ABSTRACT

PLANT EXTRACTS AS ALTERNATIVES FOR CONTROL OF GASTROINTESTINAL NEMATODES IN SHEEP

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The objective of the present study is to assess the efficacy of aqueous and ethanolic extracts of Aloe vera, Cucurbita pepo, Embelia ribes, Indigofera tinctoria and Sesbania grandiflora against gastrointestinal nematodes of sheep. Ovicidal and larvicidal properties of the above mentioned plants were investigated by both in vitro and in vivo tests. Aqueous extracts of C. pepo and S. grandiflora demonstrated significant inhibition of egg hatch and larval migration at concentrations of 40 mg/ml and 80 mg/ml. Aqueous extract of Aloe vera and ethanolic extract of Indigofera tinctoria demonstrated inhibitory effect on egg hatching and ethanolic extract of C. pepo showed significant inhibition on larval migration. The ED_{50} value of egg hatch inhibition ranged from 0.57 to 3.51 mg/ml and based on the ED_{50} value, the most potent plant extract was aqueous extract of A. vera. Similarly, the LM_{50} ranged from
0.32 to 1.75 mg/ml and based on LM$_{50}$ the most potent plant extract was ethanolic extract of *C. pepo*. However, in larval development assay, both aqueous and ethanolic extracts of all the plants tested showed only marginal inhibition of larval development at all concentrations tested.

In faecal egg count reduction test (FECRT), aqueous extracts of *S. grandiflora* and *C. pepo* at 500 mg/kg caused significant reduction in eggs per gram the reduction being higher than the result obtained with albendazole. Of the two extracts, *S. grandiflora* significantly reduced EPG as compared to albendazole, the positive control. There was no significant difference in EPG reduction between sheep treated with albendazole and *C. pepo* and between the groups of *S. grandiflora* and *C. pepo*. The major findings of the present study were the high efficacy of aqueous extracts of *S. grandiflora* and *C. pepo* in both *in vivo* and *in vitro* tests. However, the dose required for *S. grandiflora* and *C. pepo* was high in relation to the commercial drench, albendazole. Although there were slight variations in the haematological parameters (PCV, Haemoglobin and RBC) in all the groups between day 0 and 12, all the parameters were within the normal range reported for sheep. Except for blood urea nitrogen, the overall mean of all the serum biochemical profile was within the normal range for sheep.

Based on the results obtained by *in vitro* and *in vivo* assay, the aqueous extracts of *S. grandiflora* and *C. pepo* possess anthelmintic activity and could offer an alternative source for the control of gastrointestinal nematodes of sheep. Haematological and serum parameters were not affected in both the treated and untreated sheep indicating that the extracts did not cause toxic effects. The results of the study showed that the extracts are safe for use in sheep at the doses used in the study.