heifers, 15 primiparous and 21 multiparous) was randomly allocated to one of two groups (Control or FSH), in a *cross-over* experimental design. All animals received an intravaginal P4 device (1.0 g) plus EB (2.0 mg, intramuscular [im]) at a random stage of the estrous cycle (Day 0). Buffalo donors in the Control group received no further treatment, whereas buffalo donors in the FSH group received a total dosage of 200 mg of p-FSH on Days 4 and 5 in four decreasing doses 12 h apart (57, 57, 43, and 43 mg). On Day 7, the progesterone device was removed, and OPU was conducted in both groups. Data were analyzed by the GLIMMIX procedure of SAS 9.3[®]. There was no difference between groups (P = 0.53) regarding the total follicles aspirated, however, the FSH treatment increased (P < 0.001) the proportion of large (> 10 mm; FSH = 16.2% and Control = 2.0%) and medium-sized (6-10 mm; FSH = 36.3% and Control=6.1%) follicles available for the OPU procedure. The viable oocyte rate was greater in buffalo donors treated with FSH compared to Control group (Heifers = 58 vs. 50%; Primiparous = 56 vs. 47%; Multiparous = 57 vs. 50% respectively; P = 0.03). Also, buffalo donors treated with FSH had a higher blastocyst rate (Heifers = 34 vs. 17%; Primiparous = 28 vs. 27%; Multiparous = 32 vs. 24%; P = 0.03) and embryo yield per OPU-IVEP session (Heifers = 3.7 ± 0.7 vs. 1.8 ± 0.5; Primiparous=2.7 ± 0.8 vs. 2.4 ± 0.6; Multiparous=2.6 ± 0.7 vs. 2.0 ± 0.5; P = 0.07). These results provide evidence that superstimulation with FSH increased the proportion of medium-sized follicles available for the OPU procedure. Consequently, the treatment also enhanced the proportion of viable oocytes for culture and resulted in greater blastocyst rates and embryo yield per OPU-IVEP session in buffalo. It was concluded that superstimulation with FSH prior to OPU increased the IVEP efficiency in buffalo donors.