

STUDIES ON EFFICACY OF SELECTSYNCH AND OVSYNCH PROTOCOLS FOR INDUCTION AND SYNCHRONIZATION OF ESTRUS IN OSMANABADI GOATS

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Abstract: Fertility and fecundity of goats can be improved with control breeding protocols and professional goatry units are expecting such reproductive technologies. Reproductive performances were studied in Osmanabadi goats following synchronization of estrus with ovsynch and cosynch protocol respectively. Total 48 goats reared under semi-intensive care were considered for the present trials. Group 1 consisting of twenty four Osmanabadi goats of 2-4 years of age and at stage beyond 40 days post-kidding was selected for ovsynch protocol by attempting ultrasonography and out of 24goats, 11 cyclic and 13 non cyclic goats were recorded. Selected goats were treated with Inj GnRH@ 4 µg on day 1st, Inj PGF₂α @125µg on day 7th and Inj GnRH@ 4 µg on day 9th intramuscularly, whereas group 2 consisting of twenty four Osmanabadi goats of 16 cyclic and 08 non cyclic stages treated with Inj GnRH @ 4 µg on day 1st and Inj PGF₂α @125µg on day 7th intramuscularly. In ovsynch treated group, the resultant estrus was observed to be synchronized in all cyclic 11 (100%) goats, whereas the resultant estrus was induced in 11 (84.61%) non cyclic goats. Total 22 (91.66%) goats showed estrus exhibition with duration of estrus as 38.00 ± 5.0 hrs. In cosynch treated group, out of 24 goats 18 (75.00%) goats showed estrus exhibition with duration of estrus as 34.00 ± 6.0 hrs. On arranging natural services by breeding bucks, 16 (66.66%) goats from ovsynch protocol and 18 (75.00%) goats from selectsynch protocol were confirmed as pregnant by ultrasonography after 30 days of breeding. On attempting ovsynch protocol, it was observed that cyclic as well as non cyclic goats respond well and synchronised estrus can be induced whereas selectsynch protocol has better potential to improve pregnancy rate in goats.

Keywords: Osmanabadi goat, selectsynch, ovsynch, estrus and synchronisation.

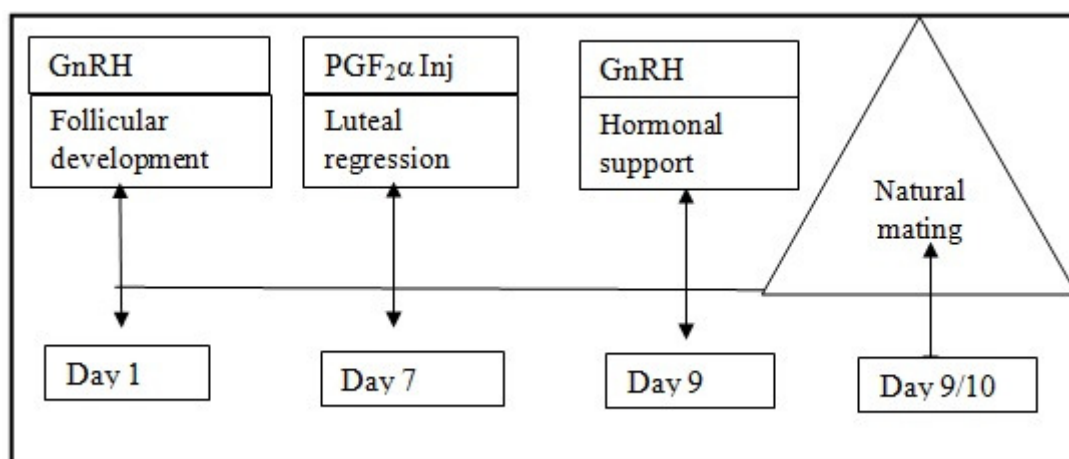
Introduction

India possesses second largest population of goats in the world. Goats are considered as poor man's ATM where M stands for milk or meat or manure or market or money and thus are suitable for earnings to the families of small scale farmers. There are some specific advantages of goat farming which makes their rearing economically sustainable. Goats have high fertility rate, minimizable inter- kidding interval, wide adaptability, high feed conversion

