

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

HISTOLOGICAL CHANGES IN THE DIGESTORY SYSTEM OF QUAILS SUBMITTED TO HEAT STRESS AND METHIONINE SUPPLEMENTATION

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Coturniculture has been growing in Brazil, mainly in the Northeast and Central-West regions. The high temperatures of the Northeast region can lead to digestive system alterations in quails reducing the production indexes. An alternative to such conditions is methionine supplementation. The present study aimed to verify if the methionine supplementation in heat stress situations can minimize the deleterious effects on the morphology of the digestive system. A total of 576 Japanese quails in the production phase (second cycle) were used distributed in a completely randomized design in a 3x4 factorial model and three levels of methionine + cystine (NRC 100%, 110% and 120%) and four temperature ranges (20, 24, 28 and 32°C) totaling twelve treatments with six replicates of eight animals each. The diets were formulated as recommended by the NRC. It was performed standard histological procedures of the intestinal samples (duodenum and jejunum) of 8 animals randomly choose from each treatment, and the morphometry of villi height (VH), crypt depth (CD) and villus:crypt ratio (VCR) of each animal were done. Three photomicrographs were digitized for each animal (duodenum and jejunum), and two measurements of each variable were performed in each of them, making a sample number of 48 per treatment. The VH of the duodenum and jejunum from animals with higher methionine supplementation (120%) were higher at low temperatures (20 and 24°C) than in the higher temperatures (28 and 32°C). Methionine supplementation did not reverse the deleterious effects of thermal stress (32°C) for VH, being lower with 120% of supplementation. The CD went deeper with increasing ambient temperature for jejunum, but not for duodenum. Methionine supplementation did not reverse the deleterious effects of heat stress on CD. The increase of the temperature leads to the linear decrease of VCR (there was no decrease in VH but linear increase in CD). Such variable is related to the integrity and health of the intestine; how greater this ratio, greater capacity of absorption of nutrients and consequence, better the production. In the study, the heat stress diminished the villus integrity, thus requiring more cellular proliferation with consequent increase in energy expenditure, leading to a decrease in egg production (91.58 to 78.52%). It is concluded that the heat stress leads to the morphological changes in the jejunum, which are not reversed by methionine supplementation, and that lead to a decrease in the production of eggs by the quails.

Keywords: coturniculture, intestinal health, morphometry

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