EFFICACY OF INTRAVAGINAL PROGESTOGEN SPONGES FOR OESTRUS SYNCRONIZATION IN GOATS

M.D.Pawshe, M.V.Ingawale , C.H.Pawshe, S.G.Deshmukh,V.K.Munde and S.D.Kharche
Department of Animal Reproduction, Gynaecology & Obstetrics,
Post Graduate Institute of Veterinary and Animal Sciences, Akola-444 104
Corresponding author drmvingawale@rediffmail.com

Received 23-9-2012 Accepted 25-12-2012

ABSTRACT

A study was carried out to evaluate the efficacy of intravaginal progestogen sponges for oestrus synchronization in goats under field condition. Intravaginal progestogen sponges were inserted in 24 randomly selected non pregnant goats which were divided equally into two groups (Group-I and Group -II). In both the groups injection CIRG 1 ml was administered intramuscularly on day of sponge insertion. Injection equine chorionic gonadotropin (eCG) 400 IU was administered intramuscularly on day nine (D=9) to the goats in Group-II only. While injection Cloprostenol sodium 263 µg/ml was administered intramuscularly and sponges were removed from all the experimental goats on day ten (D=10). The goats were observed for oestrus exhibition from 11th to 14th day and mated with fertile bucks. All the 24 sponges inserted were retained in the vaginal passage till removed. The time interval for onset of oestrus was significantly ($P<0.05$) shorter in Group-II (17.41 ± 1.31 vs 20.91 ± 0.27 hrs). Pregnancy rate in oestrus synchronized goats was 33.33 and 25.00 per cent, in Group- I and II respectively which did not differ significantly ($P<0.05$).

KEY WORDS: Oestrous synchronization, Sponges, Goats

INTRODUCTION

Oestrus synchronization is valuable reproductive technique that has been successfully employed in enhancing reproductive efficiency in goats (Kharche et al. 2002). Intravaginal progestogen sponges have been the traditional treatment of choice for oestrus synchronization worldwide in small ruminants during the breeding and anoestrous season (Bretzlaff, 1997). Two types of the intravaginal sponges (pessaries) commonly used for synchronization or induction of oestrus in does are medroxy-progesterone acetate (MAP) (Romano, 1996) and flurogestone acetate (Alifakiotis et al. 1982). Both progesterone and its analogues have an inhibitory effect on the release of luteinizing hormone (LH) from the anterior pituitary so that the endocrine events that influence the maturation of the preovulatory follicles and their ovulation are suppressed. Hence, following withdrawal of progesterone, oestrus and ovulation occur at a predictable period of time (Leboeuf et al. 1998).

In view of the above fact and the benefit associated with oestrus synchronization with intravaginal progestogen sponges as well as paucity of research in meat type goats in field condition, the present research was planned to study the efficacy of intravaginal progestogen sponges for oestrus synchronization in goats.

MATERIALS AND METHODS

The experiment was conducted at farmers doorstep in villages of Patur and Akot Taluka of Akola District (MS). The experimental non pregnant goats of I to IV parity with two to six years of age weighing from 20 to 35 kg (n=24) were randomly selected. Intravaginal progestogen sponges (CIRG) were inserted in all 24 goats which were divided equally into two groups (Group-I and Group-II, n=12 each). In both the group's injection CIRG 1 ml was administered intramuscularly on day of sponge insertion while injection Cloprostenol sodium (Cyclix) 263 µg/ml was administered intramuscularly on day 10 and sponges were removed on day 10. Additionally Inj. equine chorionic

gonadotropin (eCG) (Folligon) 400 IU was administered intramuscularly on day 9 to the goats in Group-II only. The goats were observed for oestrus exhibition from 11th to 14th day. The goats which had exhibited oestrus were served by proven bucks in the herd. The pregnancy status of mated goats was diagnosed with transrectal ultrasonography on day 25-30 postmating. The pregnancy rate was analyzed by chi-square test.

