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Utilization of saline water by Barbarine lambs in the dry areas under climate change

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This research was aimed at determining the influence of drinking saline water after weaning on live weight change, body condition score, biological and hematological blood parameters, physiological responses, water and feed intakes, apparent digestibility, nitrogen balance and ruminal fermentation on Barbarine lambs. Eighteen weaned lambs, on an average 4 months old, healthy and in good condition were used in a completely randomized design. Animals were randomly assigned to two treatments consisting of water containing different levels of salt (Treatment 1 = 0.5 g of NaCl / l of water, C-sheep; Treatment 2= 10g NaCl / 1l of water, S-sheep)

The growth rates has gradually increased with the progress of the experimental period ($P < 0.05$) similarly for the both group ($P > 0.05$) only at the 4 and 10th week, S-lambs weight slightly higher than C-sheep ($P < 0.05$). Consequently, the body weight gain on day 30 and 90th after weaning increased by drinking saline water ($P > 0.05$). However, the both group has a similar dorsal and caudal score note ($P > 0.05$). Drinking saline water increased Triglyceride and cholesterol concentration on 30 days after weaning as well as uric acid concentration ($P < 0.05$) and decreased creatinine concentration on 90 days ($P < 0.05$). However, glucose, total protein, urea and γ -GT concentration ($P > 0.05$). The hemoglobin concentration and the hematocrite were slightly lower for S-lambs compared to control lambs ($P < 0.05$). However, the rest of hematological blood parameters were no affected by drinking saline water for weaned lambs ($P > 0.05$). Weaned lambs had a respiratory rate during early weaning (day 0 and 30 of experimental period) higher than C-lambs ($P < 0.05$). Moreover, any changes had noted in rectal temperature and pulse rates under saline water stress ($P > 0.05$). Besides, inclusion of 10g of salt in fresh potable water did not affect water and feed intakes compared with C-lambs ($P > 0.05$). Lambs drinking water containing 10% NaCl suffered no ill effects. The mean digestibility coefficient of the hay diet dry matter (DM) and organic matter (OM) consumed were 52.8 and 59.4 g/kg % DM respectively for both treatment groups ($p > 0.05$). Addition of high salt level to potable water did not improve the digestibility coefficients neutral and acid detergent fiber (NDF and ADF). Only, the low crude protein (CP) content of 47.7 g/kg was observed for S-lambs resulted in the drinking saline water. Intakes of salt were associated with increase urine excretion ($P < 0.05$). Urine excretion of animals drink high salt water was 2.97 times higher than in the control. Consequently, retention of nitrogen was higher for the saline water group than in the potable water group treatments. One-third of the dietary nitrogen was excreted in the faeces and two-thirds in the urine. Urinary-N tended to decrease in high salt group and the retained-N was consequently increased ($P < 0.05$). During the experiment the weaned lambs maintained live weight, as well as, daily feed and water intakes. It could be concluded that introducing high salt level to Barbarine Sheep could be an avenue to minimize the feedstuff shortage under arid conditions of Southern Tunisia.

Biography

Wiem Mehdi El-Gharbi has completed his PhD at the age of 30 years from University of Science of Bizerte (Tunisia) and the National Agricultural Research Institute of Tunisia.

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