

## Research Article

# Anthelmintic Studies of Leaves of *Scleropyrum pentandrum* (Dennst.) Mabb

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## ABSTRACT

*Scleropyrum pentandrum* (Dennst.) Mabb of santalaceae family is a small tree found in the evergreen forests of different parts of the world. It is commonly found in Peninsular India, Western Ghats, South and Central Sahyadris and on sandy soil. It is traditionally used for various biological activities by tribal people in different parts of the world. The present study explains the anthelmintic activity of the leaves of the *Scleropyrum pentandrum*. The aqueous extract, alcoholic extract and the crude drug were tested for the anthelmintic activity. Further study is needed to isolate and elucidate its medicinally active components. Also necessary studies are needed to evaluate each compounds for its pharmacological activities.

**Keywords:** Anthelmintic activity, *Scleropyrum pentandrum*, *Pheretimaposthuma*, *Ascaridia galli*.

## INTRODUCTION

*Scleropyrum pentandrum*. (Dennst.) Mabb (syn: *Scleropyrum wallichianum* Am.) belongs to the family santalaceae. The plant grows to a maximum height of 7 meters and is normally found on sandy soil, as well as in semi and dry evergreen forests. It is commonly called malayammachi and malayamkki in Kozhikkode and Naikkuli in Kasargod of Kerala and mulkirayan in Tinnelveli of Tamilnadu<sup>1</sup>. The whole plant parts are applied externally to treat skin irritation in Kani tribal settlement, Agasthyamalai biosphere reserve, Tinnelveli South India<sup>2</sup>. The crushed roots are given for curing stomach ailments in Kurichyas tribal community in Kannur district, Kerala<sup>3</sup>. The roots are boiled and the decoction is taken as a contraceptive by semalai people. It is believed that women will become barren after consuming the decoction. Paste of stem bark and leaf is applied externally to treat skin diseases<sup>4</sup>. Stem is used as galactagogue<sup>5</sup>. Gale *et al*, (2007) presented the cyclo oxygenase inhibiting, anti malarial and anti TB activities of *Scleropyrum pentandrum*<sup>6</sup>. Anticaryogenic and cytotoxic activity of methanolic extract of *S. pentandrum* leaves were carried out by Venugopal *et al*, (2011)<sup>7</sup>. The extract was found to be having anticaryogenic activity. Five unprecedented furan-2-carbonyl C- glycosides and two phenolic diglycosides were isolated from leaves and twigs of *Scleropyrum pentandrum* by Tripetch Kanchanapoom *et al* (2012)<sup>8</sup>.

Fruits and seeds of *Scleropyrum pentandrum* also called *kirinda* is consumed by *Paniya*, *Kattunaika* and *Kuruma* tribes of Wynad district, Kerala, India<sup>9</sup>. It is also called irumulli and is used as a mechanical barrier (fencing) in dried or live condition<sup>10</sup>. Ajithbabu T K *et al* (2013) carried out the anatomical and phytochemical studies and reported the presence of Carbohydrate, Phenols, Flavanoids, alkaloids, Tannins, Glycosides, Sterols, Terpenoids in the alcoholic extract of the plant *scleropyrum pentandrum*. The anti inflammatory activity and qualitative and quantitative microscopy studies also reported.<sup>11,12</sup> Extensive literature reviews revealed that much of the bioactivities of this plant remain unexplored.

## EXPERIMENTAL

### Plant materials

The leaves of *S. pentandrum* were collected from the sacred groves of Poyilkavu Durga Temple, Calicut, Kerala. The plant is identified at Centre for Medicinal Plants Research, Kottakkal and Dr. A. K. Pradeep, Assistant professor, Department of Botany (no: 107864), and the herbarium is deposited at Botany department, Calicut University, Kerala.

### Preparation of extracts

The fresh leaves of *scleropyrum pentandrum* were collected from the same location in a large scale. The collected leaves were dried in shade to avoiding direct sun light to protect the

metabolites of the leaf. It was then powdered and subjected to soxhlet extraction with alcohol and water. This extracts and the powdered crude drug were used for the anthelmintic activity study.

### Anthelmintic activity

#### Animals

Adult earthworms (*Pheretima posthuma*) and Roundworm (*Ascaridia galli*) were used to evaluate anthelmintic activity in *vitro*. Earthworms were collected from the watery paddy fields of Poilkavu, Calicut. The roundworms were obtained from intestine of freshly slaughtered fowls. Infested intestines of fowls were collected from the local slaughter house of Vellimad kunnu, Calicut. These were washed with normal saline solution to remove all the faecal matter. These intestines were then dissected and worms were collected and kept in normal saline solution. The average size of earthworm was 4-7 cm. Average size of round worm was 4-6. Earthworm and helminths were identified and services of veterinary practioners were utilized to confirm the identity of worms.

#### Drugs and chemicals

Piperazine citrate (Glaxo Smithkline) was used during the experimental protocol.

Test samples of the extract were prepared at the concentrations, 25, and 50 mg/ml in distilled water. Six worms of *Pheretima posthuma*, and *Ascaridia galli* of approximately equal size (same type) were placed in different Petri dish containing 25 ml of above test solutions of extracts. Piperazine citrate (50 mg/ml) was used as reference standard and distilled water as control. The same procedure was adopted for both the types of worms. The

test solutions and standard drug solution were prepared freshly before starting the experiments. Observations were made for the time taken for paralysis was noted. No movement of any sort except when the worms were shaken vigorously is taken as the paralysis. Time for death of worms were recorded after assuring that worms not moved when they shaken vigorously and dipped in warm water of 50° C. The results were shown as in Table 1 & 2<sup>13,14</sup>.