RESULTS AND DISCUSSION

Out of twenty four sponges inserted, all (100 %) were retained in the vaginal passage till their removal. This result of retention of intravaginal sponges is in agreement with results of Karaca et al. (2010) and Widayati et al. (2010) while Saribay et al. (2011) reported that intravaginal sponges were lost in 5.0 and 7.5 per cent goats in short and long term treatment groups, respectively.

In the present experiment, 100 per cent goats (Group- I and II) responded to the intravaginal sponge treatment and exhibited oestrus, which agreed with result of Dogan et al. (2004), Romano (2004) and Kausar et al. (2009) in goats. The present results indicated that CIRG intravaginal sponges are highly efficient synchronizing agent. Slightly lesser oestrus responses (83.0 to 87.5 %) than the present one were reported by Greyling et al. (1985) and Kusina et al. (2000). The variation in efficiency of oestrus synchronization treatments depends on factors such as nature of dose and route of administration of progestogen and priming (Robinson et al. 1967). Also these differences may be due to the differences in breed, lactation, nutrition, season and presence of the male that are known to influence this parameter (Romano ,2002).

In the present study, the average time interval for onset of oestrus was 20.91 ± 0.27 hrs and 17.41 ± 1.31 hrs after sponge removal in Group-I and II, respectively. The time interval for onset of oestrus between two groups was statistically significant ($P<0.05$). This is in corroboration with Dogan et al. (2005) and Fonseca et al. (2008) who reported 20.3 ± 1.6 and 22.8 ± 9.9 hrs time interval in intravaginal sponge treated goats. Romano (1996) and Kusina et al. (2000) however reported 41.5 ± 1.8, and 80.00 hrs for exhibition of oestrus. The interval from sponge withdrawal to standing heat was significantly reduced in eCG treated group. This is in agreement with report of Freitas et al. (1996). Noel et al. (1994) reported that the administration of eCG when progestogen treatment was terminated could compensate the toxic effect of long-term progestogen treatment on follicular dynamics in cyclic ewes.

The pregnancy rate obtained in the experiment was 33.33 and 25.00 per cent in Group-I and Group-II, respectively, the differences was non-significant. These findings regarding pregnancy rate in eCG treated goats (Group- II) are lower (58 to 87.5 %) than those reported by Romano (1996 and 2004), Kusina et al. (2000) and Kausar et al. (2009).

The pregnancy rate obtained in Group-I without eCG treatment is lower than that (41.00 to 52.63 %) reported by Regueiro et al. (1999) and Dogan et al. (2004). The overall pregnancy rates obtained in the present study are comparatively lower than those reported by above research workers. However, these research workers used chilled diluted or frozen semen for artificial insemination, intracervically at predetermined time after detection of oestrus. In the present research work synchronized goats were given natural service with bucks and it may be one of the factors responsible for obtaining lower pregnancy rate. Fonseca et al. (2008) reported that in case of natural breeding, number of females must be induced in manner considering the number of bucks in herd to prevent over use of bucks and corresponding decreased fertility.

REFERENCES

Alifakiotis, T.I., Michailidis and Gavrilidis, G. (1982). Induced breeding in anestrus milking ewes of dairy breeds: Comparison of norgestomet, medroxyprogesterone and fluorogestone in two regimes of PMSG. Theriogenology, 17: 603-610.

Bretzlaff, K. (1997). Control of the estrous cycle. In: Current therapy in large animal theriogenology. Ed. Youngquist, R.S.W.B. , Saunders Company, Philadelphia., pp 510-514.

Dogan, Z., Nur, U., Gunay, M.K., Soylu and Sonmez, C. (2004). Comparison of fluorogestone and medroxyprogesterone intravaginal sponges for oestrus synchronization in Saanen does during the transition period. South Af. J.Anim. Sci., 34(1): 18-22.

Dogan, Z.N., Gunay, U., Sagirkaya, H., Soylu, M.K. and Sonmez, C. (2005). Estrous synchronization during the natural breeding season in Anatolian black does. Vet. Med. Czech., 50(1): 33-38.

Fonseca, J.F., Torres, C.A.A., Santos, A.D.F., Maffili, V.V., Amorim, L.S. and Moraes, E.A. (2008). Progesterone and behavioral features when estrous is induced in Alpine goats. Anim. Reprod. Sci., 103: 366-373.

