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IN-VITRO EVALUATION OF ANTHELMINTIC ACTIVITY OF *AEGLE MARMELOS LINN* ROOT EXTRACT

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ABSTRACT

Present generation is a fast moving generation and no doubt about the potency of allopathic medicine, they provide fast result, but the darkest side of this medicine is their several side effects and contraindications. On the other hand the plants are good substitution for those medicines because of their less or no side effect and their ability to cure the problem from their root. The present study is based on the pharmacological activity of *Aegle marmelos*, commonly known as a bael in India. This plant is having great potential to cure the disease like diabetes, cholesterol, peptic ulcer, inflammation, diarrhoea, and dysentery, anticancer, cardio protective, anti bacterial, anti fungal ,anthelmintic ,radio protective, anti pyretic, analgesic, constipation, respiratory infection ,antioxidant, hepatoprotective, wound healing and many more. In the present work, experiments were conducted to evaluate the possible anthelmintic effects of different extracts of *Aegle marmelos* root on Indian earthworm (Pheretima posthuma) at 25mg/ml, 50mg/ml, 100mg/ml concentration. . Results were expressed in terms of time for paralysis and time for death of worms.

KEYWORDS: Anthelmintic, *Aegle marmelos*,

INTRODUCTION

Helminthes parasite infections are global problems with serious social and economic repercussions in the third world countries. Parasitic helminths affect animals and man and animals than any single group of parasites, causing considerable hardship and stunted growth. Most diseases caused by helminthes are of a chronic, debilitating nature; they probably cause more morbidity and greater economic and social deprivation among humans The diseases affect the health status of a large fraction of the human population as well as animals. Herbal drugs have been in use since ancient times for the treatment of parasitic disease in human and could be of value in preventing the development of resistance.2, 3 A tree has unarmed branches and glabrous pedicles in pairs. The fruits are used as laxative and refrigerant. Prunes are often added to cathartic decoctions, improving their flavor and promoting their effect. They are also given in combination with other drugs in leucorrhoea and irregular menstruation. Literature survey revealed that plant extract has yet not been screened for anthelmintic activity. Therefore, the objective of this work was to assess the anthelmintic activity of *Aegle marmelos* root

PLANT PROFILE

Plant Profile	
Botanical Name	***Aegle marmelos***
Common Name	**Bael**
Classification	**Kingdom:** Plantae **Subkingdom:** Tracheobionta **Division:** Magnoliophyta **Class:** Magnoliopsida **Subclass:** Rosidae **Order:** Sapindales **Family:** Rutaceae **Genus:** Aegle **Species:** Marmelos
Part used	Fruit, root, bark, seeds, leaves, flowers
Medicinal Properties	Antibilious, antiparasitical, antipyretic, aphrodisiac, aromatic, alternative, astringent, digestive stimulant, febrifuge, hemostatic, laxative, nutritive, stomachic, stimulant, tonic. Fruits: cooling and laxative.
Medicinal Use	Diabetes, dyspepsia, chronic diarrhea, heart diseases, dysentery. Leaf: against peptic ulcers and respiratory disorders. Fruits: arrest secretion or blooding, cure diahorrea and dysentry. Root: ear problems,Anthelmintic activity.
Chemistry	Beta-sitosterol(all parts); amino acids(fruits, leaves); dictamnine(pericarp, wood); marmesin(pericarp, bark, wood); marmin, umbelliferone(pericarp, bark); skimmianine(leaves, bark); carbohydrate, carotene, fat, tannins and vitamins.
Description	A spinous, deciduous, aromatic tree, spines, straight, strong, axillary. It grows up to 18 meters tall and bears long thorns. Leaves: usually 3-foliolate, sometimes 5-foliolate; leaflets ovate-lanceolate, lateral sessile, terminal long-petioled. Flowers: borne in few-flowered, axillary panicles, greenish-white, sweet-scented. Fruits: large, upto 15 cm diameter, globose, ovoid or pyriform, 8-15 celled, rind grey or greyish-yellow, woody, pulp orange, sweet. Seeds: numerous in aromatic pulp, oblong, compressed, testa woolly and mucilaginous.
Origine and Distribution	The Bael tree has its origin from Eastern Ghats and Central India. It is indigenus to Indian subcontinent and mainly found in tropical and subtropical regions. Himalayas, UttarPradesh,Bihar,Chattisgarh,Uttaranchal,Jharkhand,Madhya Pradesh.

