



Signs of oestrus after synchronization of oestrus in yak using progesterone impregnated vaginal sponge

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Yak (*Bos grunniens* or *poephagus grunniens*), a unique domestic animal, is gifted with special anatomical, physiological and behavioural features to counter against some of the environmental hazards common at high altitude. Yaks are shy breeders, and the difficulty of detecting oestrus could be overcome by oestrus synchronization. The present study was made to record the behavioural and physical signs of oestrus after synchronization of oestrus in yak using progesterone impregnated vaginal sponge.

Non pregnant yak cows (20) of first – third lactation, maintained in yak farm of the Centre were randomly placed in 4 groups, viz. group 1, 3, and control group comprising 5 yaks in each group. A total of 20 vaginal sponges 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 PVC (polyvinyl chloride) vaginal speculum measuring 30 cm, 2 cm and 2.6 cm in length, internal 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, and 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. The behavioural and physical signs of oestrus in yak in treatment and control groups were observed from 5 am to 10 pm.

The behavioural and physical signs of oestrus exhibited by yaks receiving intravaginal sponge impregnated with 500 (group 1), 600 (group 2), 700 (group 3) and 0 mg (control) of progesterone followed by 500 IU of PMSG in the first 3

Table 1. Frequency of occurrence of different behavioural signs of oestrus in different groups* of yak receiving intravaginal sponge containing different progesterone concentrations

Behavioural sign	Frequency of occurrence (%)			
	Progesterone concentration in the sponge			
	Group 1 (500 mg)	Group 2 (600 mg)	Group 3 (700 mg)	Control (0 mg)
Followed and mounted by male yak	100.00	100.00	100.00	100.00
Standing to be mounted	100.00	100.00	100.00	100.00
Frequent urination	40.00	40.00	60.00	0.00
Raising of tail	100.00	100.00	100.00	100.00
Restlessness and alertness	60.00	40.00	80.00	0.00
Grunting	0.00	0.00	0.00	0.00
Mounting on herd mate	80.00	100.00	100.00	100.00
Sniffing of genitalia of herd mate	60.00	100.00	80.00	100.00
Loss of appetite	0.00	0.00	0.00	0.00

*Each group contains 5 yaks.

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Table 2. Frequency of occurrence of different physical signs of oestrus in different groups * of yak receiving intravaginal sponge containing different progesterone concentrations

Physical sign	Frequency of occurrence (%)			
	Progesterone concentration in the sponge			
	Group 1500 mg	Group 2600 mg	Group 3700 mg	Control 0 mg
Swelling of vulva	60.00	80.00	100.00	0.00
Congestion of vulval mucous membrane	100.00	100.00	100.00	100.00
Mucus discharge	20.00	40.00	40.00	0.00
Relaxed cervix	100.00	100.00	100.00	100.00
Open external os	40.00	40.00	80.00	100.00
Uterine tonacity	80.00	80.00	80.00	0.00
Matured Graafian follicle in one ovary	100.00	100.00	100.00	100.00

*Each group contains 5 yaks.

groups are presented in Tables 1 and 2 respectively.

The behavioural signs of oestrus observed in all the yaks (100%) of treatment and control groups were raising of tail, standing to be mounted, followed and mounted by the male yak and mounting on herd mate. Similar observations were also recorded by Sengupta (2006) and Mahanta *et al.* (2008). But other workers recorded less frequency of occurrence of raising of tail in oestrus animals (Mahanta 2001). Mahanta (2001) recorded 83.33% of occurrence of raising of tail in oestrus yaks. The loss of appetite and grunting were absent in yaks in oestrus. Mahanta (2001) and Sengupta (2006) also reported that grunting/bellowing was absent in oestrus yak.

The physical signs of oestrus such as congestion of vulval mucous membrane, relaxed cervix and presence of matured Graafian follicle in one ovary were observed in all the yaks (100%). The frequency of occurrence of swelling of vulva, open external os and uterine tonacity recorded was in

conformity with that reported by Mohanty (1996), Mahanta (2001), Sengupta (2006) and Mahanta *et al.* (2008).

SUMMARY

The present study was conducted to record the behavioural and physical signs of oestrus after synchronization of oestrus in yak using progesterone impregnated vaginal sponge. The current study revealed that the behavioural signs exhibited by most of the yak cows during synchronized and natural oestrus were raising of tail, standing to be mounted, followed and mounted by male yaks, and mounting on herd mate. Other less inconsistent behavioural signs of oestrus were frequent urination, restlessness and alertness and sniffing of genitalia of herd mate. The physical signs of oestrus observed in most of the yaks were congestion of vulval mucous membrane, relaxed cervix and presence of matured Graafian follicle in one ovary. Swelling of vulva, the mucus discharge from vulva and uterine tonacity were present in a few yaks only. There was no much difference in the frequency of occurrence of different behavioural and physical signs of oestrus in yak cows treated with different doses of progesterone.

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