Freitas, V.J., Baril, F.G. and Saumande, J. (1996). Induction and synchronization of estrus in goats: The relative efficiency of one versus two fluorogestone acetate impregenated vaginal sponges. Theriogenology, 46: 1251-1256.

Greyling, J.P.C., Niekerkt, V.C.H and Grobbelaar, J.A.N. (1985). Synchronization of estrous in the Boer goat doe: The response to the use of intravaginal progesterone and PMSG. South Af. J. Anim. Sci., 15(2): 52-55.

Karaca, F., Gokhan, D., Mustafa, K.S. and Cafer, T.A. (2010). Oestrus synchronization with short-term and long-term progestagen treatments in goats: The use of GnRH prior to short-term progestagen treatment. Italian J. of Anim. Sci., 9: 22.

Kausar, R., Khanum, S.A., Hussain, M. and Shah, M.S. (2009). Estrous synchronization with medroxyprogesterone acetate impregnated sponges in goats (Capra hircus). Pakistan Vet. J., 29(1): 16-18.

Kharche, S.D., Goel, A.K., Jindal, S.K and Sinha, N.K. (2002). Estrous response to different synchronizing agents in non describe goats. In: Proc.XVIII Annual Convention of ISSAR and National Symposium in Reproductive Technology for Augmentation of Fertility in Livestock, IVRI, Izatnagar, November 14-16, pp 42.

Kusina, N.T., Tarwirei, F., Hamudikuwanda, H., Agumba, G. and Mukwena, J. (2000). A comparison of the effects of progesterone sponges and ear implants, PGF2? and their combination on efficacy of estrus synchronization and fertility of Mashona goat does. Theriogenology. 53: 1567-1580.

Leboeuf, B.E., Manfredi, P., Boue, A., Piacere, G., Brice, G., Baril, C., Broqua, P., Humblot and Terqui M. (1998). Artificial insemination of dairy goats in France. Livest. Prod. Sci., 55: 193-203.

Noel, B., Bister, J.L., Pierquin, B. and Paquay, R. (1994). Effects of FGA and PMSG on follicular growth and LH secretion in Suffolk ewes. Theriogenology, 41 : 719-727.

Regueiro, M., Perez R.C., Ganzabal, A., Aba, M. and Forsbert, M. (1999). Effect of medroxyprogesterone acetate and eCG treatment on the reproductive performance of dairy goats. Small Ruminant Res., 33: 223-230.

Robinson, T.J., Moore, N.W., Holst, P.J and Smith, J.F. (1967). The evaluation of several progestagens administered in intravaginal sponges for the synchronization of oestrus in the entire cyclic Merino ewe. In: Robinson T. J. (Editor), The control of the ovarian cycle in the sheep. Sydney University Press, Sydney, pp 76-101.

Romano, J.E. (1996). Comparison of fluorogestone and medroxyprogesterone intravaginal pessaries for estrus synchronization in dairy goats. Small Ruminant Res., 22: 219-233.

Romano, J.E. (2002). Does in proestrus-estrus hasten estrus onset in does estrous synchronized during breeding season. Appl. Anim. Behav. Sci., 77: 329-334.

Romano, J.E. (2004). Synchronization of estrus using CIDR, FGA or MAP intravaginal pessaries during the breeding season in Nubian goats. Small Ruminant Res., 55: 15-19.

Saribay, M.K., Karaca, F., Gokhan, D., Yasar, E., Ilker, Y. and Cafer, T.A. (2011). Oestrus synchronization by short and long-term intravaginal sponge treatment in lactating goats during the breeding season: The effects of GnRH administrations immediately after matings on fertility. J. of Anim. Vet. Advances, 10(23): 3134-3139.

Widayati, D.T., Aris, J., Kresno, S., Amelia, O. and Wahyuningsih. (2010). Reproduction performance of Etawah cross bred goats in estrus synchronization by controlled internal drug release implant and PGF2 continued by artificial insemination. World Academy of Science, Engineering and Technology, 5: 1077-1079.

❑