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Effect of Hormonal and Herbal Treatments on Oestrus in Cattle

R. K. Roy[1*] and K. Kusum[2]

[1]Krishi Vigyan Kendra, Sipaya, Gopalganj, (Dr Rajendra Prasad Central Agricultural University, Pusa) Bihar, India
[2]Department of Gynaecology and obstetrics, Apollo College of Veterinary Medicine Jaipur (Rajasthan University of Veterinary and Animal Sciences), Rajasthan, India

**Corresponding author*

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A B S T R A C T

Hormonal and herbal methods to induce estrus among anoestrus cattle under village condition were the subject of study. Animals with history of anoestrus or delayed post partum anoestrus (n=118) were administered Fenbendazole, 1.5 g (Panacur ®) thereafter supplemented with 30 g mineral mixture (Agrimin forte®) daily in feed throughout the period till and divided into 4 groups. In group I, a single injection of 500 µg Cloprostenol (Clostenol®) 2ml intra-muscular administered to animals and artificial insemination performed at 72 and 96 hours post injection whereas in group II, two injections of 500 µg Cloprostenol (Clostenol®) 2 ml injected intra-muscular on 1st and 11th day and animals artificially inseminated at 72 and 96 hours post second injection. In group III and IV, three capsules of Prajana® and Janova® respectively were administered orally along with jaggery, if the animals did not exhibit signs of estrus the following day, 3 more capsules were administered. Conception (64.7 %) was better in anoestrus animals administered double injections of 500 µg Cloprostenol.

Introduction

Anoestrus, delayed post-partum anoestrus, silent oestrus are the main factors that negatively affect the economics of cattle rearing. Poor nutrition is a recognized cause of reduced fertility in cattle grazing in subtropical or tropical areas (Bo *et al*., 2003). Completion of uterine involution and resumption of sexual activity following parturition in ruminants normally depend on several factors, such as plane of nutrition, nutrition of offspring and season of parturition (Mwaanga and Janowski, 2000). Under field condition, parasitic load, nutritional imbalances, suckling calves and

environmental stress delay oestrus and post-partum oestrus.

Materials and Methods

One hundred and eighteen animals with history of anoestrus or post-partum anoestrus in the field condition were the subject of study. Some of the animals aged 4-5 years had not exhibited oestrus while others had calved more than six months ago and still not exhibited signs of oestrus. All such animals were dewormed with Fenbendazole @ 1.5g orally (Panacur®) supplemented with mineral mixture @ 30 g daily in feed (Agrimin forte®) and divided into four groups: Group I received 500µg of Cloprostenol (2ml intra-muscular injection of Clostenol®), a synthetic analogue of PGF2α containing 250 µg cloprostenol/ ml. Oestrus signs were observed for 2-3 days. The animals were artificially inseminated at 72 and 96 hours post injection. Animals of Group II received 500µg of Cloprostenol (2ml intra-muscular injection of Clostenol®) on 1st and 11th day respectively and artificial insemination was made at 72 and 96 hours post second injection. In group III, three capsules of Prajana® were administered orally along with jaggery. The animals were under observation for oestrus signs the following day and if the animals did not exhibit oestrus 3 more capsules were administered. Similarly in group IV, three capsules of Janova® were administered orally along with jaggery and if the animals did not exhibit oestrus the following day 3 more capsules were administered. All the animals of group III and IV exhibiting estrus were artificially inseminated twice. The oestrus signs such as presence of mucous vulvar discharge, fleshmen reflex, restlessness, licking or sniffing of perineal region, butting, chin-resting, mounted but not standing, mounting other cows (or attempt), and of standing heat were noted as present or absent. Signs of oestrus were scored (Eerdenburg *et al.*, 2002) as of low intensity (not being mounted and not standing), medium intensity (being mounted but not standing) or high intensity (standing readily when mounted). The treatment response was assessed on the basis of estrus induction and pregnancy confirmed per-rectal 50-55 days post insemination.

