

Potential of controlling intestinal parasitic infections in small ruminants (sheep and goats) with extracts of plants high in tannins

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The Message

Gastrointestinal nematode infections are one of major problems facing the livestock industry worldwide. Apart from anthelmintic resistance problem, control measures are compounded by poor availability and affordability of conventional anthelmintics particularly for under-resourced small scale farmers in the developing countries.

Introduction

- To control gastrointestinal infections new and more effective approaches that do not rely too much on chemotherapeutics are required.

- Some studies have reported lower worm burdens and improved performance of parasitized sheep feeding on forages rich in condensed tannins (CT) compared to control.

- The objective was to test anthelmintic activity of two tannin extracts against sheep and mice nematodes. The two extracts, Quebracho tannin (QT) and Wattle tannin (WT), originated from tropical trees *Schinopsis balansae* and *Acacia meamsii* respectively. They are both used in the leather industry.

Methods

Trial 1

- Twenty parasite-naïve rams were trickle infected with 450 L3 of (*Haemonchus contortus*) daily for 21 days while faecal egg counts (FEC, eggs per g (EPG) dry faeces) were being monitored.

- On day 22 they were randomized into two groups (n = 10); control group received a placebo drench (water) whereas the treated group received QT drench (as a source of CT) at 2.4g kg⁻¹ bodyweight for 3 consecutive days until day 24.

- All animals were humanely sacrificed on day 25 and worm burdens recovered from abomasum for estimation.

Trial 2

- Freshly obtained adult worms (*Heligmosomoides polygyrus*) were recovered from passage mice each time.

- About 10 - 15 (male and female) worms were incubated at 39°C on Petri dishes containing varying strengths of WT solution in phosphate buffered saline.

- Death of the worms at different time intervals was taken as the index of survival.

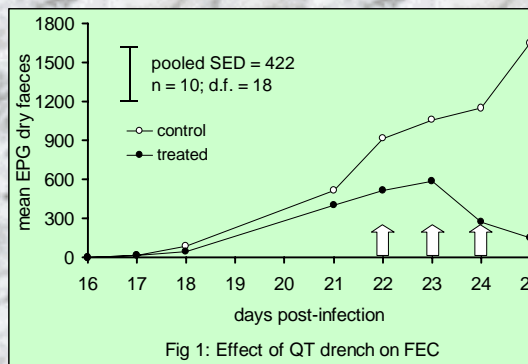


Fig 1: Effect of QT drench on FEC

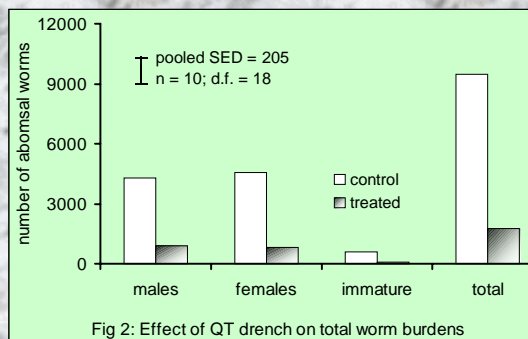


Fig 2: Effect of QT drench on total worm burdens

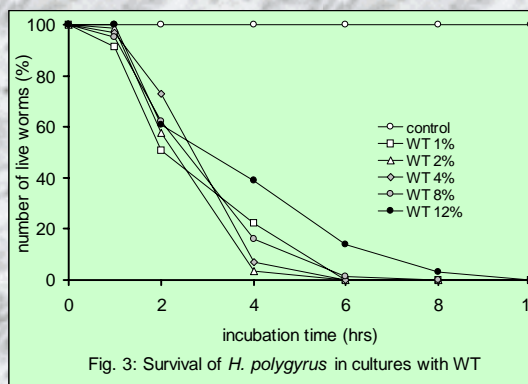


Fig 3: Survival of *H. polygyrus* in cultures with WT

Results

- Administration of QT drench for 3 consecutive days reduced FEC by 91% and total worm burdens by 80% (p < 0.01) compared to control group by the day of slaughter (Fig. 1 & 2).

- All concentrations of wattle extract (WT) were toxic to the nematode, *H. polygyrus* as no worm survived the 10-h incubation period (Fig 3).

Conclusion

The two tannin extracts showed appreciable anthelmintic activity, it may be possible to utilise them in the tropics to alleviate helminthiasis in small ruminants.

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