

IN-VITRO ANTHELMINTIC ACTIVITY OF *OCIMUM SANCTUM* LEAVES EXTRACT

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ABSTRACT

In this present experiment we had studied about to evaluate invitro anthelmintic activity of *Ocimum sanctum* by using leaves extract. Anthelmintic activity was tested against Indian earthworm *Pheretima posthuma*. Extraction of *Ocimum sanctum* demonstrated potent anthelmintic activity tested against Indian earthworm *Pheretima posthuma*. The dose-dependent anthelmintic efficacy of the fractions was quite similar to that of piperazine citrate. The result obtained in the study led to the conclude that leaves of the mangrove plant, high level of polyphenolics and show significant anthelmintic activity. *Ocimum sanctum* Linn known as Tulsi in India is a sacred plant for hindus known from centuries and being used in Ayurveda for its varied healing properties belonging to the Labiateae family. To this purpose we have studied in vitro anthelmintic activity of osmium in comparison with albendazole.

KEYWORDS: *Ocimum sanctum*, Anthelmintic activity, *Pheretima posthuma*, Tulsi, Traditional Indian Medicine.

INTRODUCTION

Soil-transmitted helminthes like hookworm, roundworms have been documented major health public health tribulations in many under developed and developing countries.^[1,2] Hookworm is mostly accountable for causing anaemia (38 % to 65.6 %), and it was obvious that the role of anthelmintic in benefit the anaemic condition of the pregnant women and children.^[3] With the exception of Piperazine (benzimidazole) no other anthelmintics is found to be safe during first trimester of pregnancy.^[4] An Anthelmintic substances having sizeable toxicity to humans, are present in foods derived from livestock, posing a severe warning to human health. A new lead for helminth control is much desirable and has promoted studies of traditionally used anthelmintic plants, which are generally considered to be important sources of bioactive substances.^[4,5] Anthelmintics derived from plant source can be an answer to this world wide problem as they form secure and non-toxic with a modified site of action.^[7,8] *Ocimum sanctum* Linn (*Ocimum tenuiflorum*) known as Tulsi in India, is a sacred plant for hindus known from centuries and being used in Ayurveda for its varied healing properties belonging to the Labiateae family. It was used widely in the treatment of respiratory problems, gastrointestinal disturbances, skin problems, joint inflammatory conditions, eye related diseases, fever conditions, immuno stimulants and even for insect bite etc. The *Ocimum sanctum* also been recommended to hold antidiabetic^[9,10] hepatoprotective, antifertility, anticancer, antifungal, antimicrobial, cardioprotective, antiemetic, antispasmodic, analgesic actions.^[11] Tulsi also has been

used as storing agent with grains to repel insects.^[12] To this purpose we have studied in vitro anthelmintic activity of osmium in comparison with piperazine citrate. Groups of approximately equal size worms consisting of five earthworms individually in each group were released into in each 20 ml of desired concentration of drug and extracts in the petridish. The anthelmintic activity was performed according to standard screening methods.^[13,14] The aqueous extract of leaves of *Ocimum sanctum* showed good activity against *Pheretima posthuma* at the tested concentrations. Eugenol was the active constituent present in *Ocimum sanctum* L., has been found to be accountable for the therapeutic potentials of Tulsi.^[15]

MATERIALS AND METHODS

Plant materials and preparation of extracts

The collected *Ocimum sanctum* leaves were processed on the same day itself. The leaves were washed thoroughly with distilled water and freeze dried. The dried samples were ground to powder and stored in air tight until further analysis. The powdered leaf material was soaked in the different solvents of varying polarity such as methanol, acetone and at room temperature for 24 h with mass to volume ratio of 1:40 (g/ml). The solvents were filtered through Whatmans No. 1 filter paper to remove the solid particles. The filtered solvents were evaporated to dryness under vacuum on a rotary evaporator at 40°C. Water extract of *Ocimum sanctum* was prepared as above by soaking dried powder in distilled water and stirred using a magnetic stirrer at a low speed for 24h.

Anthelmintic Activity

Anatomical and physiological characteristic of Indian earth worm resemblance with the intestinal round worm parasite of human being, therefore *Pheretima posthuma* have taken in this study to assess anthelmintic activity of *Ocimum sanctum*. Indian earth worms are divided into three groups each containing six earthworms approximately of equal size in following manner.

- Group I : Control (2% Tween 80 in normal saline)
- Group II : standard (15, 30 and 45 mg/ml)
- Group III : Plant extract (15, 30 and 45 mg/ml)

Fifty milliliters of respective drug solutions were taken in petri dishes and the earthworms were released in to the solution. Earth worms were monitored carefully and observations were made for the time taken to paralyze and death of individual worms. Time taken to till paralysis was recorded when no movement could be observed except when the worms were shaken vigorously. Times taken for death of worms were noted after ascertaining that the worms lost their motility completely with fading of their body colour. To confirm, the death worms were shaken vigorously or dipped in warm water at 50 °C but no movement was observed.

RESULTS AND DISCUSSION

Table.1: In Vitro Anthelmintic Effect of Ocimum sanctum Leaf.

