OCCURANCE OF OVARIAN ACTIVITY IN POSTPARTUM ANOESTRUS INDEGENOUS COWS OF ASSAM FOLLOWING OLFACTORY CUES AND EXOGENOUS PROGESTERONE TREATMENT

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ABSTRACT

A total of 28 indigenous Assam cows at 45 days postpartum were selected and divided into 4 groups as treatment groups (A, B, C) and control (D) consisting of 7 animals in each group. The animals in group A were isolated from the male and received daily oro nasal treatment with bull urine for 16 weeks, in group B, the cows were kept with a fertile bull and were given oronasal treatment as in group A. In group C, the cows received exogenous hormone treatment and in group D, animals were left untreated. The postpartum cows attained early onset of estrus when received treatment i.e. in group A 69.40±3.9 days (50-80 days), in group B 67.30±4.4 days (52-84 days), in group C 33.60±1.54 days (29-40 days) in comparison to group D which was 254.86±11.42 dyas (196-294 days). All treated cows exhibited sign of estrus with 100% estrus response. The duration of estrus was recorded as 21.71±0.92 hours (17-24 hours) in group A, 22.86±1.08 hours (18-26 hours) in group B, 26.86±1.93 hours (21-33 hours) in group C and 18.76±0.97 hours (17-22 hours) in group D. Induction of estrus was accompanied with ovulatory response and the cows that ovulated conceived on insemination.

Key words: Ovarian activity, Postpartum, Indigenous Cows, Norgestomet

INTRODUCTION

The indigenous cattle of Assam are resistant to various diseases, adaptable to the adverse environmental conditions and a quality milk producer. However, their attainment of puberty is very late (3 years) and so is the resumption of postpartum estrus (8-10 months). This breed needs augmentation of reproductive performance for a sustainable rural dairy industry and there have been many attempts to enhance the resumption of ovarian activity and early estrus in the postpartum period by a single injection 100-500µg GnRH given at different times after calving (Britt et al, 1974; Ball and Lamming, 1983) and these have given variable results which were very expensive. A priming pheromone in the urine of bull could be used to induce postpartum ovarian activity in dairy cows and pheromonal cues from the bull had been used to accelerate puberty in heifers (Izard and Vanderbergh, 1982). Therefore the present experiment was conducted to test whether olfactory cues from the bull urine are sufficient to induce estrus in postpartum indigenous cows of Assam.

MATERIALS AND METHODS

Twenty eight (28) numbers postpartum indigenous cows of Assam at 45 days after parturition were equally divided into the treatment (group A, B, C) and control group (group D), consisting of 7 animals in each group. The animals were maintained under semi intensive system of rearing and they were supplied with concentrate mixture @ 1.5 Kg/animal/day and drinking water ad libitum. They were vaccinated against H.S. and B.Q. following deworming at 15 days ahead of vaccination. The cows in group A were isolated from male and subjected to daily oronasal treatment with bull urine for 16 weeks. About 3 ml of bull urine was

spread into each nostril and 1 ml into the open mouth. Urine was collected from a fertile bull and stored at -16°C for 15 weeks before the treatment (Vanderbergh et al, 1975). In group B, the animals were kept with a fertile bull and were given oronasal treatment with bull urine for 16 weeks as in the previous group (group A). In group C, the animals receieved Crester ear implant, containing 3mg norgestomet and 5mg estradiol valerate. On day 9 of the treatment the implant was removed and on the day of implant removal PMSG (Folligon) @ 400 IU was administered intra muscularly to each of the treated animals. In group D, the animals were left untreated and served as control. The animals of both treatment and control groups were observed for occurance of estrus. Data obtained from the different treatment were analysed statistically as described by Snedecor and Cochran (1967).

RESULTS AND DISCUSSION

Estrous could be induced early in all animals following oronasal treatment with bull urine (group A), bull exposure and oronasal treatment with bull urine (group B) and by treating the animals with exogenous hormone (group C) compared to the animals of control group (group D).

Animals attain early onset of estrus when they received treatment, 69.40±3.9 days with a range of 50-80 days in group A, 67.30±4.4 days, with a range of 50-84 days in group B, 33.60±1.54 hours with a range of 29-40 hours in group C and 254.86±11.42 days with a range of 196-294 days in group D. All the treated animals exhibited signs of estrus and estrus was 100 percent.

The duration of induced estrus was 21.71±0.92 hours (17-24 hours) in group A, 22.86±1.08 hours (18-26 hours) in group B, 26.86±1.93 hours (21-33 hours) in group C and 18.67 ±0.97 hours (17-22 hours) in control group D respectively. Analysis of variance revealed that a significant difference ($p<0.01$) in duration of estrus was observed among 4 different groups. Ovulation occurred in 5 (71.43%) group A, 5 (71.43%) group B and 7 (100%) animals in group C. The animals that ovulated after induction of estrus were conceived on insemination and the percentage of conception was 100 percent. However, in control (group D) ovulation occurred in 5 animals following natural estrus after a lapse of 254.86±11.42 days of experiment and the percentage of conception was 71.43.

In this experiment 71.43% animals ovulated after olfactory stimulation with urine and bull exposure. It was shown in other studies that tactile, visual and auditory stimuli contribute to the male effect, even if odor is the predominant signal (Shelton, 1980; Cohen-Tannoudgi et al, 1986; Claus et al, 1990). Again Knight et al, (1983) reported in sheep that olfactory stimulation with ram's wool induces ovulation in 40-53% acyclic Romney Marsh ewes. Our results indicated that bull urine contain a priming pheromone that hasten the onset of estrus in postpartum cows. Similar results have been given by Izard and Vanderbergh (1982) who reported that puberty occurred earlier in heifers exposed to urine from a matured bull.

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