RESUMO - HELMINTOLOGIA

ZINC OXIDE SUPPLEMENTATION MODULATES EOSINOPHIL AND LEUKOCYTE COUNTS IN LAMBS EXPERIMENTALLY INFECTED WITH HAEMONCHUS CONTORTUS

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Haemonchus contortus infection represents one of the major health challenges in sheep farming, associated with reduced productivity and increasing anthelmintic resistance. Zinc is a trace mineral involved in various biological processes, such as the modulation of the immune response. In nanoparticle form, zinc oxide (ZnO) has a larger surface area for absorption and higher bioavailability. Thus, the objective of this study was to comparatively analyze eosinophil and globule leukocyte counts in lambs subjected to experimental infection with H. contortus, supplemented with different particle sizes of ZnO and

different infection statuses (infected and uninfected). To this end, 59 lambs were divided into three supplementation groups: placebo (not supplemented); supplemented with 50 mg of ZnO in microparticles (ZnO-MC) or nanoparticles (ZnO-NP). Within each group, the animals were divided into infected (1,200 L3/week) and uninfected groups, with infection occurring over a six-month period. After slaughter, abomasum sections were cut to a thickness of 5 μm and stained using the Luna stain technique. Subsequently, 10 micrographs were obtained from each slide at 400× magnification for cell quantification. ImageJ software was used for cell counting, and the results were expressed in cells/mm². A significant effect of infection status was observed on eosinophil and globular leukocyte counts, with higher values in infected animals compared to uninfected ones ($p<0.0001$). Zinc supplementation significantly affected eosinophil ($p=0.469$) and globule leukocyte ($p=0.0328$) counts. Infected animals in the ZnO-MC group (14±0.6) had a higher mean eosinophil count compared to the other groups (placebo: 11±1.9; ZnO-NP: 10.2±0.6). Regarding globular leukocyte counts, the ZnO-NP group had a higher mean (71.97 ± 48.99) compared to the other groups (placebo: 54.99 ± 34.12; ZnO-MC: 35.25 ± 24.44). Infection with H. contortus led to a significantincrease in the presence of eosinophils and globule leukocytes in the abomasal mucosa, showing that the local immune response was activated, and zinc supplementation partially changed this response. These findings suggest that the form of zinc administration may directly impact the

cellular components of the local immune response, representing a potentially romising strategy for the health management of sheep in the face of H. contortus infection.

Palavras-chave: abomasal mucosa; immune response; nanoparticles.