

Physiological and chemical responses of Barbarine ewes to sun exposure during summer season under semi-arid condition

Khnessi S¹, Ben Salem I², Matoufi F¹, Rekik M³ and Lassoued N¹.

¹*National Institute of Agronomic Research, Tunisia (INRAT), Laboratory of Animal Production and Forage Street Hedi Karray, 2049 Ariana, Tunisia.*

²*National School of Veterinary Medicine Sidi Thabet Sidi Thabet 2020, Tunisia*

³*International Center for Agricultural Research in the Dry Areas (ICARDA) Amman, Jordan*

Correspondance: mleilsamia@live.fr

Résumé

This study aimed to compare physiological and chemical responses of Barbarine ewes placed outdoors under direct exposure to sun during summer season to counterparts placed indoors. The study was conducted during the month of August. 20 ewes were divided to 2 groups balanced for age and live weight. Group 1 was kept indoors with adequate ventilation whereas group 2 was kept outdoors without shade. Animals were weighed every two weeks. Heart and respiration rates were evaluated in the first, second and the fifth week of the trial. In other hand, rectal temperature was measured every week. Blood samples were taken in the beginning and in the end of the trial in order to assess energetic, nitrogen and ionic balances. Results showed that exposure to the sun had no influence on body weight (50.33 ± 0.74 vs 50.78 ± 0.78 kg respectively for indoors and outdoors groups). Solar exposition significantly ($P < 0.05$) increased respiration and heart rates (respectively 53 vs 100 and 83 vs 93 ; for indoors and outdoors). The average rectal temperature was significantly higher ($p < 0.05$) for animals placed in the sun (39.33 ± 0.15 and 39.5 ± 0.24 °C respectively for indoors and outdoors groups). The evaluation of serum metabolites showed that cholesterol concentration decreased and triglyceride concentration increased ($P < 0.001$) in animals in the sun. In the other hand we recorded a significant increase ($P < 0.001$) of total proteins, creatinine and urea blood values.

The present study provide a better understanding of the adaptation mechanisms of Barbarine sheep that raised, in majority, in dry condition on the effect of solar exposition during summer season on physiological and chemical changes.

Key words: Ewes, solar exposition, physiological traits, blood parameters.