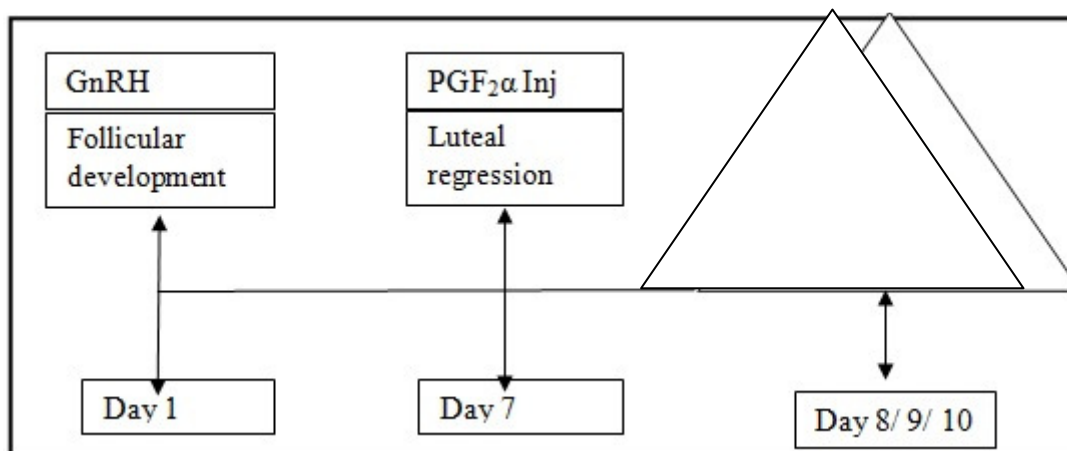
efficiency and require low investment management skills. Goats are seasonal breeders with defined breeding season. As the day light and day length reduces, goat's exhibit estrus cycles. Generally, 70 per cent goats exhibit estrus during June-July whereas 30 percent goats exhibit estrus during January- February (Patil *et al.*, 2010). Goat exhibit estrus for 30 to 36 hrs and for successful fertilization, services in the second phase of estrus are necessary. Since breeding seasons are limited and specific, reproduction in many goats particularly under field management is problematic. Many goats fail to induce estrus, release even average ova and also fail to conceive within short and stipulated breeding period. In goats, there is a need of mass scale application of controlled breeding practices in the field to improve the production, fertility and fecundity. The Ovsynch and select synch synchronization protocols are used in dairy animals to improve the fertility. Similarly, there exist best opportunity to try and adopt such protocols with suitable modifications in goats. Synchronisation in goats has been tried with $\text{PGF}_2\alpha$ and progesterone therapies which is further standardised with GnRH and $\text{PGF}_2\alpha$ protocols. Number of control breeding protocols is available in dairy animals and it is possible to use some selective protocols in goats. Ovsynch protocol is already is used in goats (Holtz *et al.*, 2008; Yacoub *et al.*, 2011) but efficacy of ovsynch and other protocols is yet to be explored in Indian goats.

Material and method

Group 1 (Ovsynch protocol) Selected 24 goats were injected with GnRH injection on day 1st and on day 7th $\text{PGF}_2\alpha$ injection were injected. Then again GnRH injection was administered on 9th day intramuscularly.



roup 2 (Select synch protocol) Selected 24 goats were injected with GnRH injection on day 1st on day 7th PGF₂ α injection was injected intramuscularly.



Result and discussion

On selectsynch trial, a total of 18 goats (75%) were found in estrus stage within 3 to 4 days of completion of treatment as against nil response in control group. The oestral response was not only visualized but also observed through buck parading. All goats in estrus were not seen with exhibitory signs of oestral stage but were found to be very active and receptive to male buck. Goats were followed on Day 15th and Day 30th by ultrasonography to record conception and pregnancies. It was noted that on Day 15th, 10 goats were diagnosed as early pregnant by visualization of embryonic vesicle. The fallow up of Day 30th clearly indicated that there were 16 (66.66%) pregnant goats from experiment.

Bowdrige *et al.*, (2013) attempted NCsynch protocol consisting of presynchronization with PGF₂ α 8 days before the selectsynch protocol consisting of 50 μ g of GnRH and reported 68 per cent pregnancy rate but the same differed non significantly from that of control group. On scanning the available literature, it was observed that references on efficacy of selectsynch protocol are very few in numbers and the schedule of experimentation was different in terms of dose of hormones, breed variation of goats, plan of breeding and orientation of experimentation.

