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COMPARATIVE ANTHELMINTIC ACTIVITY OF HIBISCUS ROSA-SINENSIS LEAVES AND MORINGA OLEIFERA LEAVES

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ABSTRACT

The present study was designed to evaluated the comparative anthelmintic activity of ethanolic and aqueous extract of *Hibiscus Rosa-Sinensis* Linn. and *Moringa oleifera* (Lam.) at different concentration. The test samples were tested on indian earth worms Pheritima posthuma as a test worms. Results were expressed in terms of paralysis time & mortality time of worms. Albendazole was used as a reference standard and Distilled water as a control group. Ethanolic and aqueous extract were tested by different chemical tests. It showed the presence of alkaloid, glycoside, tannins, flavonoids compounds. These phytoconstituents may responsible for the said activity.

KEYWORDS: *Hibiscus rosa*sinensis, *Moringa oleifera*, Pheritima Posthuma.

INTRODUCTION

Helminthes infections are the most common infections in man which affects the large proportions of the world's population. In the treatment of parasitic diseases, the anthelmintic drugs are used in discriminately. Anthelmintics are a group of antiparasitic drugs that expel parasitic worms and other internal parasites from the body by either killing them and without causing significant damage to the host. Hence the improvement and invention of new substances acting as anthelmintic are being derived through plants which are considered to be the best source of bioactive substances.[1]

Hibiscus leaves: *Hibiscus rosa-sinensis* Linn. (Malvaceae) is a large genus that contains herbs, shrubs and trees widely distributed in the tropical and sub-tropicalregion of world. It is

an evergreen woody, glabrous, showy shrub of 5-8 ft in height. Leaves are bright green, ovate, coarsely toothed above, flower are solitary, axillary, bell shaped, large 4-6 inch in diameter with pistil and stamens projectingfrom the centre.[2] The detailed study of Hibiscus rosa-sinensis have been carried out worldwide which showed that Leaves are used as emollient, anodyne and laxative and aperients, juice of leaves beneficial in gonorrhea, alopecia and also used for blackening of hair in Ayurveda. It shows the Antifungal, Anti-inflammatory, Antipyretic, Antibacterial and antioxidant activity, Analgesic, Antitumor, Anti-asthamatic.[6]

Taxonomic classification: Kingdom: Plantae, **Subkingdom**: Tracheobionta**, Superdivision**: Spermatophyta**, Division**: Magnoliophyta**, Class**: Magnoliopsida**, Subclass**: Dilleniidae**, Order**: Malvales, **Family**: Malvaceae**, Genus**: *Hibiscus*, **Species**: *Hibiscus rosa-sinensis.*[3]
Drum stick leaves: *Moringa oleifera(*Moringaceae) It is a small, fastgrowing, evergreen or deciduous tree with a soft and light wood indigenous to South Asia.

Taxonomical Classification: **Kingdom**-Plantae. **Sub-kingdom**- tracheobionta, Super **Division**- spermatophyte, **Sub-Division**- Magnoliophyta, **Class**- Magnoliopsida, **subclass**-Dilleniidae, **Order-**Capparells, **Family** – Moringaceae, **Genus**-Moringa, **Species**-Oleifera. The leaves mainlycontain various glycosides of thiocarbamate and isocyanide class; Traditionally, it is used to treat many diseases throughout the world and many of them are scientifically proved, it is used as; antihypertensive, antiasthmatic, diuretic, anticancer, antibiotic, antiulcer, analgesic, CNS- depressant, antiepileptic, anti-inflammatory, anthelmintic.[7]

MATERIALS AND METHODS

Collection and Authentication of Plant material

Fresh leaves of Hibiscus rosa-sinensis and Moringooleifera are collected from herbal garden of A.A.P.M. Pharmacy college, Dharangutti Tal. Shirol, Dist. kolhapur, Maharashtra. The characteristics of it were identified and authenticated by Dr. Ms. M. V. Kale Vice-Principal, Jaysingpur college, Jaysingpur.

Preparation of Sample

The fresh leaves of Hibiscus rosa-sinensis leaves and Moringa oleifera leaf were washed under tap water. Leaves are dried under shade for 15days. Leaves were crushed to fine powder in electric blender and packed powder in airtight bottles till further process.

