



EFFECT OF MELATONIN IMPLANT ON LOCOMOTOR ACTIVITY, BODY TEMPERATURE AND GROWTH PERFORMANCE OF POST-WEANING LAMBS

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Melatonin is an endogenous hormone that plays a pivotal role in mediating several patterns of animal physiology and behavior. Melatonin's effect on the sheep reproductive system has been deeply investigated as well as its action in reducing neonatal mortality and increasing survival rate at weaning, due to a higher colostrum quality and brown adipose tissue production. Nowadays how melatonin is involved in the lamb's growth and development is still unclear.

In light of this, the present study supports the potential role of melatonin in improving performance outcomes in fattening lambs. Therefore, this work aimed to explore the effect of melatonin implant on growth performance and physiological parameters in post-weaning lambs.

Sixty Rasa Aragonesa lambs were divided into 4 groups, depending on gender and the implantation or not of two 18 mg-melatonin implants (Melovine, CEVA, Spain), and reared for 6 weeks from weaning to slaughter under the same management conditions. During the whole experimental period, body weight and the amount of feed consumed were used to calculate feed conversion rate (FCR). An acceleration sensor was applied on a neck collar to define the locomotor activity (LA) and its circadian rhythm (CR), in terms of MESOR, amplitude, and acrophase. Finally, the surface temperature (T) was taken by a thermographic camera the last week of fattening, and the subcutaneous fat thickness (FT) over the longissimus dorsi muscle was ultrasound-scanned.

Regarding the performance parameters, FCR was not affected by the treatment, although melatonin-treated lambs consumed a lower amount of feed, especially female MEL ($p < 0.001$), in which also FT was significantly higher ($p < 0.05$) compared to CTR, while no effect was shown in male lambs. The thermography revealed a lower T in MEL for all the body regions analyzed ($p < 0.01$). Overall LA was lower in MEL ($p < 0.001$), and female lambs always exhibited more movement ($p < 0.001$). Moreover, the CR was influenced by treatment since MEL displayed a progressive increase of MESOR over time ($p < 0.01$), whereas CTR showed a delay in the acrophase every week ($p < 0.001$).

In conclusion, the study relieves that melatonin affects physiological parameters during the post-weaning period of lambs. The results underline the interaction effect between melatonin and gender, showing a positive impact on melatonin-treated female lambs.

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