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In vivo effects of *Areca catechu* and *Adhatoda vasica* extracts on goats infected with gastrointestinal nematodes

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In our search for inexpensive and acceptable alternatives to gastrointestinal nematode control in goats, medicinal plants used in Sri Lanka were evaluated for their anthelmintic activity by Larval migratory inhibitory (LMI) assay using exsheathed infective larvae from gastrointestinal nematodes of goats. The toxicological properties of *in vitro* active plant extracts were studied using Swiss mice. The non-toxic plant extracts were subjected to efficacy trials using goats. In the efficacy trials, goats treated with methanol extracts of *Areca catechu* immature fruit kernel (2mg/ kg BW) and *Adhatoda vasica* leaves (24 mg/kg BW) showed anthelmintic efficacy of 80% and 75%, respectively. Above doses were based on the maximum significant LMI achieved from the *in vitro* assay.

Based on above results, a long-term prophylactic trial was conducted on three groups of goats (10 X 3), by separately drenching *Areca catechu* immature fruit kernel extract, *Adhatoda vasica* leaf extract and phosphate buffered saline (control) orally. Above drenching was continued at 14-day intervals for a period of six months. The log transformed mean monthly feacal egg counts (FEC), analysed by repeated measures of analysis of variance (RMA), showed that mean monthly FEC remained high in the untreated group throughout the trial, whereas in the groups treated with extracts, FEC decreased significantly ($p<0.05$) from the second month until the end of the trial. The one way analysis of variance of the total worm burdens showed that the worm burdens of the treated groups were significantly lower when compared with the control. When analysed by RMA, live weight gain of the

group treated with *Areca catechu* extract showed a significant ($p<0.05$) difference only during the last two months of the trial, and the *Adhatoda vasica* extract treated group showed a significant live weight gain during the last month of the trail when compared with the untreated group. The packed cell volume level and haemoglobin concentration of the treated groups increased gradually throughout the study period and the levels for the control group decreased with the time.

Our findings indicate that the potential use of the above two extracts are an inexpensive and acceptable alternative to gastrointestinal nematode control in goats.

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