Preparation of ethanol extract

40gm of powder mixed with 150ml of ethanol and extracted by using soxlet apparatus for 04hrs. The filtrate was then evaporated at 60^0cand stored at 40^0c until further process.

Evaluation of Anthelmintic Activity

The assay was performed in-vitro using adult earthworm i.e. pheretima posthuma for evaluation of anthelmintic activity. First ethanolic and aqueous extract were diluted in distilled water in different concentration. Sample prepared at concentration (20, 40, 60, 80, 100mg/ml). Albendazole(40mg/ml) was used as a standard &distilled water used as a control. All dilution taken 40ml in petridish, & added worms in that petridish, & observe the time taken for paralysis & death of intestinal roundworms. The time of paralysis noticed when there were less or no movement of worm & death time noticed when there were stop movement of worm after shaking.

Phytochemical screening

Preliminary Phytochemical Analysis of Hibiscus rosa-sinensis leaves and Moringa oleifera

Preliminary Phytochemical Analysis[4,5]

Table No: 1.

		Hibiscus rosa-sinensis		Moringa Oleifera	
Sr.no.	**Chemical constituents**	**Ethanolic extract**	**Aqueous extract**	**Ethanolic extract**	**Aqueous extract**
1	Alkaloids	+	+	+	+
2	Sterols	_	_	+	+
4	Tannins	+	+	-	+
6	Glycosides	+	+	+	+
7	Mucilage	+	+	+	+
8	Flavonoids	+	+	+	+
9	Reducing sugar	+	+	+	+
10	Saponins	_	+	+	-

Collection of Worms

Indian adult earthworms Pheretima posthuma were collected from Jaysingpur, India.

The average size of earthworms being 7-9 cm prior to experiment. They were washed with water for removal of dirt.

Anthelmintic Activity of Ethanolic & Aqueous Extract of Hibiscus rosa-sinensis leaves and Moringa oleifera leaves

Table No. 2.

Test Drug	Conc. (mg\ml)	Time of Paralysis (min.)	Time of Death (min.)
Ethanolic Extract of Hibiscus rosa-sinensis leaves	20	31.66±1.52	43.66±1.52
	40	26.33±1.52	32.66±2.51
	60	23.33±0.57	27.66±2.51
	80	20±1	25.33±2.081
	100	17±1	21.66±1.52
Aqueous Extract of Hibiscus rosa-sinensis leaves	20	48.66±1.52	61±1
	40	44±1	58±2
	60	39±1	54.33±057
	80	33.33±1.52	51.33±1.52
	100	27.33±2.0	48±1
Ethanolic Extract of Moringa oleifera leaf	20	59±1	61±1
	40	53±1	56±1
	60	48.66±1.52	51±1
	80	39±1	41.66±1.52
	100	31±1	33±1
Aqueous Extract of Moringa oleifera leaf	20	71.66±1.52	73±1
	40	64±1	66±1
	60	59.66±1.52	61±1
	80	53±1	54.66±1.52
	100	42±1.52	47.66±1.52
Distilled Water	-	-	-
Albendazole	40	20±1	35±1

Fig. No. 1: Effect of Ethanolic Extract of Hibiscus rosa-sinensis.

Fig. No. 2: Effect of Ethanolic Extract of Moringa oleifera.

