

MALE EFFECT 22 DAYS PRIOR OESTRUS SYNCHRONIZATION, ENHANCES CORPUS LUTEUM FUNCTION AND FERTILITY IN MERINO EWES

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INTRODUCTION

It is known that male effect stimulates ovarian function in seasonal anoestrous ewes. A new approach to overcome the negative effect of winter/spring seasons on fertility in cyclic or acyclic ewes was assessed by using the ram effect 22 days prior the onset of oestrus cycle synchronization.

MATERIALS AND METHODS

A total of 24 Merino of Beira Baixa adult ewes (Group 2) were exposed (day 0) to male effect using 8 adult rams for 7 days, 22 days before the programmed oestrous cycle synchronization treatment. A control group (Group 1, n=25, same breed) received the same treatment as animals in group 2, exception made to the male effect. Corpus luteum (CL) function was assessed by measuring peripheral plasma progesterone (P4) levels by RIA, twice weekly until the end of synchronization treatment, at AI and 7 days after AI. The study started on 25th of March in a farm located at Idanha-a-Nova, Portugal (Lat. 39.93°, Long. -7.245°). Oestrous cycles were synchronized in both groups (n=25 and n=21 for groups 1 and 2, respectively) by intravaginal insertion (day 22) of sponges containing fluorogestone acetate (40 mg) during 11 days and 500 IU (i.m.) of eCG in the last day (Intervet ®). Cervical AI of synchronized animals with refrigerated semen (400×10^6 spz) was performed in 23 and 18 animals respectively of groups 1 and 2; only animals with $P4 < 0.05$ ng mL⁻¹ at AI and surviving until lambing were included. Males for natural service (NS) were introduced to all AI'ed ewes 16 days after AI and pregnancies resulting from each method were differentiated by lambing dates. Differences between groups for cyclic animals until sponge removal, overall fertility rate (total lambing/synchronized animals), incidence of AI parturitions (AI lambings/total lambings) and fertility rates for AI (frAI) or NS (frNS) (AI or NS lambings / synchronized

ratios, were checked by chi square tests. Progesterone levels 7 days after AI (activity of the first CLs induced by synchronization) were compared between groups by ANOVA (n=25 and n=21 for groups 1 and 2, respectively).

RESULTS AND DISCUSSION

At the onset of the experiment, 8 out of 25 (32%) and 7 out of 24 (29.2%) ewes were acyclic in groups 1 and 2, respectively ($p > 0.05$). Till sponge removal, 5 out of 25 (20%) and 1 out of 24 (4.2%) ewes remained acyclic in groups 1 and 2, respectively ($p = 0.09$). All synchronized animals in both groups presented P4 levels higher than 1 ng mL⁻¹, 7 days after oestrus. Gestation lengths ranged 146-153 (AI) and 166-189 (NS) days. Excluding deaths and non-responding females to synchronization, overall fertility was 95.7% and 83.3% for groups 1 and 2, respectively ($p = 0.19$). The incidence of AI parturitions was significantly higher in the group of ewes submitted to male effect than in controls (86.7% vs. 54.6%; $p < 0.04$). Fertility rate ratio of AI over NS (frAI/frNS) was 1.2 in controls (52.1%/43.8%) and 6.5 in stimulated ewes (72.2%/11.1%) ($p < 0.01$). Results show higher fertility rates of the synchronized ovulations (AI), in females stimulated by males 35 days prior to inseminations. Luteal function 7 days after the synchronized ovulations was significantly enhanced in stimulated ewes than in controls as shown by P4 concentrations (avg \pm sd: 7.2 ± 1.8 vs. 4.1 ± 3.1 ng mL⁻¹; $p < 0.0001$) suggesting the occurrence of more competent ovulations in group 2. Male effect performed in cyclic and acyclic ewes 35 days prior to a synchronized AI, stimulated ovarian function and significantly enhanced luteal function and fertility with AI after synchronized ovulations.

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