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Anthelmintic activity of *Myristica fragrans* (Nutmeg) extract

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ABSTRACT

The crude extracts of *Myristica fragrans* (Nutmeg) was evaluated for anthelmintic activity in experimental adult earthworm's *Pheretima posthuma*. The result expressed in term of time for paralysis and time for death. The alcoholic & aqueous extract of *Myristica fragrans* (Nutmeg) show potent anthelmintic activity.

Keywords: *Myristica fragrans* (Nutmeg), albendazole, *Pheretima posthuma*, anthelmintic activity, Helminths

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INTRODUCTION

Helminths infections are the most widespread infections in humans, affected at least 1/3 people 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]. Anthelmintics are drug that act locally to expel parasitic worm from gastrointestinal tract or systemically to remove adult helminthes or development froms that invade organs and tissue. They can either killing (vermin-cides) or, expel them [3].

The myristica fragrans (Nutmeg) consists of dried kernels of the seed of myristica fragrans houtt, belonging to family myristicaceae. Nutmeg is native to Indonesia, Caribbean island and India. The main chemical constituents of Myristica fragrans (Nutmeg) are myristincin, elimicin, saffrole, palmitic, oleic, lauric, and other acid, protein and starch. The Myristica fragrans (Nutmeg) was profound used as a carminative, stimulant, flavoring agent and also used in the treatment of rheumatism [4]. The literature survey revealed that there are no sufficient studies carried out regarding anthelmintic activity of myristica fragrans (Nutmeg). Hence, the present study is focused to evaluate the anthelmintic activity of Myristica fragrans (Nutmeg) on *Pheretima posthuma*. Initial results are encouraging and head to evaluate extensively.

MATERIAL AND METHOD

Collection & authentication of plant

The Myristica fragrans (Nutmeg) collected from local Market of mandsaour district of Madhya Pradesh, India. And authenticated by Dr. B.S. Baghel, Department of Botany, Krishi Vigyan Kendra Horti culture College, Mandsaour, Madhya Pradesh, India.

Extraction methodology

The dried Myristica fragrans (Nutmeg) was pulverized into coarse powder in a grinder machine. The 200 gm of dried Myristica fragrans (Nutmeg) extracted by soxhlet apparatus using various solvents. Solvent from each sample was filtered, squeezed off and evaporated off under reduce pressure in a rotary evaporator to obtain crude extract. Both extract are suspended in 1% Acacia in normal saline used as a vehicle for present study.

Experimental animal

Adult Indian earthworms *Pheretima posthuma* having anatomical and physiological resemblance with intestinal roundworm parasite of the human being. So *Pheretima posthuma* were used for present study [5]. Adult earthworm of the genus and species, pheretima

posthuma (3-6 cm in length and 0.1-0.2cm in width), was collected from moist soil, and washed out in to normal saline water to remove all faecal matter and the earthworms are divided into four groups. Each group consisting of six earthworms (approximately equal size). Group first serve as control, receive only normal saline; Group second serve as standard, receive standard drug albendazole Group third serve as alcoholic extract; Group forth serve as aqueous extract of 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 50mg/ml concentration.

Anthelmintic investigation

The earthworms were used to determine anthelmintic activity of *Myristica fragrans* (Nutmeg) extract, the earthworm divided into four groups, each group consisting six earthworms. The earthworms were first treated with 1% gum acacia in Normal Saline, than the earthworms were treated with 25ml of solution of albendazole (50mg/ml), alcoholic and aqueous extract (50,100 mg/ml) of *Myristica fragrans* (Nutmeg).

Observations are made for the time taken to paralysis and death of individual worms. Paralysis was said to occur when the worms do not revive even in normal saline. Death was concluded when the worm lost their motility followed with fading away of their body color ^[6]. (Table 1)

RESULTS AND DISCUSSION

The anthelmintic effect of *Myristica fragrans* (Nutmeg) extract is show in table1. The aqueous & alcoholic extract of *Myristica fragrans* (Nutmeg) shows Dose dependent activity. The observation of result show that the anthelmintic activity of alcoholic Extract is more potent compare to aqueous extract. The literatures reports reveal that myristincin, elimicin, saffrole, lauric acid, protein and starch present in the extract know to possess anthelmintic activity. In the present investigation also the observed anthelmintic potential of test extract may be due to presence of similar phytoconstitutes, which was evident by prelim.

Table 1: The Anthelmintic activity of Myristica fragrans (Nutmeg) extract

S.No.	Treatment	Concentration	Time Taken For Paralysis (min.)	Time Taken For Death (min.)
1.	Vehicle			
2.	Albendazole	50mg/ml	16.29±0.08	54.28±0.06
3.	Alcoholic Extract	50mg/ml	19.30±0.06	38.28±0.08
		100mg/ml	11.30±0.08	26.22±0.06
4.	Aqueous Extract	50mg/ml	36.02±0.08	52.29±0.07
		100mg/ml	17.33±0.07	32.26±0.08

Result expresses as mean ± SEM from mix observation

CONCLUSION

In conclusion, alcoholic & aqueous extract of *Myristica fragrans* (Nutmeg) has anthelmintic activity against *Pheretima posthuma* and its activity is comparable with the standard drug albendazole. The aqueous & alcoholic extract of *Myristica fragrans* (Nutmeg) has beneficial anthelmintic effect.

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