Groups	Concentration (mg/ml)	Paralysis time (min)	Death time (min)
Control	----	----	----
Standard	15	29.67±0.31	61.31±1.17
	30	21.19±0.51	47.15±1.71
	45	19.11±0.77	21.13±1.43
Plant extracts	15	45.87±0.29	118.34±1.41
	30	30.28±0.37	106.21±1.88
	45	21.17±0.42	76.47±0.47

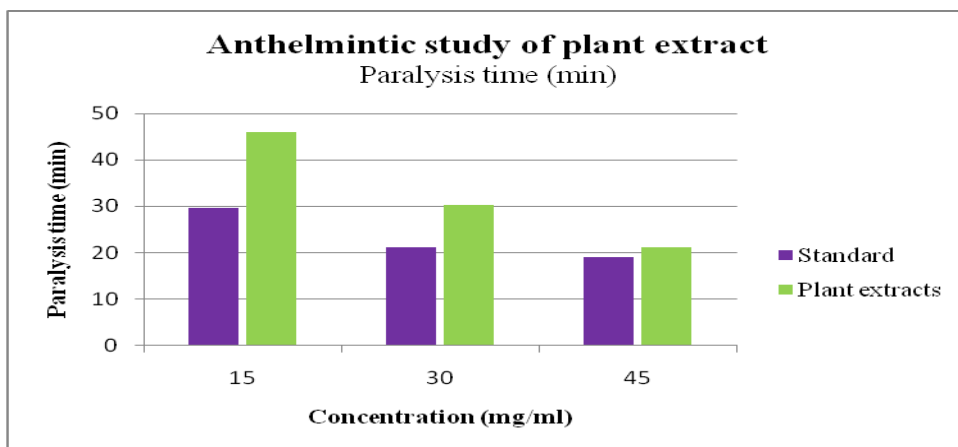


Figure 1: Anthelmintic study of plant extractb (Paralysis Time).

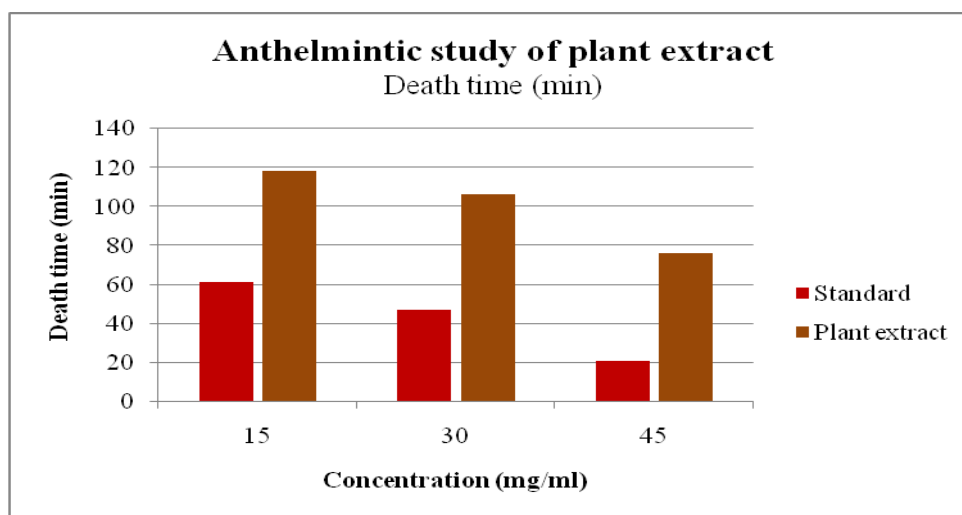


Figure 2: Anthelmintic study of plant extractb (Death Time).

Anthelmintic activity of leaf extract of *Ocimum sanctum* was performed against Indian earthworm *Pheretima posthuma*. *Ocimum sanctum* extract produced moderate activity. At 15, 30 and 45 mg/ml concentration, extract produced paralysis in worms after 45.87±0.29, 30.28±0.37 and 21.17±0.42min, while at same concentration after 118.34±1.41, 106.21±1.88 and 76.47±0.47 min produced death in earthworms respectively. Standard drug piperazine citrate at a 15 and 30 mg/ml, 45 mg/ml concentration, showed the potent activity which was evident by the quick paralysis time 29.67±0.31, 21.19±0.51 and 19.11±0.77 respectively and death time 61.31±1.17, 47.15±1.71 and 21.13±1.43min respectively. The paralysis and death times of the extract, fractions and standard drug are given in Table 1. Depicts the *Pheretima posthuma* state with control, extract and piperazine citrate.

CONCLUSION

Aqueous extract of *Ocimum sanctum* Linn is more potent than control (NS) and lesser antihelmintic activity than albendazole. Time to paralysis and consequent death were significantly higher in aqueous extract of *Ocimum* than that of Albendazole at same concentrations. According to the above study it was concluded that the Extraction of *Ocimum sanctum* demonstrated potent anthelmintic activity tested against Indian earthworm *Pheretima posthuma* but it did not give clear inference at that stage and hence we considered the work for further extensive research.

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