Oestrus Induction and Synchronization in Out-Of-Season Saanen Goats

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Abstract

The purpose of this study was to perform the oestrus induction and synchronization of Saanen goats in out-of-season. The study was conducted from July 2014 - April 2015 on 77 Saanen goats, aged between 1.5 to 5 years. The goats were divided into three experimental groups: in group I (n = 37 goats) intravaginal sponge (Ovigest) containing 60 mg of MPA was left in the vagina for 14 days. Immediately after sponge removal the animals received two injections: 0.75 mg (1 ml) prostaglandin (Prosolvin) and 500 IU PMSG hormone (Folligon). In group II (n = 20) oestrus induction and synchronization was performed using synthetic prostaglandin (Proliz - 1 ml containing 0.2 mg isopropyl ester of cloprostenol and 9 mg benzyl alcohol) at the dose of 0.5 ml/animal. The group III (n = 20) was considered the control group and oestrus synchronization was performed using fertile bucks. In group I the results showed that all goats expressed signs of oestrus. The average value of the oestrus interval was 33 hours and the average of oestrus duration was 20 hours. The number of kids obtained in group I was 94, and prolificacy was P (%) = 2.54. In group II and III was not observed occurrence of oestrus. Synchronization practice is necessary, due to a significant positive effect on oestrus and fecundity.

Keywords: oestrus, goat, pregnancy, synchronization

INTRODUCTION

For the efficiency of the oestrus synchronization, the hormonal treatment must facilitate: small costs, zero influence for milk and meat production, initiates the oestrus stage for a bigger number of animals in a short time and the most important, the oestrus must be followed by the ovulation with a high rate of fecundity.

Goat production is experiencing a period of worldwide growth. Given the reproductive seasonality for this species, it is not always possible to obtain good results of kidding distribution throughout the year using natural oestrus. Thus, oestrus should be induced in the anestrus season and hormonal treatment is a widely used technique for this purpose (Fonseca and Simplicio, 2008; Pietroski et al., 2013).

Intravaginal sponge containing progesterone applications are used worldwide for oestrus induction and synchronization (Kridli et al., 2002). Additionally, intramuscular injection of a pregnant mare’s serum gonadotropin (PMSG) at withdrawal of progestagen sponge is used for multi-ovulation (Nasr et al., 2002, Whitley and Jackson, 2004).
The purpose of this study was to perform oestrus induction and synchronization in Saanen goats during out-of-season. Thus, the experiments have followed a few issues: assessment of oestrus manifestation; occurrence of oestrus interval, duration of oestrus, pregnancy evaluation, percentage of fecundity.

MATERIALS AND METHODS

The research has been carried out between July 2014 - April 2015 on a herd of 77 goats from Saanen breed, aged between 1.5 to 5 years. In order to carry out the experiments regarding the induction and synchronization of during the out-of-season 77 goats and five male goats were used.

Structure of the experimental groups

For the goats included in the experiment, their clinical status was monitored, and only those in a good body conditions were selected.

In group I (n=37 goats) all females were treated with intravaginal sponges containing 60 mg medroxyprogesterone acetate (MPA, OVIGEST/Hipra, Greece) for 14 days. Immediately after sponge removal the animals received two injections: 0.75 mg (1 ml)/animal prostaglandin (Prosolvin/Intervet) and 500 IU/animal PMSG (Folligon/Intervet). In group II (n=20 goats) hormonal treatment was performed using a prostaglandin hormone – Proliz (1ml contains 0.2 mg Cloprostenol isopropyl ester and 9mg benzyl alcohol). The product was administered by deep intramuscular injection, 0.5 ml/goat. Oestrus induction and synchronization in group III - control group (n=20 goats) was achieved using fertile bucks.

EXPERIMENTAL GROUPS

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The goats were daily monitored in order to establish occurrence of oestrus, its duration and its intensity. Oestrus detection was achieved by using fertile bucks. Once oestrus was detected, its duration was monitored and natural mating was performed. The ratio was five female goats to one buck (5:1).

Pregnancy was confirmed 30 days after mating using an ultrasound device.

RESULTS AND DISCUSSION

In group I the results showed that all goats expressed signs of oestrus (100%) (Tab. 1). In other studies Pietroski et al. (2013), observed that maintaining the sponges for 12 days led to an oestrus rate similar with our study (100%). In their research, Kausar et al. (2009) showed that all the experimental goats exhibited oestrus after removal of sponges (100%).

The time to onset of oestrus and duration are important in controlled reproduction programmes (Kausar et al., 2009). The average value of the oestrus onset interval was 33 hours with variations between 24-40 hours (Tab. 1). Several studies have reported the onset of oestrus within 18-96 hours in Saanen and Black Bengal goats (Alacam et al., 1985; Ishwar and Pandey, 1990). Our results regarding the time interval were shorter than previously reported in protocols for Toggenburg goats – 46 hours and 54 hours (Fonseca et al., 2005) and longer than 22 hours in Turkish Saanen goats (Dogan et al., 2008).

The average duration of oestrus in the case of this experimental group was 20 hours, with variations between 17 – 24 hours (Tab. 1). The duration of oestrus was shorter than the values presented by Dogan et al. (2008), in Turkish
Saanen goats (31 hours) and by Fonseca et al. (2008), in Alpine breed (25 hours). In their study Pietroski et al. (2009), have reported a mean value of oestrus duration of 24.9 hours. This variation can be attributed to differences in breed, nutrition, season, different progestagens, used of gonadotrophins and presence of male after sponge removal and social dominance (Orihuela, 2000; Dogan et al., 2008, Pietroski et al., 2009).

The number of kids obtained in the first group was 94 and the prolificacy percentage was $P\% = 2.54$ (Tab. 1). One goat (2.7%) had quadruple parturition, 22 goats (59.46%) presented a triple parturition. The twinning rate was 27.03% (10 goats) and all kids were viable. The remaining 4 goats (10.81%) had a simple parturition. From the total of 94 kids, 78 have reached maturity (82.97%), 25 of them were females (32.05%) and 53 were males (67.94%).

Regarding the second and the third group (n=20 goats) treatment for oestrus induction and synchronization during out-of-season did not lead to the occurrence of oestrus in any of the goats.

The use of the “male effect” is reported to improve oestrus efficiency and fertility when used in combination with prostaglandins (Martin et al., 2004; Amarantidis et al., 2014) and progestogens (Omontese et al., 2013; Omontese et al., 2016).

**CONCLUSIONS**

The association of intravaginal sponges impregnated with 60 mg MPA with 0.75 mg (1 ml) PGF2α and 500 IU PMSG is convenient for oestrus synchronization in Saanen goat during out-of-season in case of romanian climatic conditions. The use of a single hormone or the use of fertile bucks didn't have any effect on the Saanen goats.

Synchronization practice is necessary, due to a significant positive effect on oestrus and fecundity. It is clear that more advantageous can be achieved through oestrus synchronization than the conventional production methods according to the study.

**REFERENCES**


