

IN VITRO ANTHELMINTIC ACTIVITY OF SOME MEDICINAL PLANT EXTRACTS AGAINST CAPRINE GASTROINTESTINAL NEMATODES

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Gastrointestinal nematodiasis is one of the limiting factors for an efficient rearing of small ruminants, specially in developing countries. Studies in Sri Lanka have shown that *Haemonchus contortus* infection is a major cause of morbidity and mortality. The control of gastrointestinal nematodiasis is usually performed using synthetic anthelmintics. The appearance of nematode resistance to these anthelmintics stimulated the research on alternatives, such as medicinal plants. According to circumstances and depending on their efficacy, naturally produced plant anthelmintics offer an alternative that can overcome some of these problems and is both sustainable and environmentally acceptable.

In Sri Lanka, traditional animal healers used various plants to treat gastrointestinal nematode infection for centuries. It is believed anthelmintic activity seen due to indigenous medicinal plants may be due to the presence secondary metabolites of anthelmintics such as tannins, essential oils, triterpenoids and other active compounds in plants. Therefore, the current study focused the attention on plants used in ethno veterinary medicine in Sri Lanka, with the aim of controlling nematode infection in goats using plant extracts, which are affordable, environmentally safe and accessible to rural farmers.

In our experiments, anthelmintic properties of 13 crude plant extracts were assessed *in vitro* using larval migration inhibition (LMI). Out of 13 plant extracts, *Areca catechu* (arica nut) unripe fruit, *Adhatoda vasica* (pavatta) leaves and *Azadirachta indica* (neem) seed had shown significant ($p < 0.001$) inhibitory activity against exsheathed infective larvae (L3) of *Haemonchus contortus* and *Oesophagostomum* spp. Interestingly, *Areca catechu* (arica nut) unripe fruit showed a remarkable reduction ($p < 0.001$) in larval migration through the sieves even at low concentration, when compared with the crude extracts of *Adhatoda vasica* (pavatta) leaves and *Azadirachta indica* (neem) seed. It was observed that the degree of inhibition increased significantly ($p < 0.001$) with the increasing concentrations of the crude extracts up to a certain level and this concentrations were found to be 5 mg/ml, 30 mg/ml and 60 mg/ml for arica nut, neem seed and pavatta leaves respectively.

Our results indicated that as a feed additives, arica nut, pavatta leaves or neem seed, could be used in controlling gastrointestinal nematodes such as *Hemonchus contortus* and *Oesophagostomum* spp which are commonly found in goats. Since humans had used all these three plants, there is very little doubt about their toxicity. However, consideration needs to be given to toxicities that could arise due to species variation. The arica nut, neem seed and pavatta leaves extracts appear to be promising as anthelmintic-active agents and should be investigated further to be used in the field, for the control of gastrointestinal nematodiasis in goats.