

## ANTHELMINTIC EFFICACY OF MEDICINAL PLANTS AGAINST GASTROINTESTINAL NEMATODES OF GOATS.

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Parasitic nematodes are among the most common and economically important infectious diseases of grazing livestock, especially small ruminants in Sri Lanka and the control of gastrointestinal nematode infections in goats is usually by synthetic anthelmintics but substantial levels of anthelmintic resistance have been recorded. A number of medicinal plants, that may prove to be possible alternatives are available. Therefore, the current study focused attention on plants used in ethnoveterinary medicine in Sri Lanka, with the aim of using them for controlling nematode infection in goats.

Twenty crude plant extracts were evaluated for their anthelmintic activity. Firstly the extracts were screened using an *in vitro* larval migration inhibition (LMI) assay. Of these, crude extracts of *Azadiracta indica* (neem) seed (NS), *Areca catechu* (areca-nut) unripe fruit kernel (AUFK), *Adhatoda vasica* (pavatta) leaves (PL), *Cinnamomum sativum* (Cinnamon) leaves (CL) and *Tamarindus indicus* (siyambala) leaves (TL) caused a significant ( $p < 0.001$ ) reduction in larval migration and the degree of LMI increased significantly ( $p < 0.001$ ) with increasing concentration of these extracts. Plant extracts with a significant anthelmintic activity were subjected to a mice toxicity study and were found to be non-toxic to mice.

The plant extracts with significant inhibitory activity were subjected to two dose titration trials, using 49 (4-6 months old) naturally infected (eggs per gram faeces; egg 1000-3400), crossbred goats. The animals were allocated randomly to seven groups and drenched with a single dose of one of the following; levamisole (12 mg/kg), ANFK (5 mg/ml), PL (60 mg/ml), NS (30 mg/ml), CL (30 mg/ml), TL (90 mg/ml); the seventh group was used as a control. Each group was treated with the corresponding extract at a dose rate of 0.2 ml/kg body weight and fecal samples were collected on day -2, 0 and 10. The first trial was carried out using the anticipated effective dose and the second trial was carried out using twice the anticipated effective dose. In the dose titration trial, the crude extracts of AUFK, PL and CL significantly ( $< 0.05$ ) reduced the number of worm eggs in the faeces of naturally infected goats. The fecal egg count reduction (FECR) levels were 44.4%, 43% and 36.3% respectively in the first trial and 80%, 75% and 66.66% respectively for the second trial using a two-fold concentration. The study showed that the crude extracts of AUFK, PL and CL can be used to control gastrointestinal nematodiasis in goats. Thus long-term prophylactic trials should be conducted before recommending their use.

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