



REGULAR ARTICLE

ANTHELMINTIC ACTIVITY OF CASTOR OIL AND MUSTARD OIL

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SUMMARY

The aim of the present study was to investigate the anthelmintic activity of vegetable fixed oils, castor oil and mustard oil using adult earthworm, *Pheritima posthuma*. The oils were tested at different concentrations for the determination of paralysis time and death time of the earthworms. Albendazole is used as standard and it was found that castor oil and mustard oil showed a better anthelmintic activity in comparison with the standard.

Key words: Anthelmintic activity, Albendazole, Earthworm, Castor oil, Mustard oil

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1. Introduction

The traditional system of medicine claims that almost every plant in the nature is having at least one medicinal property and when used in a right manner only they can be safe and effective but the modern system of medicine claims that plants can be the cheapest source of treatment and can be safely used only after safety evaluation and dose determination for its effective use. Once the safety of plant and its dose dependent effectiveness is determined, plants can serve humans to treat and heal almost all the ailments.

Helminthiasis is a macroparasitic disease of humans and animals in which a part of the body is infested with parasitic worms such as pinworm, roundworm, or tapeworm. Anthelmintics or antihelminthics are the drugs or the agents that destroy or cause the expulsion of such parasitic intestinal worms and helps to treat helminthiasis, one of the most common infections in humans and cattle. Resistant worms accumulate and finally treatment failure occurs¹. To overcome the resistance, plant derived drugs can serve as prototype to develop more effective and less toxic medicines².

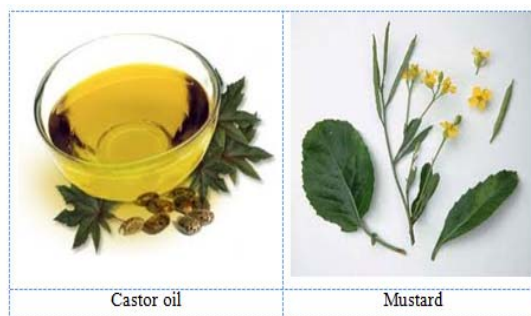
Albendazole is the first drug of choice for the treatment of worm infections. It is also first reported anthelmintic which promises to have useful activity against all

the types of helminthparasites menacing the domestic animals³. Herbal remedies are considered the oldest forms of health care known to mankind on this earth. Traditional system of medicine reports the efficacy of several natural plants in eliminating worms. We have focused our attention on search of herbal remedy and selected few fixed oils which are easily available to evaluate the anthelmintic activity using adult earthworm, *Pheritima posthuma*.

2. Material and Methods

Test material

Castor oil (*Ricinus communis* Linn, Euphorbiaceae), and mustard oil (*Brassica nigra*, Brassicaceae) were procured from the Ayurvedic outlet in Hyderabad.



Castor oil

Mustard

Experimental Model

Adult earthworm *Pheretima prostoma* were collected (due to its anatomical and physiological resemblance with the intestinal roundworm parasites of human being^{4,5}) from moist soil, obtained from agricultural fields nearby Vignan hills, Deshmukhi, A.P.-India. All the worms were washed with normal saline to remove all fecal matters were used for the anthelmintic study.

Anthelmintic activity

Three test groups were taken each containing six earth worms of approximately equal size (8±1 cm). Albendazole was taken as standard drug and different concentrations (10mg/ml, 20mg/ml, 30mg/ml and 40mg/ml) were prepared in normal saline containing 5% DMF^{6,7,8}. All the oils at different concentrations were prepared by dissolving in minimum quantity of DMF initially and making up to the final volume with normal saline to obtain

10mg/ml, 20mg/ml, 30mg/ml and 40mg/ml concentrations. One of the groups is taken as control group which was treated with normal saline containing 5% DMF. For every test group, all the six worms were individually placed in Petri dish containing 10ml of test solution. Paralysis onset time and death time of individual worms were noted. Paralysis was said to occur when the worms do not revive even in normal saline. Death was concluded when the worms lost their motility followed by fading away of color of worm.

3. Results and Discussion

The data revealed that the oils showed a significant activity compared to the standard. This indicates that the oils may be used to prevent helminthiasis by incorporating these oils in daily diet however only after determining the effects of these oils on long term-usage.

Table 1: Anthelmintic activity of castor oil and mustard oil

S. No.	Test group	Concentration (mg/ml)	Paralysis onset time (min)	Death time (min)
1.	Control	-	-	-
2.	Castor oil	10	16.42±0.15	17.57±0.98
		20	13.62±0.19	14.08±0.72
		30	8.55±0.51	5.35±0.59
		40	3.83±0.18	8.48±0.42
3.	Mustard oil	10	14.59±0.49	20.03±0.27
		20	6.38±0.29	18.48±0.49
		30	5.28±0.06	16.7±0.22
		40	3.85±0.19	12.59±0.31
4.	Albendazole	10	7.15±0.42	74.33±0.84
		20	5.33±0.32	32.43±0.83
		30	1.42±0.18	29.99±0.32
		40	1.1±0.05	26.67±0.92

Results are expressed as mean±SEM from six observations; Control worms were alive up to 24 hrs of observation

4. Conclusion

The castor oil and mustard oil were found to be effective upon comparison with the standard in causing paralysis and death of earthworms than the Standard drug, Albendazole. It can be concluded that active constituents responsible for anthelmintic activity might be present in the oils.

References

1. Singh D, Swarnkar CP, Khan FA. 2002. Anthelmintic resistance in Gastrointestinal nematodes in livestock in India. J Vet Parasit. 16; 115-130.

2. Trapti Rastogi*, Vijay Bhutda, Komal Moon, PB Aswar, and SS Khadabadi. 2009. Comparative Studies on Anthelmintic Activity of *Moringa Oleifera* and *Vitex Negundo*. *Asian J. Research Chem.* 2(2). 181-182.
3. V. J. Theodorides et al., Anthelmintic Activity of Albendazole Against Liver Flukes, Tapeworms, Lung and Gastrointestinal Roundworms
4. Thorn GW, Adams RD, Baunwald E, Isselbacher KJ, Petersdorf RG. 1977. "Harrison's Principle of Internal Medicine", Mc-Graw Hill Co., New York, p.1088.
5. Vigar Z. 1984. "Atlas of Medical Parasitology" P. G. Publishing House, Singapore. p.216.
6. Nirmal, S.A., Malwadkar, G. and Laware, R.B. 2007. Anthelmintic activity of *Pongamia glabra*. *Songklanakarin J. Sci. Technol.*, 29(3) : 755-757
7. Dipak N. Raut, Subodh C. Pal, Subhash C. Mandal. 2009. Anthelmintic potential of *dendrophthoe falcata* Etting.(l.f.) Leaf. *IJPRD/PUB/ARTI/VOL-6/002*.
8. Borkar V. S., Gangurde H. H., Gulecha V. S., Bhojar P.K., Mundada A.S.2010. Evaluation of in vitro antihelmintic activity of leaves of *Butea monosperma*. *International Journal of Phytomedicine*, 31-35.