Advance of the breeding season and artificial insemination with frozen semen in Portuguese Serrana Goats

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Objectives: This study aimed to compare the efficiency of melatonin and/or a short-term FGA treatment in the advance of the breeding season in Serrana goats. Fertility after artificial insemination (AI) with frozen semen was also assessed.

Materials and Methods: This experiment took place at Bragança (latitude 41° 49’ N, longitude 6° 40’ W and altitude 720 meters) and involved 65 adult Serrana goats. At early March, 32 goats received a melatonin implant (18 mg) – melatonin group. The other 33 remained as control group. Fifty days later all goats were injected with 100 micrograms of PGF2alfa. Simultaneously a vaginal sponge with 20 mg of FGA was inserted in each goat. Progestagen treatment lasted for 5 days. At sponge removal all goats were injected with 300 UI of eCG. Later, 15 goats of each group were artificially inseminated (n = 30) with frozen semen (AI group). The last 35 goats were inseminated by intact males provided with harness markers for heat detection (NB group). Ovarian activity was assessed by progesterone (P4) plasmatic levels 2 weeks before melatonin and short-term FGA treatments and for 5 days after eCG injection. Pregnancy diagnosis was performed 41 days after eCG administration by real time ultrasonography.

Results: In the fortnight prior to melatonin treatment 49.2% of all goats had high levels of P4 (> 0.5 ng/ml). In the previous 2 weeks to short-term FGA treatment 6.1% of control and 71.9% of melatonin goats had high levels of P4 (Chi-square = 91.6; P=0.001). Over 88.6% of NB goats showed sexual behavior. About 83.3% were control and 94.1% melatonin treated goats (Chi-square = 5.9; P=0.05). Eighty percent of all goats had high levels of P4 1 to 5 days post eCG injection. About 81.3% were control and 78.1% melatonin treated goats (Chi-square = 0.3; P>0.05). No significant difference was found between NB and AI goats – 82.9% vs. 76.7% (Chi-square = 1.1; P>0.05). Forty-one days after eCG administration, 78.5% of all goats were pregnant. About 78.8% were control and 78.1% melatonin goats (Chi-square = 0.0; P>0.05). Fertility rate was higher in NB than in AI goats – 85.7% vs. 70.0% (Chi-square = 7.5; P=0.01).

Conclusions: – Melatonin enhanced both the percentage of goats presenting high levels of P4 (> 0.5 ng/ml) and the percentage of goats in estrus. – Melatonin had no significant effect in the ovarian activity following short-term FGA treatment. – Fertility rate was higher in NB than in AI goats. – AI with frozen semen resulted in a quite high fertility rate (70.0%)