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Superovulatory Response following Ablation of Dominant Follicle in Buffaloes

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Large variability and unpredictability in superovulatory responses remain a major limiting factor in the embryo transfer programme in buffalo. Follicular growth in buffalo occurs in two or three waves (Baruselli *et al.*, 1997) and first wave begins at the start of the estrous cycle marked by development of dominant non-ovulatory follicle. The second wave begins at mid cycle while the third wave appears at 16.80±1.22 day of the estrous cycle. The presence of first wave dominant follicle at the time of initiation of superovulatory treatment has been reported to adversely affect superovulatory response in buffalo (Taneja *et al.* 1995). The present study was designed to evaluate the effect of presence or absence of dominant follicle on superovulatory response in buffaloes.

Materials and Methods

Fourteen clinically healthy and normal cycling buffaloes were randomly divided into two groups. In group I (treated; n=7), dominant follicle was aspirated by ultrasound (Pie Scanner-200, Pie Medical Equipments B.V., Netherland) guided transvaginal needle aspiration on Day 9 (Day 0 = Day of estrus). While in Group II (control; n=7) dominant follicle was not ablated. Buffaloes were similarly given superovulatory treatment from day 10 of estrous cycle with a total dose of 600 mg NIH-FSH-P1 per animal i/m in tapering split doses over 5 days at 12 h intervals. Luteolysis was induced with Tiaprost trometamol (0.98 mg i/m) 72 h after initiation of superovulatory treatment. The buffaloes were observed for external signs of heat such as swollen and edematous vulva, mucus discharge, frequent micturation, bellowing, mounting after 24 h of Tiaprost trometamol administration. The buffaloes in estrus were artificially inseminated with frozen thawed semen at 12 h intervals for three times after onset of superestrus. Both the ovaries of superovulated buffaloes were palpated per rectum a day before embryo collection for number of CL to evaluate superovulatory response. Embryo flushing was performed by gravitational method on day 5 ½ of estrus using Rusch catheters, tubing (IMV, L'Agle, Cedex, France) and embryo concentrator (Em con, Immuno systems, Inc., WI, USA). Data generated during the study were analyzed and differences between means were compared using analysis of variance.

Results and Discussion

In Group I all buffaloes (100%) superovulated, whereas, in Group II only six out of seven buffaloes (85.71 %) responded to superovulatory treatment. Both mean ovulation rate and total ova/embryo recovered in treated group were not different (6.85±0.55 vs 6.14±0.91 and 1.00±0.43 vs 0.57±0.29) from the control group.

The results of present study indicated that dominant follicle ablation did not enhance the superovulatory response. In control group, wherein dominant follicle was not removed, superovulatory response was less as compared to treated group. Previous studies have recorded that 33% animals did not respond to superovulatory regime even after following standard superovulatory protocol (Misra and Pant, 2006).

The overall ovulatory response per animal (3-7 CL) might be satisfactory for buffalo but the results of present study have shown low recovery (1.00±0.43 and 0.57±0.29, in treated and control groups, respectively) compared to maximum number of total and viable embryos per non-surgical collection in the buffalo that