



Biological Evaluation of (*Azadirachta Indica*) Neem Flower for Anthelmintic Activity on Earth Worm (*Pheretima posthuma*)

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Abstract:

The petroleum ether extract of *Azadirachta indica* flowers were investigated for anthelmintic activity using earth worms (*Pheretima posthuma*). Various concentrations of 10, 20, & 40 mg/ml of flower extract were tested in the bioassay. Mebendazole 10mg/ml was used as reference standard drug whereas normal saline as a control. Paralysis time and death time of earthworms were recorded. Therefore, significant anthelmintic activity was found at the concentration of 40mg/ml. The results confirm that, the petroleum ether extract of neem flower possess anthelmintic activity. Thus, neem flower is also proved to be anthelmintic.

Key Words: *Azadirachta indica*, Anthelmintic activity, *Pheretima posthuma*, Mebendazole.

1. INTRODUCTION

An important plant that was used in herbal medicine is *Azadirachta indica* (meliacea). Neem tree is found in abundant in tropical and semi-tropical regions like India, Bangladesh, Pakistan and Nepal. It is a fast growing tree with 20-23m tall and trunk is straight and has a diameter around 4-5ft. Neem incudes active compounds such as Azadirachtin, nimbolinin, nimbin, nimbidin, nimbidol, salannin and quercetin. Neem therapeutically controls diseases like leprosy, intestinal helminthiasis, respiratory disorders, constipation and skin infections. Apart from these uses, neem is proved to have many various pharmacological activities – antioxidant, anticancer, antiinflammatory and hepatoprotective effects, wound healing effect, antidiabetic, antibacterial, antiviral, antifungal, antimalarial, antinephrotoxicity, neuroprotective, immunomodulatory and growth promoting effect.

PLANT PROFILE

TAXONOMICAL CLASSIFICATION

KINGDOM : Plantae
CLASS : Dicotyledons
ORDER : Sapindales
FAMILY : Meliaceae
GENUS : *Azadirachta*
SPECIES : *A. indica*

2. MATERIALS AND METHODS

2.1 FLOWER COLLECTION

The flower of *Azadirachta indica* were collected from Nellore (Dist.) Andhra Pradesh.

2.2 FLOWER EXTRACTION

After the flowers were collected, they were washed with fresh water to remove the soil and adhered matters. Sufficient flowers were dried under the shade dried at room temperature then they were powdered using a grinding mixture to obtain a coarse powder and then passed through 40 mesh sieve. 25g of powdered drug of *Azadirachta indica* flower is taken using petroleum ether as a solvent of extraction via

Soxhlet extraction technique maintained at a temperature of 40°C.

2.3 WORM COLLECTION

Indian adult earth worm (*Pheretima posthuma*) was used to study anthelmintic activity of flower extract. The adult earth worms are collected from Govt Vermicompost, Kodavaluru village, Nellore (Dist.), Andhra Pradesh, India. Worms with the length of 5-6cm and width of 0.2-0.3cm are utilized for the whole experiment. The earthworms obtained resembled with intestinal round worm parasites of human beings both anatomically and physiologically and hence were considered for anthelmintic activity.

2.4 PREPARATION OF TEST DRUG AND REFERENCE DRUG

Test samples for in-vitro study were prepared at concentrations of 10, 20 and 40mg/ml and standard reference drug i.e. mebendazole of 10mg/ml is to be prepared.

2.5 ANTHELMINTIC ACTIVITY:

Anthelmintic study of extract was carried out at concentrations of 10, 20 and 40mg/ml against the Indian earthworm (*Pheretima posthuma*) by affirming the method of Maheshwar G. Hogade. Five groups of Indian earthworms, each containing 5 earthworms approximately of equal size were used for the study. Three groups of earthworms were tested with extract of different concentrations (10mg/ml, 20mg/ml, 40mg/ml) and one group was treated with 10mg/ml with reference standard as Mebendazole and one group was used as a control which is treated with normal saline. The anthelmintic on earthworms was observed and time required for paralysis and death was recorded.

