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Interaction of Dietary Protein and Vitamin E Supplementation on Gastrointestinal Nematode (Gnt) Parasitism of Naturally Infected Lambs

Authors : Ayobami Adeyemo, Michael Chimonyo, Munyaradzi Marufu

Abstract : Gastrointestinal nematode (GNT) infection significantly hinder sustainable and profitable sheep production on rangelands. While vitamin E and protein supplementation have individually proven to improve host immunity to parasitism in lambs, to our knowledge, there is no information on the interaction of dietary vitamin E and protein supplementation on lamb growth and GIN faecal egg counts in naturally infected lambs. Therefore, the current study investigated the interaction of dietary protein and vitamin E supplementation on faecal egg counts (FEC) and growth performance of lambs. Twenty four Dohne Merino lambs aged 12 months were allocated equally to each of four treatment combinations, with six lambs in each treatment group for a period of eight weeks. Treatment one lambs received dietary protein and vitamin E (PE), treatment two lambs received dietary protein and no vitamin E (PNE), treatment three received dietary vitamin E and no protein (NPE), and treatment four received no dietary protein and vitamin E supplementation (NPNE). The lambs were allowed to graze on Pennisetum clandestinum contaminated with a heavy load of nematodes. Dietary protein supplementation increased ($P < 0.01$) average daily gain (ADG) and body condition scores (BCS). Dietary vitamin E supplementation had no effect ($P > 0.05$) on ADG and BCS. There was no interaction ($P > 0.05$) between dietary protein and vitamin E supplementation on ADG and BCS. Combined supplementation of dietary protein and vitamin E supplementation significantly reduced ($P < 0.01$) faecal egg counts and larval counts, respectively. Also, dietary protein and vitamin E supplementation reduced GNT faecal egg counts over the exposure period. The current findings support the hypothesis that the interaction of dietary protein and vitamin E supplementation reduced faecal egg counts and larval counts in lambs. This necessitates future findings on the interaction of dietary protein and vitamin E supplementation on blood associated profiles.

Keywords : gastrointestinal nematodes, nematode eggs, Haemonchus, Trichostrongylus
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