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Poster presentation

Alternative days for prostaglandin administration in short-term protocols for estrous synchronization in goats

Jeferson Ferreira da Fonseca[1]*, José Henrique Bruschi[2], João Henrique Moreira Viana[2], Luís Sérgio de Almeida Camargo[2], Luís Gustavo Bruno Siqueira[3] and Marina Lima Santos[3]

[1]Embrapa Goats, Estrada Sobral/Groaíras, Km 4, CP D10, Cep 62.011-000, Sobral-CE, Brasil; [2]Embrapa Dairy Cattle Research, Rodovia MG 133, Km 42, 36.155-000, Cel Pacheco-MG, Brasil; [3]Departamento de Zootecnia, Universidade Federal de Viçosa, Av. P.H. Rolfs, s/n, Brasil, 36.571-000

**E-mail: jeferson@cnpc.embrapa.br*

Introduction

During the last decade, goats experienced a singular growth in the world and had the greatest growth among the principal farm animals, like cattle, sheep, pig and buffaloes. This growth was particular evident and stronger in developing countries (Morand-Fehr & Boyazoglu, 1999). Actually, Brazilian Researchers are focused in the study of assisted reproduction techniques to make goat production more intense and efficient. In this field, induction and synchronization of estrus can be very attractive.

The synchrony of estrus is important to management of bucks and artificial insemination. There are many forms to induce and/or synchronize estrus in goats, but, sometimes it so important to differentiate these terms. Induction of synchronous estrus can be reached by association of natural or synthetic progesterone with gonadotrophins and prostaglandins. Induction of estrus is commonly referred to the non-breeding season. Synchronization of estrus can be obtained by the use of the same previous associations but during the breeding season it is not necessary to use gonadotrophins, because only progestagens associated with prostaglandin, or prostaglandin alone can both synchronize estrus. By the other side, synchrony protocols use relative long time of exposure to progestagen or between prostaglandin administrations. In progestagen protocols, prostaglandin is commonly administered 24 to 48 hours before device removal (Gordon, 1997) with means more one management intervention.

The objective of this study was to investigate the efficiency of short time exposure to progestagen and the time of prostaglandin administration to induce estrus and the corresponding fertility after natural breeding or artificial insemination in lactating Toggenburg goats.

Material and Methods

This study was carried out in May to July (final third of local breeding season) in Coronel Pacheco, Minas Gerais, southeast region of Brazil. The research unit is located at 435 m altitude and 21°35''S and 43°15''W latitude and longitude, respectively. The area receives an average annual precipitation of 1581 mm[3]. Average annual temperature experienced at site

is 21°C.

Thirty lactating Toggenburg does were randomly assigned to two treatments (T1 and T2)according to weight and body condition score (1 to 5 variation); 42.3 ± 10.1 and 40.2 ± 8.6 kg and 2.8 ± 0.8 and 2.8 ± 0.8 for T1 and T2, respstively. Both in T1 (n = 15) and T2 (n = 15), controlled internal drug release (CIDR-G; Eazi Breed, InterAg, Hamilton, New Zealand) device containing 0.3 g of progesterone was inserted and removed after six days later and a dose of 22.5 μg d-cloprostenol (Prolise®, ARSA S.R.L., Buenos Aires, Argentina) was administered by subvulvar via at the same time of CIDR insertion (T1) or 24h before CIDR removal. After CIDR removal, animals were monitored to detection of estrus three times daily (0600, 1200, and 1800 h). Animals in estrus were bred with fertile buck or artificially inseminated with frozen-thawed semen (0.25 straw, 100 millions spermatozoa) 12 h after detection of estrus and 12 later if the female was still in estrus.

