ABSTRACT

This study was designed to evaluate the use of norgestomet ear implant and PMSG to induce ovulatory oestrus in post-partum anestrus Murrah buffaloes. Twenty post-partum Murrah buffalo cows were selected for this study. Rectal palpation of ovaries was done twice at a 10-day interval and the buffaloes were confirmed as anestrus based on the palpation of ovaries. All the twenty buffaloes were given 6 mg of norgestomet ear implant and 2 ml of Syncromate-B injection containing 5 mg of oestradiol valerate and 3 mg of norgestomet. The implants were removed on day 10 and 500 IU of PMSG was administered intramuscularly at the time of removal. The response to the treatment was 100%. The onset, duration and intensity of estrus were assessed. The average time taken for the onset of estrum was found to be 37±0.433 h (36-40 h) and the average duration of estrum was 20.4±0.674 h (18-24 h). The percentages of animals which exhibited intense, normal and weak intensity of estrum were 35%, 50% and 15% respectively. The animals were inseminated with frozen semen at 48 and 72 h after the removal of the implants. Seven animals (35%) conceived with the first artificial insemination and four animals (20%) conceived with the second artificial insemination. The overall conception rate over two inseminations was 55%.

It is evident from this study that the norgestomet ear implant with PMSG successfully induced estrum in Murrah buffaloes and the conception rate of 55 percent is comparable with that of normal cycling buffaloes.

Keywords: PMSG, norgestomet, anestrus, conception

INTRODUCTION

Buffaloes contribute greatly to the economy of the rural masses and to more than 50% of the total milk production in India. Further these animals are best suited for our changing agroclimatic conditions. But the low fertility in buffaloes characterised by prolonged post-partum anestrus, continues to be a major constraint to the economic production of Murrah buffaloes (Porwal et al., 1981). True anestrus is the condition in which both the ovaries are small, smooth, inactive with the absence of graffian follicle or corpus luteum and characterised by cessation of sexual cycle and psychic manifestation of estrus (Nayak et al., 2009). Higher incidence of anestrus due to inactive ovaries in buffaloes than in cows has been reported by Tanwar et al. (2003). The dry non-pregnant buffaloes have become a financial burden to the milk man, hence such animals are sold for throw away prices which results in less margin.
of profit. Moreover the valuable genetic material thus goes to slaughter in large numbers especially around the metropolises like Chennai, Mumbai and Calcutta. So there is an urgent need for improving the reproductive efficiency in Murrah buffaloes by using new reproductive techniques. The answer to this problem is induction of oestrum in post-partum anestrus buffaloes with synthetic progesterone. Rao and Rao (1984) and Kathiresan et al. (1995) have tried various hormonal treatment with variable success. The present study was conducted on anestrus Murrah buffaloes to see the efficacy of norgestomet ear implant with PMSG in relation to the induction of estrus and conception rate.

**MATERIALS AND METHODS**

**Experimental animals**

The post-partum anestrus Murrah buffaloes attending the Peripheral Veterinary Hospital, Madhavaram, Madras Veterinary College and the buffaloes available at the Central Cattle Breeding Farm, Alamadhi, Chennai were used for this study. The buffaloes were 4-7 years old, apparently healthy, parous and with the history of anestrum for about 3-7 months after calving. The animals were fed with adequate green fodder and required concentrates. The anestrus condition was confirmed by palpation of the ovaries per rectum twice at a 10-day interval. The animals with small, smooth and inactive ovaries and not showing estrus activity were selected as anestras. A total of 26 animals were identified for this study. Six anestrus Murrah buffaloes were maintained without treatment as control.

**Induction and detection of estrum**

The buffaloes were given a 10-day treatment with subcutaneous ear implant containing 6 mg of norgestomet (Intervet, Holland) with intramuscular injection of Synchronate B (Intervet, Holland) containing 5 mg estradiol valerate +3 mg norgestomet at the time of inserting the implant. On the 10th day the implants were removed and an injection of 500 IU PMSG (Folligon, Intervet Pvt. LTD) was given. Estrus detection was carried out by external observation and by twice daily rectal examination of genitalia. The intensity of the induced estrus was assessed based on the estrual signs as per Rao and Rao (1984) with slight modification as weak, moderate and intense. The onset and duration of estrum were recorded.

