



Applicant Information

Applicant Name	Applicant Email	Affiliation	Country
Dr Jonathan Jato	jjato@uhas.edu.gh	University of Health and Allied Sciences	Ghana

Abstract Details

Title:

The search for antiparasitic drugs from natural sources: in vitro nematocidal effects of polyphenol-rich plant extracts against intestinal worms

Category:

Communicable diseases (Malaria, TB, HIV, NTD)

Authors:

Jonathan Jato, Emmanuel Orman, Yaw Duah Boakye, Christina Strube, François Ngnodandi Belga, Christian Agyare

Objectives:

Soil-transmitted helminthiasis continue to present a huge economic burden on animal and human health resulting in significant morbidity and mortality. Plant polyphenols have recently been recognised as sustainable means for helminth control. This study, therefore, sought to investigate the anthelmintic effects of tannin-containing extracts against animal and human intestinal parasites.

Method:

Tannin-rich hydro-acetonic extracts of *Phyllanthus urinaria* L. and *Combretum mucronatum* Schum & Thonn. were screened in vitro against infective larvae of *Ascaris suum*, *Toxocara canis*, *Ancylostoma caninum*, *Trichuris suis* (isolated from infected animals) and human hookworm and whipworm larvae obtained from an infected population in the Bono-East region of Ghana.

Results:

The ellagitannin-rich extract of *P. urinaria* produced concentration-dependent effect with IC₅₀ of 1.513, 0.112, 0.035, 0.024 mg/mL against *T. canis*, *A. caninum*, *A. suum* and *T. suis* respectively. This is comparable to effects seen for the proanthocyanidin-rich extract of *C. mucronatum* against same parasites. The two extracts again showed potent inhibition of human hookworm and whipworm larvae with IC₅₀ of 0.301 and 0.332 mg/mL respectively for *P. urinaria* extract, and 0.343 and 0.230 mg/mL for *C. mucronatum*. Activity in animal parasites indicates the potential of these extracts to counter the zoonotic risk associated with animal intestinal nematodes.

Conclusion:

This study revealed that both ellagitannins and proanthocyanidins exhibited significant but similar effects against human and animal parasites and hence may act via similar pathways. It therefore validates the traditional use of these plants as dewormers and strengthens the call for plant polyphenolic compounds as a promising source of alternative anthelmintic therapy.

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