2. RESULTS AND DISCUSSION

The results from the table showed that, the petroleum ether extract of *Azadirachta indica* flower exhibits anthelmintic activity in dose dependent manner using *Pheretima posthuma* giving shortest paralysis and

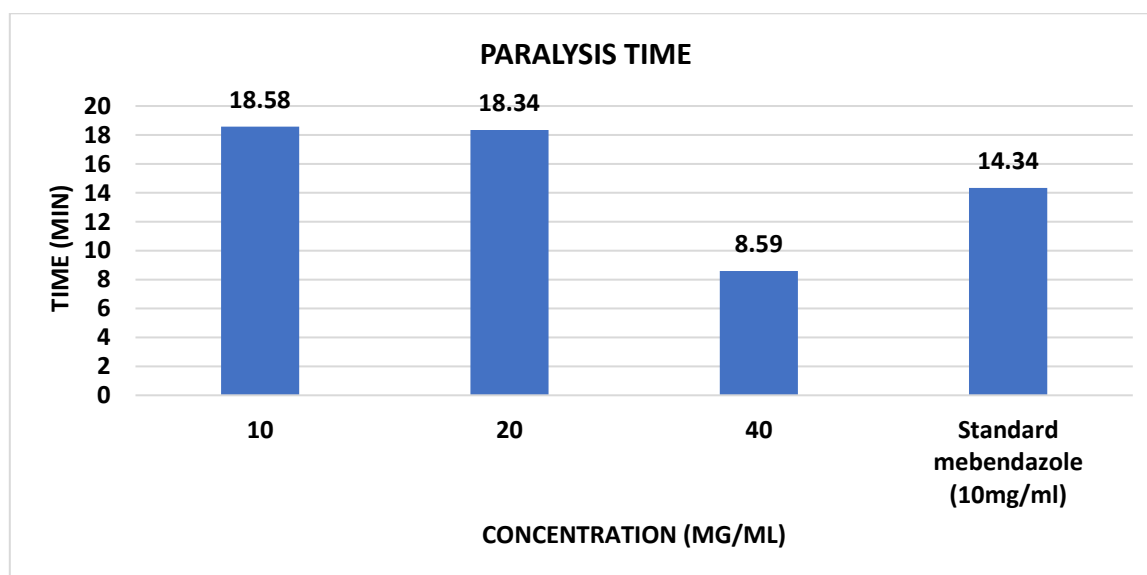
death time at concentration of 40mg/ml. From our observations, the paralysis time of 10,20,40mg/ml were found to be 18.55 ± 0.40 , 18.30 ± 0.52 , 8.56 ± 0.47 and death time include 29.25 ± 0.61 , 20.05 ± 0.35 ,

13.42 ± 0.74 respectively. Finally, phytochemical screening states that neem contains alkaloids, tannins, phenols, flavonoids, terpenes.