Results and Discussion

The percentages of animals showing oestrus response were 52.17 % (24/46), 64.70 % (11/17), 63.33% (19/30) and 84 % (21/25) in group I, II, III and IV respectively (Table 1). However, percentage of animals showing intense oestrus was high in group II (64.70 %) followed by group IV (36 %), group I (34.78 %) and group III (26.67 %). Most of the animals showing intense oestrus conceived regardless of treatment effect. Group II had the highest conception rate 11/17 (64.70 %) followed by group I, 21/46 (45.65 %), group IV 9/25 (36 %) and group III 8/30 (26.67%). Animals administered single injection of 500µg of Cloprostenol (clostenol®), brought 52.17 % animals in oestrus.

Gacche *et al.*, (2002) reported 84 % animals exhibiting oestrus with single intra-muscular injection of 500 µg of Cloprostenol which is more than the present study. Intra-muscular administrations of cloprostenol (500 µg) induce luteloysis which is better when two injections of prostaglandins 11 days apart are administered. Hence with double injections of 500 µg of Cloprostenol (clostenol®), 11 days apart, 64.70 % animals exhibited oestrus. Amjad *et al.*, (2006), similarly reported 66.66 % oestrus with intra-muscular injections of 2 ml PGF2α, at 1st and 11th day.

Table.1 Estrus induction by hormonal and herbal treatments

Oestrus	Hormonal (Cloprostenol 500 µg)		Herbal	
	Single injection[a]	Double injection[b]	Prajana[c]	Janova[d]
Total no. of animals	46	17	30	25
Non-estrus animals	22/46 (47.82 %)	6/17 (35.29 %)	11/30 (36.67 %)	4/25 (16 %)
No. of animals exhibiting oestrus	24/46 (52.17 %)	11/17 (64.70 %)	19/30 (63.33 %)	21/25 (84 %)
Oestrus Intensity				
Intense	16/46 (34.78 %)	11/17 (64.70 %)	8/30 (26.66 %)	9/25 (36 %)
Mild	5/46 (10.87 %)	Nil	11/30 (36.67 %)	12/25 (48 %)
Normal	3/46 (6.52 %)	Nil	Nil	Nil
No. of animals pregnant	21/46 (45.65%)	11/17 (64.7 %)	8/30 (26.66 %)	9/25 (36 %)

[a] Two ml i.m. clostenol® injections were made. Estrus signs were observed for 2-3 days. Animals were artificially inseminated twice at 72 and 96 hours post injection.
[b] Two ml i.m. clostenol® injections were made at 1st and 11th day. Animals were artificially inseminated twice at 72 hours and 96 hours post 2nd injection.
[c] Three capsules of Prajana® were administered on the 1st day. If estrus signs were seen, then artificially inseminated, otherwise three more capsules were administered the following day.
[d] Three capsules of Janova® were administered on the 1st day. If estrus signs were seen, then artificially inseminated, otherwise three more capsules were administered the following day.

However, Tandle *et al*., (1997) and Kharche and Srivastava (2002), reported 100% and 87.06 % oestrus in cows administered two injections of PGF2α. Low oestrus response in this study may be due to poor nutrition as the farmers do not provide balanced ration. Improvement in fertility and oestrus induction with herbal drugs viz, Janov® and Prajana® may be attributed to the constituent herbs of polyherbal heat inducer which exert gonadotropin like action. These herbal drugs are rich in trienoic fatty acids which the body uses as precursors for prostaglandin biosynthesis. This helps coordinate ovarian functions and thus produce timely oestrus and ovulation. It helps in resumption of normal cyclical pattern to bring about release of hormones in a natural way, leading to pregnancy. Failure of development of pulsatile pattern of luteinizing hormone might be one of the primary factors inhibiting the return of cyclic ovarian activity in post-partum animals (Humphrey *et al*., 1983). Thus if this pulsatile pattern were somehow re-established, one could possibly bring about acyclic animals into ovarian activity. Though the ovary of post-partum anoestrus animals is sensitive to gonadotrophins (Mawhiney *et al.*, 1979; Troxel e*t al.*, 1980), yet inadequate release or synthesis of gonadotropin releasing hormone (GnRH) may be the cause of post-partum anoestrus (Carruthers *et al*., 1980). Prajana® and Janova® are herbal preparations, both contain Mrigakshi or *Citrullus colocynthes*, Shringaver or *Zingiber officinale* and Vadehi or *Piper longum*. While Mrigakshi is a potent uterine tonic, *Zingiber officinale* along with *Piper longum* function as aphrodisiac.

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