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Anthelmintic Activity of *Piper Betle* Linn, (Paan/ Nagavalli) Aqueous Extract

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ABSTRACT

The crude extract of *Piper Betle* Linn, (Paan/ Nagavalli) was evaluated for anthelmintic activity in experimental adult earthworm's *Eisenia fetida*. The result expressed in terms of time for paralysis and time for death of earthworm *Eisenia fetida*. The aqueous extract of *Piper Betle* Linn, (Paan/ Nagavalli) show anthelmintic activity.

Keywords: *Piper Betle* Linn, (Paan/ Nagavalli)), albendazole, *Eisenia fetida*, anthelmintic activity, Helminthes.

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INTRODUCTION

Helminths infections are the most widespread infections in humans, affected at least 1/3 people of world population. The helminthes infection caused by infestation with parasitic worm. They produce harmful effect on host by depriving him of food, causing blood loss and by secreting toxins [1]. The parasitic worms are categorized into three groups: cestodes, or tapeworms; nematodes, or roundworms; and trematodes, or flukes [2]. Anthelmintic are drugs that act locally to expel parasitic worms from gastrointestinal tract or systemically to remove adult helminths or development forms that invade organs and tissues. They can either kill (vermicides) or expel them [3].

The Paan/ Nagavalli consist of dried leaves of *Piper Betle* Linn. belonging to family Piperaceae[4]. Paan is native to Indonesia, Caribbean Island and India. The main chemical constituents of *Piper Betle* are 4-Allyl-Pyrocatechol, Allyl-Catechol, Ascorbic-acid, ASH, Asparagines, Beta-Carotene Cadinene, Calcium, Carbohydrate, Carvacrol, Caryophyllene, Chavicol, Diastase, Etragole, , Eugenol, Eugenol-methyl-ether & other Fat, Fiber, GABA Plant, Glucose, Havibetol, Hydroxy-Chavicol, Iron, Niacin, Ornithine, Oxalic acid, P-Cymene , Phosphorus, Potassium nitrate, Protein, Ptrocatechin, Riboflavin, Starch, Sucrose, Sugars, Tannin, Terpenene, Thiamin, Water [5].The *Piper Betle* (Paan/ Nagavalli) was profound used as aromatic, stimulant, carminative, astringent, aphrodisiac, and antiseptic [6]. The literature survey revealed that there are no sufficient studies carried out regarding anthelmintic activity of *Piper Betle* (Paan/ Nagavalli). Hence, the present study is focused to evaluate the anthelmintic activity of *Piper Betle* (Paan/ Nagavalli) on *Eisenia fetida*. Initial results are encouraging and head to evaluate extensively.

MATERIALS AND METHODS

Collection & authentication of plant

Leaves of *Piper Betle* were collected from the local market of Pune and authenticated by the Botanical Survey of India, Koregaon Park, Pune.

Experimental animal

Adult Indian earthworms *Eisenia fetida* having anatomical and physiological resemblance with intestinal roundworm parasite of the human beings. *Eisenia fetida* collected from moist soil of the botanical garden were washed with normal saline and used for the anthelmintic study. The earthworms (6-9 cm in length and 0.1-0.2 cm in width) were used for all the experimental protocols [7]. In the experiment, earthworms were divided into three groups. Each group consisting of six earthworms (approximately equal size). Albendazole was used as reference standard while distilled water as control & aqueous extract of *Piper Betle* (Paan) at different concentration.

Standard drug

For present study Albendazole included as Standard Drug. The concentration of standard drug was prepared in 1% gum acacia in normal saline to give 40mg/ml concentration.

Anthelmintic investigation

The earthworms were used to determine anthelmintic activity of *Piper Betle* (Paan) extract, the earthworm divided into three groups, each group consisting six earthworms. The earthworms were first treated with 1% gum acacia in Normal Saline, then the earthworms were treated with 25ml solution of albendazole (40mg/ml), aqueous extract (25, 50, 75,100 mg/ml) of *Piper Betle* (Paan). Observations were made for the time to be taken for paralysis and death of individual worms. Paralysis was said to occur when no movement of any sort could be observed except when the worms were shaken vigorously. Death was concluded when the worms lost their motility followed with fading away of their body colors [8]. (Table 1)

Table 1: The Anthelmintic activity of *Piper Betle* (Paan) extract

Extract	Concentrations (mg/ml)	Time required to paralyze. (min)	Time required to death of worm. (min)
Control	—	—	—
Aqueous extract	25	NA	NA
	50	26.33 ± 0.2250	34.58 ± 0.09000
	75	7.155 ± 0.04500	11.23 ± 0.02000
	100	5.130 ± 0.03000	8.360 ± 0.1300
Albendazole	40	3.310 ± 0.2000	6.45 ± 0.1200

NA: No activity; All the values are expressed as mean ± SEM, N=3

RESULTS AND DISCUSSION

Observation were made for the time taken for paralysis (Paralysis was said to occur when the worm did not revive even in normal saline) and Death (Death was concluded when the worms lost their motility followed with fading away of their body colors) of individual worms in standard drug and various aqueous extracts of *Piper Betle*. The data revealed that all the extracts showed remarkable anthelmintic activity as compared to the standard drug as shown in the graph [Fig.1].

From the above results it was concluded that all the aqueous extracts of varying concentrations of the leaves of *Piper Betle* are having good anthelmintic activity as compared to the conventionally used drug. This may be the basis to explore the exact chemical constituents present in the leaves of *Piper Betle* for anthelmintic activity.

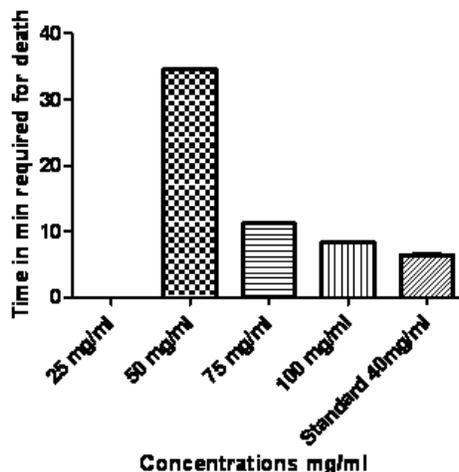


Fig 1: Anthelmintic activity of *Piper betle*

CONCLUSION

The traditional use of leaves of *Piper Betle* as an Anthelmintic have been confirmed as the leaves extracts displayed activity against the *Eisenia fetida* in this study. Further studies need to isolate and reveal the active compound contained in the crude extracts of *Piper Betle* and establish the mechanisms of action are required.

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