

PR
615.321
EDT

**EVALUATION OF ANTHELMINTIC ACTIVITY OF
SELECTED MEDICINAL PLANTS CURRENTLY USED
IN AYURVEDA**



E. R. H. S. S. Ediriweera

D.A.M.S (Honors) (Colombo),
M.D (Ayu) Kayachikithsa specialization in Panchakarma (India)
Department of Nidana Chikithsa
Institute of Indigenous Medicine
University of Colombo

**A thesis submitted for the degree of Doctor of Philosophy of
the University of Peradeniya**

2015

Supervisors



688983

R. P. V. J. Rajapakse

B V Sc (Sri Lanka),
PhD (Peradeniya)
Senior Professor
Faculty of Veterinary Medicine and
Animal Science
University of Peradeniya
Sri Lanka

W. D. Ratnasooriya

BSc (Honors) (University of Ceylon)
PhD (University of Strathclyde)
DSc (University of Peradeniya)
Senior Professor
General Sir John Kotelawala
Defence University
Sri Lanka

688983

ABSTRACT

Single-ingredient plant decoctions, prepared using twenty six plants belonging to nineteen Families were selected for this study. These plants are traditionally used in Ayurveda and Sri Lankan traditional medicine as anthelmintics. The plant preparations were evaluated for anthelmintic activity using infective larvae of *Toxocara canis* and *Haemonchus contortus*, as models in *in vitro* studies and *Toxocara canis* in *in vivo* mouse model. Clinical studies to evaluate effects of *Leucas zeylanica* and *Pavetta indica* on *Enterobius vermicularis* infections were also carried out.

In vitro studies included larval migration inhibition assay (LMI) and evaluation of the effect on viability of *T. canis* and *H. contortus* larval forms in the presence of twenty five plant decoctions. Decoctions of twenty plants revealed promising results in the range of 80 - 100% inhibition on *haemonchus* infective larvae. Decoctions of twelve plants revealed high effectiveness in the range 80-100% with *Toxocara canis* infective larvae. Furthermore, eight plant decoctions namely, *Cassia alata*, *Cassia occidentalis*, *Cassia tora*, *Embelia ribes*, *Erythroxylum moonii*, *Justicia adhattha*, *Sesbania grandiflora* and *Vernonia cinerea* were effective in LMI of both species.

In the *in vitro* viability studies, several plant decoctions were highly effective in both larval types. All migrated larvae of *T. canis* and *H. contorsus* were dead in decoctions of *M. oleifera* and *E. moonii*. All migrated *H. contorsus* larvae were dead in decoctions of *R. sativus*, *A. indica* and *L. zeylanica*. All migrated larvae of *T. canis* were dead in decoctions of *P. obtusa*, *S. grandiflora* and *J. adhattha*.

In vivo studies on migratory larvae in mouse model was performed to evaluate *Ghanasara* preparations with *Erythroxylum moonii* and *Scoparia dulcis* to effect on migratory larvae of *T. canis*. In this study, *Ghanasara* of *E. moonii* was highly effective in inhibition of *Toxocara* larval migration in the visceral pathway of mouse. It

was able to reduce the migration of larvae in most of the organs examined such as heart, spleen, kidney brain and with total clearance in lungs and intestines within a period of seven days of treatment with *E. moonii*. *S. dulcis* preparations also demonstrated moderate activity in inhibiting migrating larvae.

Clinical studies were performed using decoctions of *Pavetta indica* and *Leucas zeylanica* on adult/children and adults respectively. Results were evaluated based on clinical symptom and faecal examination for worm eggs.

Group (adult) treated with *L. zeylanica*, reported total absence of nocturnal anal itching, over 80% complete or partial reduction of abdominal pain, loss of appetite, bad breath and eructation and ova were absent in stools after treatment. During the last two days of treatment, abdominal burning sensation was reported by 12% of patients.

Groups (children and adults) treated with decoction of *P. indica* showed more than 75% reduction of symptoms such as nocturnal anal itching, impaired appetite, abdominal pain, eructation, diarrhoea and also ova were absent in stools after treatment. It is concluded that in treatment of *E. vermicularis* infections, the decoction of *L. zeylanica* is highly effective in adults whereas *P. indica* is highly effective both in children and adults.