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COMPARATIVE ANTHELMINTIC ACTIVITY OF PIPER BETLE LINN. & MORINGA OLEIFERA

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ABSTRACT

The study was designed to evaluate to anthelmintic properties of ethanolic and aqueous extract of *Piper betle Linn.* and *Moringa oleiferaby* using pheritima posthuma as a test worms. All test sample taken at same concentration ie. (20, 40, 60, 80, 100mg/ml) were tested on indian earth worms (pheritima posthuma), paralysis time & death of time were consider as assessment of anthelmintic activity. The albendazole 40mg/ml & normal saline solution were used as a standard & control respectively. The phytochemical testing of *Piper betle Linn.* & *moringa oleifera* done & it showed that *Piper betle Linn.* contain, Saponin, glycoside, Alkaloid, Tannin & *Moringa oleifera* contain Alkaloid, Flavonoid, Saponin, Steroid and Tannin. It was noticed in this investigation that the time of paralysis & death of worms was the dose dependent & it was much earlier in case of Piper betel than in *Moringa oleifera.*

KEYWORDS: *Piper betle Linn., Moringa oleifera,* Pheritima posthuma.

INTRODUCTION

Parasitic worms also infect livestock and crops and domestic pets, affecting food production with a resultant economic impact. Anthelmintic drugs are used to treat infection with parasitic worms. It is important that anthelmintics are selectively toxic to the parasite and not the host.[1]

The mode of action of Albendazole is to cause paralysis of worms and expel them in the feaces. It cause degenerative alteration in the intestinal cell worm, it leads to decreased production of (ATP). Due to diminished energy production, the parasite is immobilized.

Betel leaves: (*Piper betle* Linn.): Family: Piperaceae. It is evergreen and perennial creeper, with glossy heart shaped leaves. It is originated from south East Asia. It is invaluable medicinal plants where its leaves have been used for many medicinal purposes. Chief constituent of leaves is the volatile oil- Eugenol, Leaves are reach source of many nutrients like water, energy, Protein, fats, fiber, calcium, iron etc. It is used as tonic for brain, heart and liver. It promote healthy teeth and skin. It is used as anthelmintic. It reduces the cough. It gives analgesic and cooling properties.[2]

Drum stick:- (*Moringa oleifera*) Family: Moringaceae. It is native parts of Africa and Asia, It mostly found in Himalayas northwestern India. It mainly contain tannin, saponins, alkaloids, terpenoids etc. It is used as cardiac and circulatory stimulants, antitumour, antipyretic, anti-inflammatory, antispasmodic, antidiabetic, diuretic, helminthiasis etc.[3]

MATERIALS AND METHODS

Piper betle Linn. Collected from local market of Sangli, District Sangli, India and Moringa oleifera were collected from College herbal garden, Jaysingpur, District Kolhapur, india in month of September 2017 and it was identified and authenticated by Dr. Ms. M. V. Kale Vice-Principal, Jaysingpur college, Jaysingpur.

Preparation of Extract

Dried Leaves of *piper betle* Linn.Were grinded to fine powder. 40gm of powder mixed with 150ml of ethanol and extracted by using soxlet apparatus for 04hrs. The filtrate was then evaporated at 60^0c and stored at 40^0c until further process.[4]

Moringa oleifera was dried and fine powder 40gm of powder mixed with 150ml of ethanol and extracted by using soxlet apparatus for 24hrs. The filtrate was then evaporated at 60^0c and stored at 40^0c until further process.[3] Both aqueous extracts were prepared by Maceration by soaking drugs in water for 1 day filtered and dried.

Table No. 1: Preliminary Phytochemical Analysis.[5]

Sr. No.	Chemical Classes	Extract of *Piper betle*		Extract of *Moringa oleifera*	
		Ethanolic	Aqueous	Ethanolic	Aqueous
1.	Flavonoids	Positive	Positive	Positive	Positive
2.	Tannin	Positive	Positive	Negative	Negative
3.	Saponins	Positive	Positive	Positive	Positive
4.	Alkaloid	Positive	Positive	Positive	Positive
5.	Glycoside	Negative	Positive	Positive	Positive
6.	Carbohydrate	Positive	Positive	Positive	Positive

Collection of Worms

Indian adult earthworms Pheretimaposthuma were collected from Jaysingpur, India.

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

Evaluation of Anthelmintic Activity

The assay was performed invitro using adult earthworm i.e. pheretima posthuma for evaluation of anthelmintic activity. First etanolic and aquous 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 & Normal saline solution 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.

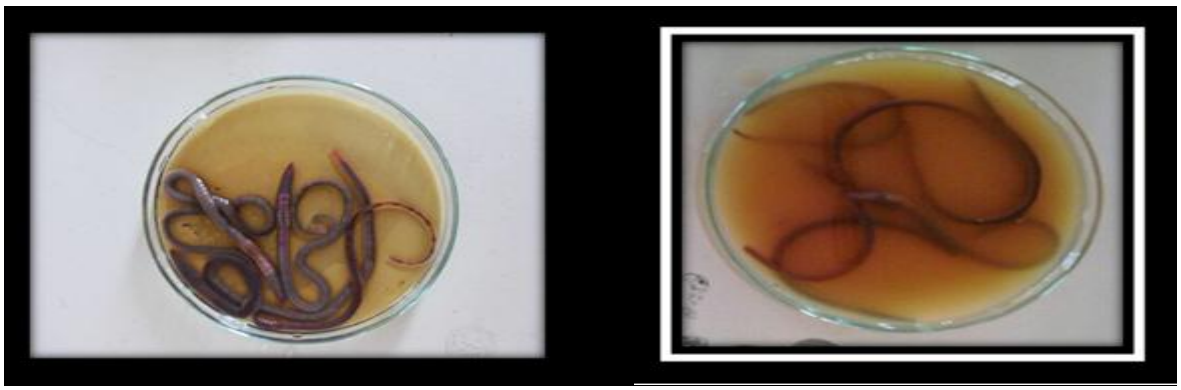

Fig. No. 1 Effect of Ethanolic Betel leaf Fig. No. 2 Effect of Aqueous Betel leaf.