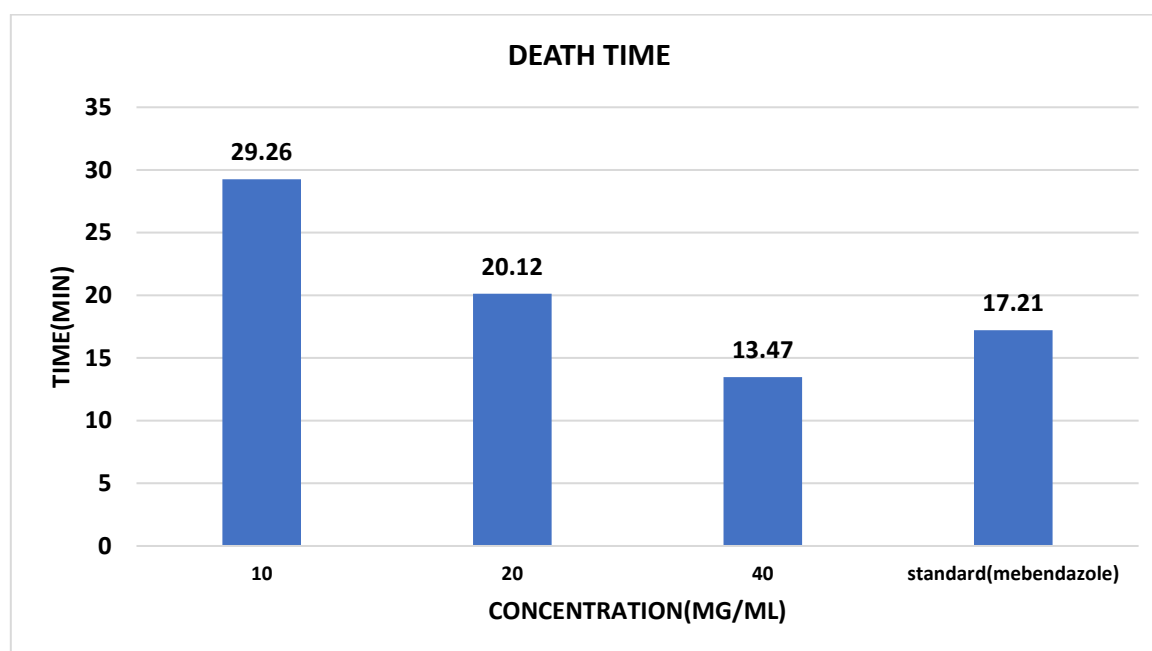
TABLE-1

In vitro effects of different concentrations Petroleum ether extract *Azadirachta indica* flowers, Normal Saline(control) and Mebendazole(standard) on survival in Indian earthworms.

S.NO	GROUP	DRUG (mg/ml)	CONCENTRATION	TIME TAKEN IN MINUTES	
				PARALYSIS	DEATH
1	Control	Saline	-	-	-
2	Standard	Mebendazole	10mg/ml	14.32 ± 0.04	17.03 ± 0.05
3	Test	Extract	10mg/ml	18.55 ± 0.40	29.25 ± 0.61
			20mg/ml	18.30 ± 0.52	20.05 ± 0.35
			40mg/ml	8.56 ± 0.47	13.42 ± 0.74



GRAPH-1: Paralysis Effect and Time of Various Concentrations of *Azadirachta indica*.



GRAPH-2: Death Effect and Time of Various Concentrations of *Azadirachta indica*.

4. CONCLUSION

The study has shown that petroleum ether extract of *Azadirachta indica* flower is proved to be anthelmintic. The maximum anthelmintic activity of *Azadirachta indica* flower is been observed at 40mg/ml.

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REFERENCE

1. HALBEKWE "Invitro anthelmintic activities of aqueous crude extract of *A.indica* on paramphistomum cervi and *fasciola hepatica*" international journal of veterinary science and animal husbandary 2019;4(1):14-18
2. Melzig MF, Bader G, Loose R. investigation of the mechanism of membrane activity of selected triterpenoid saponins. *Planta Med.*2001;67(1):43-48.
3. Sombatsiri K, Tpigvattaont S. effects of neem extracts on some insect pests of economic importance in thailand. Proceeding second Int.conf. Rauischolzhausen, 1983, 95-100.
4. Mishra v. Parveen N, singhal KC, Khan NU. Antifilaria activity of *A.indica* on cattle filarial parasite *separia cervi*. *Fitoterapia.*2005;76:54-61.
5. Sory T. Ethnoveterinatri practices of the Vorema Range land pastoral system. DVM thesis. Addis Ababa university, faculty of veterinary medicine, Debrezeit, Ethiopia, 1999.
6. Akhtar MS, Riffat S. Efficacy of *Melia azedarach* Linn. Fruit (Bahain) and Morantel against naturally acquired gastrointestinal nematodes in goats. *Pakistan veterinary journal.*1984;4 :176-9.
7. L.Radhakrishnan "Evaluation of anthelmintic effect of neem (*A.indica*) leaves on *Haemonchus contortus* in goats" *Research journal parasitology* 2 (1): 57-62, 2007.
8. Kukde, R.J., S.R. Kalaskar and R.v. Nambalkr, 1999. Neem leaves as feed supplement for Livestock. *Pashudhan.*14:5.
9. Arunachal, P.K., K. Karunaninithi and R. Narendra babu, 2002. comparative study on anthelmintic efficacy of Neem products and Praziplus in sheep. *IND.G.small ruminants*, 8:131-132.
10. Kahiya, c.s. Mukaratirwa and SM. Thamsborg, 2003. Effects of acacia niloticum and acacia karoo diets on *Haemonchus contortus* infection in goats. *Vet. parasitol.*, 115:265-274.
11. Avinash B "Evaluation of the anthelmintic activity (invitro) of Neem leaf extract mediated silver nano particles against *haemonchus contortus*" *international journal pure App. Biosci* 5(2):118-128(2017).
12. Prasad, T.N.V.K.V., Kambala, V.S.R. and Naidu, R., A critical review on biogenic silver nanoparticles and their Antimicrobial activity. *current nano science*, 7: 531-544(2011).
13. Maheswar G Hogade "Invitro anthelmintic activity of bark of *azadirachta indica* against *ascardigalli* and *Eudrilus eugeniae*" www.jnronline.com vol 14(1) January 2014.