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Effect of three concentrations of progesterone in the vaginal sponge for oestrus synchronization in Yak

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The yak (*Poephagus grunniens*) is a precious multipurpose animal gifted with special features to thrive by utilizing the pasture at altitude of 3000 to 6000 m above mean sea level where no other domestic animal can survive. Study on oestrus synchronization is scanty in yak (Sarkar and Prakash 2005). The present study was made to record the effect of 3 concentrations of progesterone in the vaginal sponge for synchronization of oestrus in yak.

Non pregnant yak cows (20) of first and third lactation, maintained in yak farm, National Research Centre on Yak, Indian Council of Agricultural Research, Nyukmadung, West Kameng district, Arunachal Pradesh were used in the study. The yak cows were randomly placed in groups 1, 2, 3, and control group comprising 5 yaks in each group. Vaginal sponges (20) were prepared by cutting the sponges into 7 cm in length and 4.5 cm in diameter in cylindrical shape and tied with a cotton thread for the eventual withdrawal of the sponge from the vagina. The sponges were sterilized in autoclave at 15lb pressure for 15 min. Vaginal sponges (15) were impregnated with progesterone in 3 sets comprising 5 sponges in a set in such a way so that each sponge in a set contained 500, 600 or 700 mg of progesterone. Five sponges were kept without medication. The polyvinyl chloride vaginal speculum measuring 30 cm, 2 cm and 2.6 cm in length, internal diameter and outer diameter respectively was fabricated.

Prior to insertion of PVC speculum into the vagina of the yak, sponge was introduced into one end of the sterilized PVC speculum. After washing and drying the vulva of the yak, the speculum containing the sponge was slowly and gently introduced up to the anterior vagina. Then with the help of a PVC plunger measuring 45 cm in length and 1.3 cm in diameter the sponge was pushed from the speculum into the anterior vagina of the yak.The 3 treatment groups of yak i.e. groups 1, 2 and 3 received the sponges containing 500, 600, and 700 mg of progesterone, respectively, while the control group received non medicated sponge. The sponges were kept *in situ* for 14 days. After 14 days, the sponges were removed and PMSG @ 500 IU/animal was injected intramuscularly in the animals of treatment groups. All the experimental animals including the animals of control group were closely observed for the occurrence of oestrus by allowing vasectomized bull to move around the animals round the clock. First acceptance of the male by the female was considered as the onset of oestrus. Oestrus females were artificially inseminated after 12 h of onset of oestrus. The oestrus synchronization response was estimated based on the number of yaks coming into oestrus. The time interval between treatment and the onset of synchronized oestrus in each animal was recorded and the interval between the 2 was calculated out in hours. The conception rate following AI in the synchronized oestrus was determined by rectal palpation on 60th day of service.

In the present study, the oestrus synchronization response was 100% in all the animals of treatment groups receiving progesterone impregnated vaginal sponge containing 500, 600 and 700 mg of progesterone followed by 500 IU of PMSG (Table 1). In control group, out of 5 animals only 1 (20%) animal came into oestrus. The oestrus synchronization response recorded in the present study was in close agreement with that reported in yak by Sengupta (2006).

The time interval between treatment and onset of synchronized oestrus was recorded as 47.89±1.72, 45.41±3.04 and 31.53±4.92 h in yak cows receiving intravaginal sponge containing 500, 600 and 700 mg of progesterone respectively followed by 500 IU PMSG on the day of removal of sponge and 54.08 h in control group (Table 1). The time interval was statistically significant ($P<0.01$) between groups. The time interval between treatment and onset of oestrus recorded in

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Table 1. Oestrus synchronization response and conception rate in different groups of yak receiving intravaginal sponge containing different progesterone concentrations

Group	Progesterone concentration (mg)	Oestrus synchronization response	Time interval (h)		Conception rate (%)
			Mean ± SE	Range	
1	500	100	47.89 [a] ± 1.72	44.00 – 52.33	60
2	600	100	45.41 [a] ± 3.04	35.83 – 52.50	40
3	700	100	31.53 [b] ± 4.92	18.26 –45.33	60
Control	0	20	54.08		0

Means bearing different superscripts differ significantly (P<0.05).

the present study was comparable with that reported by Chakravarty *et al*. (2009).

The conception rate in yak cows after oestrus synchronization with progesterone impregnated vaginal sponge containing 500, 600 and 700 mg of progesterone followed by PMSG on the day of sponge removal was 60.00, 40.00 and 60.00% respectively (Table 1), which was much higher than that reported by Sengupta (2006). This might be due to differences in drug and protocol used for synchronization, season and method of breeding.

SUMMARY

Yak cows (20) were used to study the effect of 500, 600 and 700 mg of progesterone in the vaginal sponge for synchronization of oestrus. The vaginal sponges were kept *in situ* for 14 days and thereafter PMSG @ 500 IU/yak was injected intramuscularly. The oestrus synchronization response with the three concentrations of progesterone was 100% vs 20% in control yak receiving no treatment. With 500, 600 and 700 mg of progesterone, the time interval between treatment and onset of oestrus was 47.89±1.72, 45.41±3.04 and 31.53±4.92 h respectively and conception rate was 60.00, 40.00 and 60.00% respectively.

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