The following parameters were calculated: percentage of animals in estrus: number of females in estrus / number of females treated X 100; interval to estrus: interval (hours) from device removal to time of first estrous identification (onset of estrus); duration of estrus: interval (hours) from time of the first to the last estrous identification; and pregnancy rate. Statistical analysis was performed using all tests for statistical significance at the 95% confidence interval. Percentages of animals in estrus and pregnancy rates were compared between treatments by using chi-square test. Average interval from device removal and onset of estrus and duration of estrus were submitted to one-way analysis of variance and compared by SNK-test using a SAEG program (System for Statistical Analysis; Ribeiro Júnior, 2001).

Results and Discussion

Percentage of does in estrus was the same for T1 and T2 (93.3%). Previous works reported similarly results in protocols using gonatrophins and relatively longer times (11 to 21 days) of progestagen exposure (Cortell *et al.*, 1988). In this study a shorter exposure time to progestagen was used without loss in the number of animals in estrus. Adctionaly, the administration of prostaglandin concomitant to device insertion (T1) reduces the animal stress and management practices.

Estrus was detected from 27 to 57 h after device removal in both treatments. The average interval from device removal and onset of estrus did not differ ($P > 0.05$) between T1 (40.3 ± 12.0 h) and T2 (41.1 ± 9.3 h). Regueiro *et al.* (1999) reported similarly results in dairy goats during the breeding, which were inserted with vaginal sponge containing 60 mg medroxiprogesterona acetate (MPA) for 14 days with or without gonatdotrophin (500 IU of equine chorionic gonadotrophin; eCG) at the time of sponge removal. These authors reported that eCG shortened the interval to estrus but more animals returned to estrus in eCG than those in control group (62.55 versus 15%). So, during the breeding season the use of eCG can not only be dispensable but deleterious to fertility too. Nevertheless, the dose of eCG used by referred authors was so long, because efficient protocols with MAP for six or nine days were reported with 200 IU eCG (Fonseca *et al.*, 2003).

Duration of estrus was not affected ($P > 0.05$) by T1 (43.6 ± 13.4 h) or T2 (37.9 ± 13.2 h) either. After detection of estrus, animals were natural bred (T1 = 6 and T2 = 7) or artificially inseminated (T1 = 8 and T2 = 7). Duration of estrus was not significantly

influenced ($P > 0.05$) by natural breeding (36.5 ± 10.4 h) or artificial insemination (44.3 ± 14.9 h) and there was no interaction ($P > 0.05$) among treatments and kind of service. The recognized effect of penile introduction and mechanisms displayed by this phenomenon were not capable to shorter significantly the duration of estrus (Romano, 1994a,b). Manipulation of clitoris or artificial insemination per se could display similar mechanisms of estrous shortening.

Pregnancy rate did not differ between T1 (64.3%) and T2 (64.3%) or natural breeding (64.3%) and artificial insemination (64.3%). It attests that both protocols used were equally efficient for both natural breeding and artificial insemination in dairy goats.

Conclusions

During the breeding season, estrus can be efficiently synchronized in lactating does by CIDR plus cloprostenol, independent from time of cloprostenol administration, and a good fertility can be reached with both natural breeding and artificial insemination.

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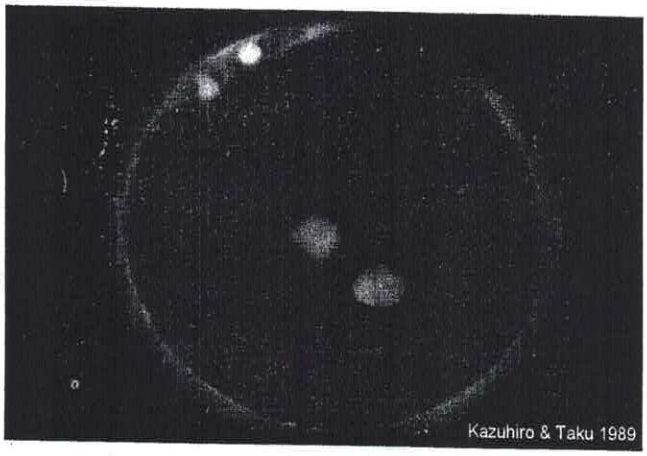

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