MATERIALS AND METHODS

Experimental

1.Collection of plant material: Leaves of Aegle marmelos were collected from local area of Satara and authenticated by Yashwantrao Chavan Institute , Satara, Maharashtra. Collected root were washed and dried at room temperature. After complete drying, root were powdered and passed through a sieve and stored in air tight container.

2. Preparation of extracts

The *Aegle marmelos* were collected from Satara (Maharashtra) and dried in shade and coarsely powdered. It was than passed through the sieve no. 20. A weighted quantity (100g) of the powder drug was extracted with petroleum ether (60-80^{0}C) using soxhlet extractor. Defatted drug was subjected to ethanolic extraction and extract was dried by distilling off the solvent and then dried in desiccator. The marc collected after ethanolic extraction was subjected to aqueous extraction by maceration process for seven days consecutively and then extract was dried by evaporating the water and stored for further activity.

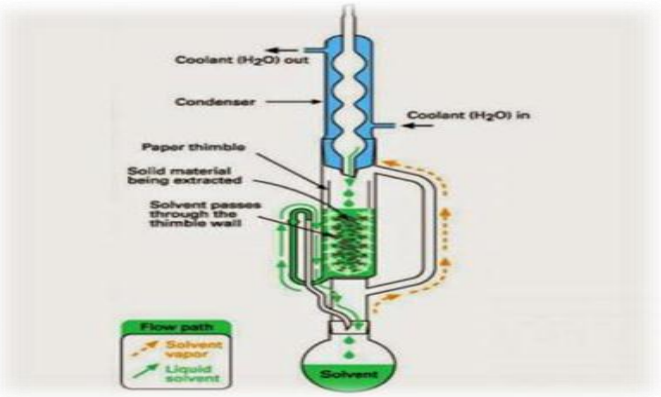

Fig. Soxhlet extractor

3. Chemicals: Petroleum ether (60-80), Ethanol were used in various part of experiment

RESULT AND DISCUSSION

1. Paramerters of Extracts

Fig. 1.petrolium ether extract 2.aqueous extract 3.Ethanolic extract.

Table No.1

Characteristics	Petrolium ether extract	Aqueous extract	Ethanolic
Colour	Brown	Black	Brown
Odour	Pungent	Pungent	Acrid
Taste	Bitter	Bitter	Bitter

Table No.2

Different extracts	Petrolium ether extract	Aqueous extract	Ethanolic
% yield	14.94%	1.15%	8.69%

Phytochemical Analysis

CHMICAL TEST

A.Test for Alkaloids	Aqueous extract	Ethanolic extract
1.Mayer's Test	+	+
2.Dragndroff's Test	+	+
3.Wagner's Test	+	+
4.Hager's Test	+	+
B.Test for Tannins		
1.5%$FeCl_3$	+	+
2.Lead Acetate	+	+
3.Bromine Water	+	+
C.Test for Glycosides		

1.Cardiac Glycoside	–	–
2.Anthraquinone Glycoside	–	–
3.Saponin Glycoside	+	+
4.Coumarin Glycoside	+	+
D.Test for Flavonoids		
1.Shinoda Test	+	+
2.Sulphuric Acid Test	+	+
E.Test for Carbohydrates		
1.Fehling's Test	–	–
2.Benedict's Test	–	–
F.Test for Resin	+	+
G.Test for Steroids		
1.Libermann test	+	+
2..Salkowski test	+	+

Anthelmintic screening: Observations were made for the time taken to paralysis and death of individual worms. Time for paralysis was noted 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.