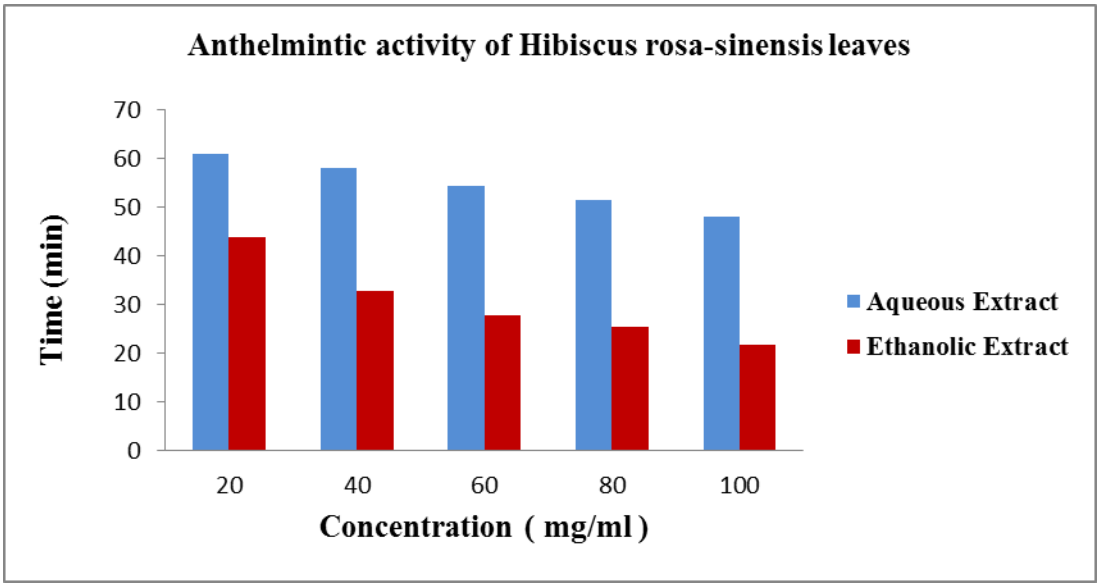

Fig. No. 3: Anthelmintic Activity of Ethanolic & Aqueous Extract of Hibiscus rosa-sinensis leaves.

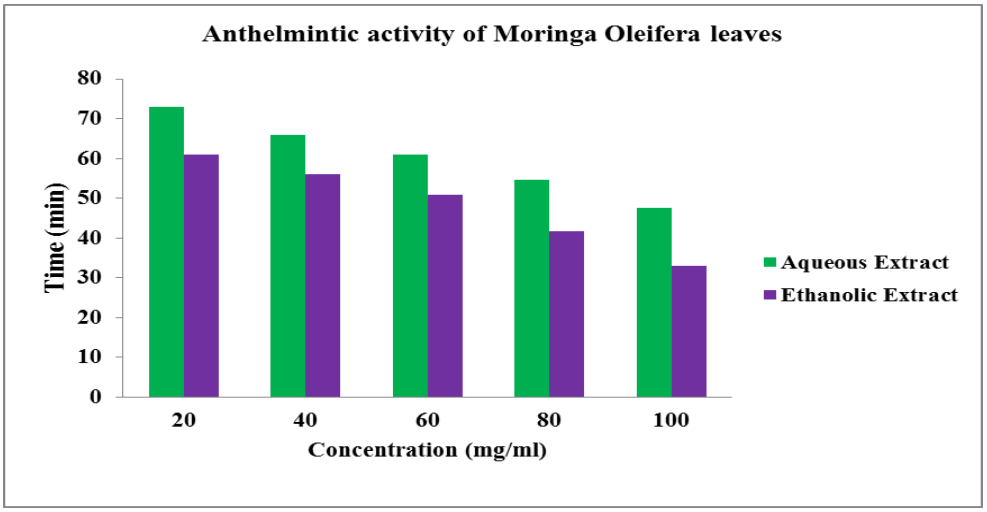

Fig. No. 4: Anthelmintic Activity of Ethanolic & Aqueous Extract of Moringa oleifera leaves.

RESULT AND DISSCUSSION

The result obtained in present investigation is indicating that the Hibiscus rosa-sinensis and *Moringa oliefera* extract showing dose dependent response i.e. from loss of motility to death of worms. All finding shown that test sample showed significant anthelmintic activity in a dose dependent manner. Ethanolic test sample shown faster action than aqueous test sample. The comparative evaluation amongst the drugs shows that *Hibiscus rosa-sinensis* has potent anthelmintic activity as compared to *Moringa oleifera*.

CONCLUSION

In this present investigation it is concluded that ethanolic extract of crude *Hibiscus rosa-sinensis* is having more potent activity against pheritima posthuma worms than ethanolic extract of Moringa oleifera.

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