
Anthelmintic activity of root bark of *Carissa carandas*

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Abstract

The anthelmintic activity of the methanolic extract of the root bark of *Carissa carandas* was evaluated on adult Indian earthworm (*Pheretima posthuma*) using albendazole as a reference standard. The extract caused paralysis followed by the death of worm at the tested dose level. The extract at the highest tested concentration has anthelmintic activity comparable with that of standard drug albendazole.

Introduction

Carissa carandas (Fam. Apocynaceae) is a shrub growing widely in various parts of India, Nepal and Australia. Various parts of the plant have been reported to cure a variety of ailments.

The root barks were used by the tribals of Jharkhand and Chhattisgarh as stomachic, anthelmintic and antiscabies medicine. Unripe fruits are sour and widely used as astringent and treatment of constipation. The leaves and fruits find application to control diarrhoea and skin diseases^{1,2}. The present study was undertaken to evaluate the anthelmintic potentiality of the root bark of *Carissa carandas*.

Material and Methods

Plant Material

The root bark was collected from the campus of Birla Institute of Technology, Mesra, Ranchi and identified by taxonomist of our



department. A voucher specimen has been preserved in our laboratory for future reference. The roots were washed with water, sun dried after washing and then the bark was peeled and grinded to a coarse powder in a grinder. The powder was passed through a 40-mesh sieve and extracted with methanol in a Soxhlet apparatus. The methanol was completely removed under vacuum and the dried extract was stored in a vacuum desiccator till further use.

Evaluation of anthelmintic activity

The anthelmintic activity was evaluated on adult Indian earthworm, *Pheretima posthuma* due to its anatomical and physiological resemblance with the intestinal round worm parasites of human being^{3,4,5}. The anthelmintic activity of the crude extract of the root bark of the plant was determined by following the method of Mathew *et al*⁶ and Dash *et al*^{7,8}.

Five groups of approximately equal size earthworms consisting of six earthworms in each group were used for our study. Each group was tested with one of the following: vehicle (1% gum acacia in saline), albendazole (10mg/ml) and extracts (10, 25 and 50 mg/ml). Observations were made for the time taken to paralyze and death of the individual worms. Paralysis was said to have occurred when the worms did not revive even in normal saline. Death was concluded when the worms lost their motility, followed with fading away of their body colour⁹.

Results and Discussions

The extract was found to possess flavanoid, alkaloid, sterols and reducing sugars on preliminary phytochemical screening. The results of the anthelmintic activity of the extract are illustrated in Table 1. The extract caused paralysis followed by death of the worms at all tested dose levels. The potency of the extract was found to be inversely proportional to the time taken for paralysis/death of the worms. The activity reveals concentration dependant nature of the extract. The extract at the highest tested concentration has anthelmintic activity comparable with that of standard drug albendazole.

Thus the study justifies the traditional uses of the root bark as anthelmintic. The plant needs to be explored further for its phytochemical profile to identify the exact chemical structure of the components responsible for such action.

Table 1:
Anthelmintic activity of the methanolic extract of root bark of *Carissa carandas*

Treatment	Concentration (mg/ml)	Time taken for paralysis (in min)	Time taken for death (in min)
Vehicle (Control)	---		
Albendazole	10 mg/ml	30.6 ± 0.41	67.4 ± 0.56
Methanol extract	10 mg/ml	105.2 ± 0.71	175.7 ± 0.81
Methanol extract	25 mg/ml	57.4 ± 0.46	87.2 ± 0.77
Methanol extract	50 mg/ml	37.1 ± 0.53	65.3 ± 0.25

(Results are expressed as Mean ± SEM of six observations)

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