The treatment protocol was adopted in empty Osmanabadi goats and it was revealed on sonographic scanning that there were 16 cyclic and 08 non cyclic goats were used under experimentation. On attempting trial of ovsynch protocol, a total of 22 goats (91.66%) were found in estrus stage within 3 to 4 days of completion of treatment as against nil response in control group. Ovsynch protocol was attempted in cyclic and non cyclic Osmanabadi goats and induced with synchronized estrus was recorded in 22 goats. The resultant estrus was

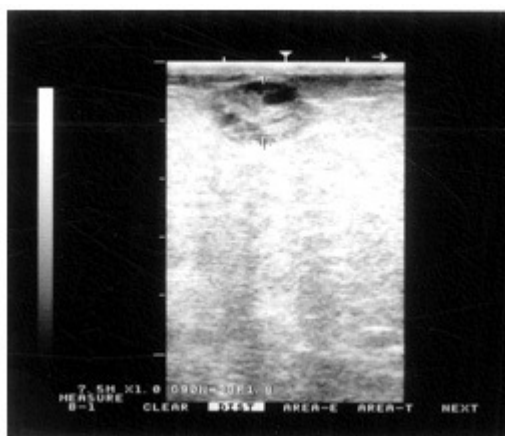
observed to be synchronized in all cyclic 11 (100%) goats, whereas the resultant estrus was induced in 11 (84.61%) non cyclic goats. Ovsynch protocol has been attempted by Holtz *et al.*, (2007) in Boer goats and 100 per cent oestral response was recorded in Boer cross breed does with 58 per cent pregnancy and kidding were recorded. Riaz *et al.*, (2012) also attempted ovsynch protocol in Beetal and Dwarf does and recorded 71 per cent response of estrus induction. Similarly, Panicker *et al.*, (2015) studied ovsynch protocol in Malabari cross breed goats and reported 75.00 per cent estrus response with 58 per cent of conceptions. Present trial has much higher success for ovsynch protocol which may be because of natural mating. Goats from the protocol group, which were covered by male buck as per the record, were followed on Day 15th, 20th, 25th, 30th and 35th by ultrasonography to record conception and pregnancies. It was noted that on Day 25th all goats were confirmed as pregnant and there were 18 (75.00%) pregnant goats from experiment.

Heat induction and synchronization with ovsynch protocol was found to be numerically higher than that of the selectsynch protocol in terms of estrus exhibition and pregnancy rate. On comparison of duration of estrus in ovsynch and selectsynch protocol statistically, there was significant difference (T statistic= 3.656).

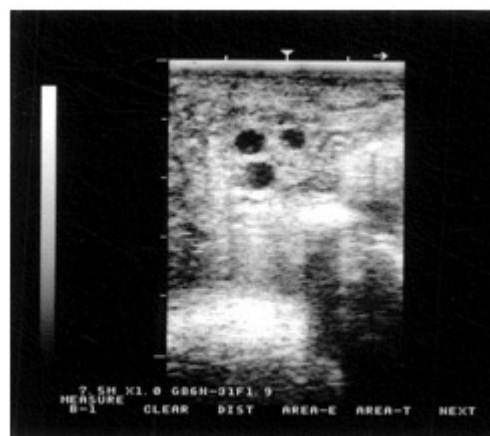
Particulars	Ovsynch protocol	Cosynch protocol
Animal treated	24	24
Estrus exhibition	22(91.66%)	18(75.00%)
Duration of estrus	38.00 ± 5.0	34.00 ± 6.0
Responded but not conceived	04	02
Pregnancy rate by USG	18/24(75.00%)	16/24(66.66%)

Efficacy of selectsynch and ovsynch protocol in goats in terms of conception rate was found to be 66.66 per cent and 75 per cent under present experiment, which indicates that the protocols were ineffective in 33.33 and 25 per cent goats, respectively. Non responsive goats or respondents with no external exhibitory signs of estrus indicate stress, body inability, and absence of physical weight gain or even nutrient deficiencies.

Ovarian status before treatment



Ovarian status after treatment



Conclusion

Selectsynch protocol has showed efficacy of 75.00 per cent for inducing estrus in a synchronized manner and the protocol leads to successful ovulation and fertilization as evidenced by 66.66 per cent conceptions.

Ovsynch protocol has higher efficacy of inducing and synchronizing estrus in 91.66 per cent goats and the fertile induced estrus resulted in 75 per cent conceptions in Osmanabadi goats.

On attempting selectsynch and ovsynch protocols, it was observed that cyclic as well as non cyclic goats respond well to the control breeding protocols.

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