#### Statistical analysis

Results obtained were evaluated by unpaired 't' test. The values of p<0.5 for the test were considered statistically significant.

### RESULTS AND DISCUSSION

Aqueous extracts of 50 mg/ml showed a maximum anthelmintic activity compared to the alcoholic extracts of either 25mg/ml and 50mg/ml concentrations.

### CONCLUSION

The aqueous extract of the drug at 50mg/ml is found to be more effective than the alcoholic extracts. Both methods are found to be giving similar results with the extracts. Further studies must be conducted to establish the anthelmintic activity of the leaf extract by different techniques and different standards. Our future aim is to isolate the chemical constituents responsible for the anthelmintic activity.

### ACKNOWLEDGEMENT

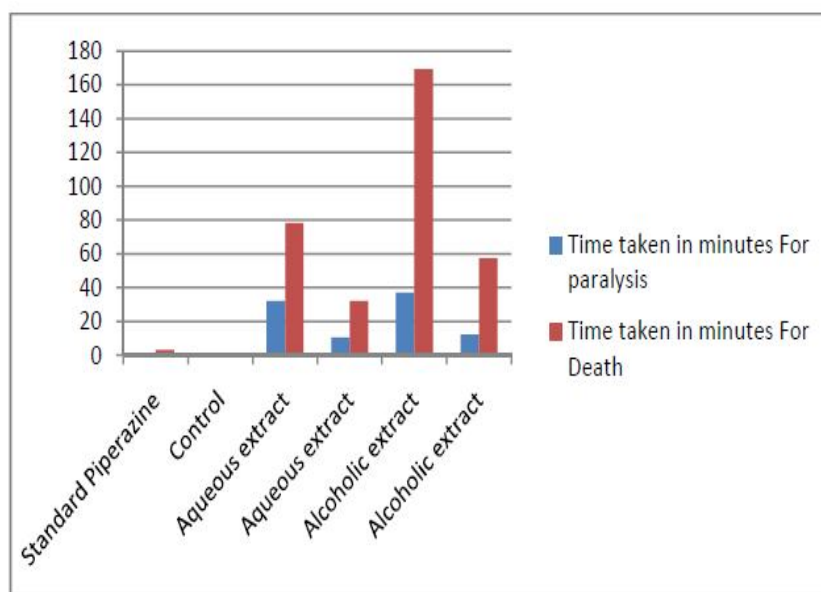
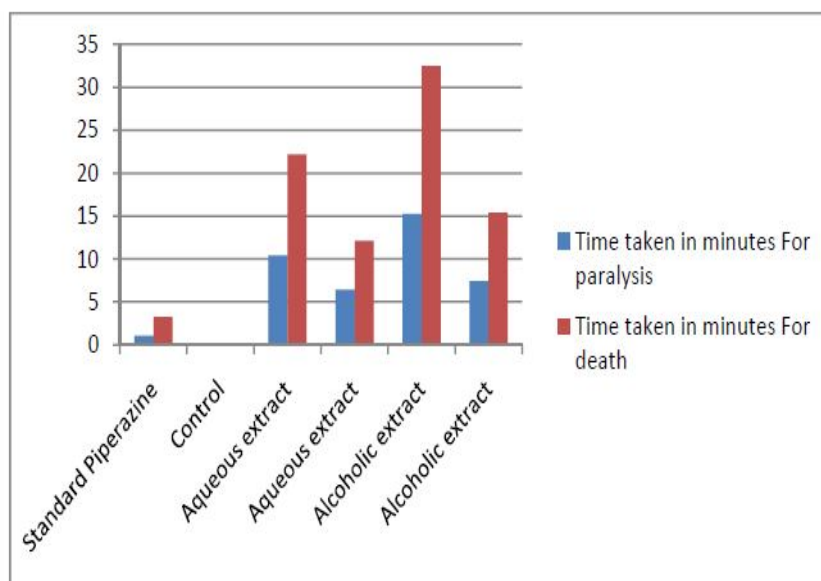
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**Table 1: Anthelmintic activity of *Scleropyrum pentandrum* extract on *PheretimaPosthuma***

Treatment		Time taken in minutes	
		For paralysis	For death
Standard Piperazine	50mg/ml	1.41±.17	3.32±.21
Control	Distilled water	0	0
Aqueous extract	25mg/ml	32.09±.26	78.13±.29
Aqueous extract	50mg/ml	10.42±.20	32.14±.24
Alcoholic extract	25mg/ml	37.04±.27	169.10±.32
Alcoholic extract	50mg/ml	12.27±.17	57.42±.23

**Table 2: Anthelmintic activity of *Scleropyrum pentandrum* extract on *Ascaridia galli***

Treatment		Time taken in minutes	
		For paralysis	For death
Standard Piperazine	50mg/ml	1.1±.12	3.28±.14
Control	Distilled water	0	0
Aqueous extract	25mg/ml	10.43±.18	22.15±.22
Aqueous extract	50mg/ml	6.43±.19	12.14±.21
Alcoholic extract	25mg/ml	15.25±.22	32.42±.26
Alcoholic extract	50mg/ml	7.44±.15	15.42±.19

**Plot. 1: Anthelmintic activity of *Scleropyrum pentandrum* extract on *Pheretima Posthuma*****Plot. 2: Anthelmintic activity of *Scleropyrum pentandrum* extract on *Ascaridia galli***

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