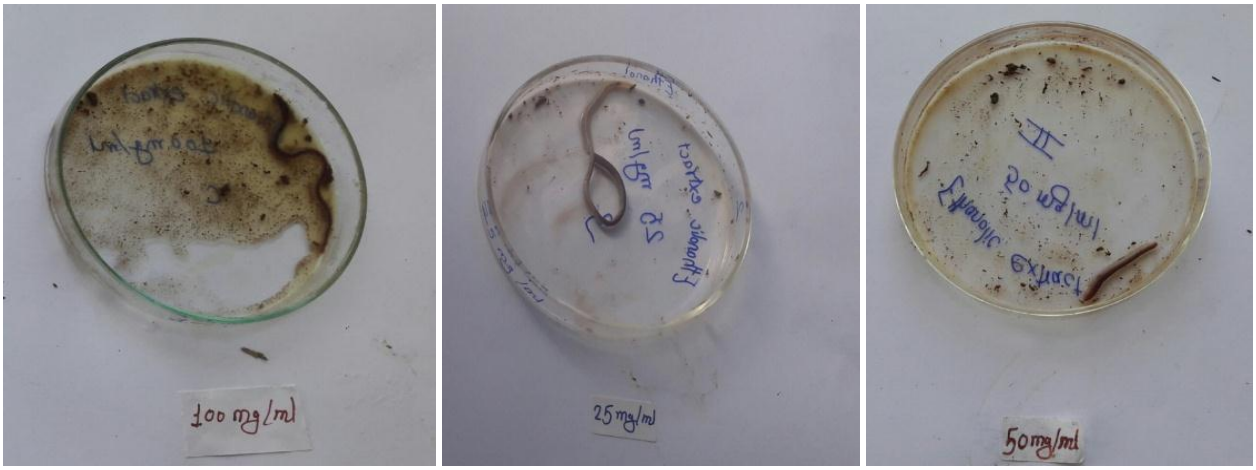

Fig.Ethanolic extract

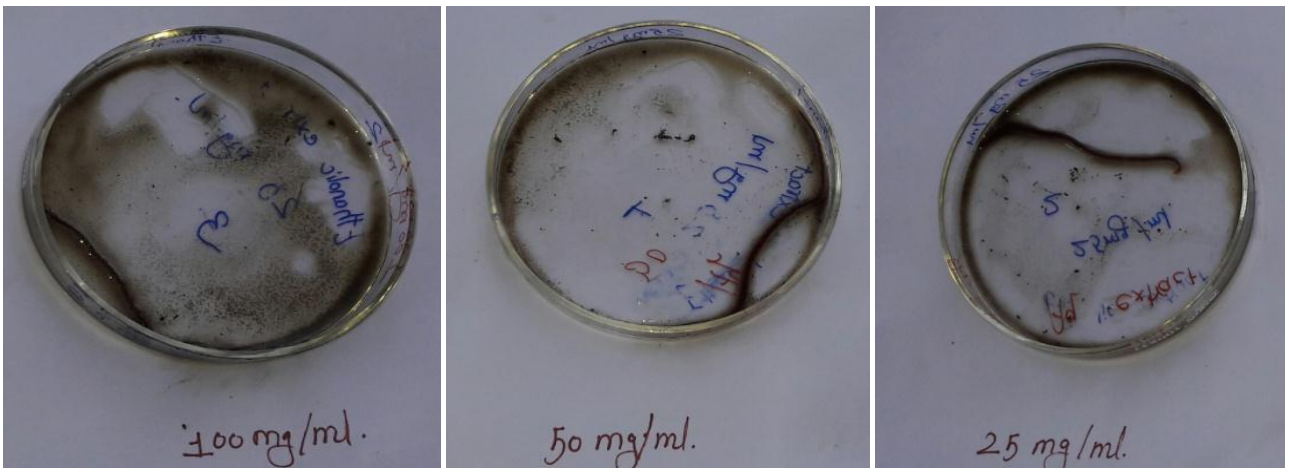

Fig.Aqueous extract

RESULT

Observation table

Table 1: Anthelmintic Activity of ethanol extracts of *Aegle marmelos* against Earthworm.

Group	Treatment	Concentration	Time taken to paralysis and death of worms.	
			Paralysis time (Min.)	Death Time (Min.)
Test	Ethanolic	25mg/ml	39.22	42.35
		50mg/ml	23.32	30.20
		100mg/ml	15.30	22.18
	Aqueous	25mg/ml	40.39	45.27
		50mg/ml	34.57	39.57
		100mg/ml	28.42	30.12

In the present work ,two different extract ,ethanolic and aqueous from root of *Aegle marmelos* were used to evaluate in- vitro anthelmintic activity against Indian earthworm.

The perusal of the anthelmintic activity data revels ethanolic extract at the concentration of 25 mg/ml showed paralysis and death in 39.22 min. and 42.35 min. respectively. 50mg/ml showed paralysis and death in 23.32. min and 30.20 min. and 100mg/ml showed paralysis and death in15.30min. and 22.18min.

The anthelmintic activity data revels aqueous extract at the concentration of 25 mg/ml showed paralysis and death in 40.39 min. and 45.27 min.respectively. 50mg/ml showed paralysis and death in 34.57 min and 39.57 min. and 100mg/ml showed paralysis and death in28.42min. and 30.12 min.

CONCLUSION

In conclusion the ethanolic extract of *Aegle marmelos* root had significant activity than aqueous extract. Further in future researches will also being carried out in our department to establish the prescribed mechanism of action and to identify phytochemical moiety which is responsible for this activity.

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