**Breeding and pregnancy diagnosis**

The buffaloes were inseminated with frozen semen at 48 and 72 h after the removal of the implant. All the animals were kept under observation after insemination and those exhibiting next cyclical estrus were inseminated again at 12 h after the onset of the estrum. Pregnancy diagnosis was done by rectal examination at 45 days after the last artificial insemination.

**RESULTS AND DISCUSSION**

Estrus was induced in twenty post-partum anestrus Murrah buffaloes by using the norgestomet ear implant system and PMSG. The onset duration and the intensity, of the induced estrum were assessed. All the estrus induced buffaloes were inseminated twice at induced estrus and those exhibiting estrus again were also inseminated. Subsequently pregnancy was assessed at 45 days after the last artificial insemination.

All the treated buffaloes (100%) exhibited estrus signs like vulval edema, vaginal mucous
membrane congestion, mucus discharge, standing to be mounted by herd mates etc. This was in accordance with the findings of Nayak et al. (2009) that 100% estrus was achieved in anestrus buffaloes with Crestar implant with PMSG combination in true anestrus buffaloes. The intensity was classified as intense, moderate and weak oestrus as presented in Table 1. Among the treated buffaloes 35%, 50% and 15% buffaloes exhibited intense, moderate and weak estrus, respectively. None of the animals in the control group exhibited signs of estrus. Comparatively in treated buffaloes, moderate estrus was more prominent (50%) than intense and weak estrus. This was contrary to Chede (1990) findings, who observed only 32.25% intermediate estrus by implanting norgestomet for 9 days.

The time interval between implant removal and onset of estrus varied from 36-46 h with the mean of 37.8 h. This was in accordance with the findings of Rao and Narayana (1983) and Kathiresan et al. (1995) in anestrus buffaloes. The mean duration of estrus was 20.40 h; it ranged between 18 and 24 h (Table 1). This is comparable to the findings of Kathiresan et al. (1995) in anoestrous dry and lactating subestrus buffaloes whereas they recorded a longer duration of estrum in dry and lactating true anestrus buffaloes treated with the SMB system and PMSG. Kathiresan et al. (1995) have recorded 28.5, 43.0 and 28.5 and 16.71, 50 and 33.33 intense, normal and weak estrum signs in dry and lactating group of true anestrus buffaloes, respectively. The differences might have been due to breed variation and differences in the progesterone level at the time of giving the norgestomet implant and oestradiol level at the time of induced oestrus.

The conception rate in SMB induced post-partum Murrah buffaloes are shown in Table 2. The conception rate after the first service was 35% and

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Parameter</th>
<th>Mean ± SE</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Onset of estrus (h)</td>
<td>38.80±0.433 (36-46)</td>
</tr>
<tr>
<td>2</td>
<td>Duration of estrus (h)</td>
<td>20.40±0.675 (18-24)</td>
</tr>
<tr>
<td>3</td>
<td>Intensity of estrus (No. of animals)</td>
<td>7 (35%), 10 (50%), 3 (15%)</td>
</tr>
</tbody>
</table>

Table 2. Treatment response and conception rate.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Parameter</th>
<th>No. of animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No. of buffaloes treated</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>No. of buffaloes exhibited estrous signs and inseminated</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>No. of buffaloes pregnant after first artificial insemination</td>
<td>7 (35%)</td>
</tr>
<tr>
<td>4</td>
<td>No. of buffaloes pregnant after second artificial insemination</td>
<td>4 (20%)</td>
</tr>
<tr>
<td>5</td>
<td>Overall conception rate</td>
<td>11 (55%)</td>
</tr>
</tbody>
</table>
that after the second service was 20%. The overall conception rate was 55%. This was more or less in accordance with the conception rate of 57% in post-partum anoestrus buffaloes by Rallthra et al. (1994). But these results were contrary to Patel et al. (2003) who recorded a high (75%) conception rate in buffaloes with norgestomet ear implant.

**CONCLUSION**

It is evident that the 6 mg norgestomet ear implant for the duration of 10 days and an injection of 3 mg of norgestomet and 5 mg of oestradiol at the time of implantation in combination with 500 IU PMSG at the time of removal successfully induced estrum in post-partum anoestrus Murrah buffaloes. Further the oestrus response was 100% and the treated buffaloes showed different signs of estrum. The overall conception rate was 55% after two inseminations.

**REFERENCES**