Fig. No.2 Effect of Ethanolic Betel leaf Fig. No.3 Effect of Aqueous Drum Stick.

Observation Table

Table No. 2: Anthelmintic Activity of Ethanolic & Aqueous Extract of *Piper betle* and *Moringa oleifera.*

Test Drug	Conc. (mg\ml)	Time of Paralysis (min.)	Time of Death (min.)
Ethanolic Extract of Piper betle Linn.	20	39±3.60	41.66±4.16
	40	34±2.6	36±2.6
	60	28±2	31.33±1.15
	80	22.33±2.08	26.66±1.52
	100	19±1	21±1
Aqueous Extract of piper betel	20	47±2	50.66±2.0
	40	42±2	43.33±1.52
	60	37±2	39.33±1.52
	80	31.66±1.52	34.33±1.52
	100	25±2	27.33±2.51
Ethanolic Extract of Moringa oleifera	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 Moringaoleifera	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	47.66±1.52	42±1.52
Distilled Water	-	-	-
Albendazole	40	20±1	35±1

Fig No 3: Anthelmintic activity of Alcoholic Extract of Clove, Standard drug and Control.

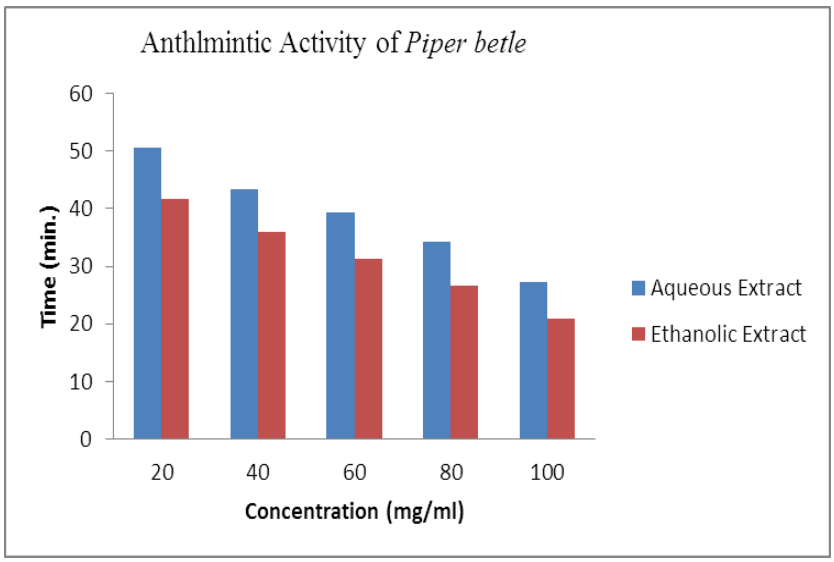

Fig. No. 3 Anthelmintic Activity of Ethanolic & Aqueous Extract of *Piper betle.*

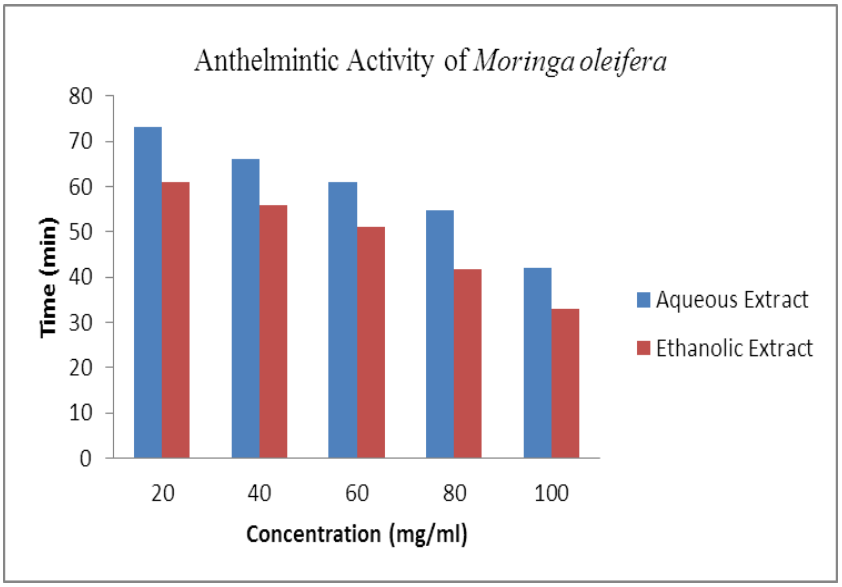

Fig.No.5 Anthelmintic Activity of Ethanolic & Aqueous Extract of *Moringa oleifera.*

RESULT AND DISSCUSSION

The result obtained in present investigation is indicating that the Piper betle and Moringa oliefera extract showing dose dependent response i.e. from loss of motility to death of worms. In case of test sample of Betle leaf 100mg/ml conc. Showed Paralysis at19 mins. and death occured within 21 mins. In case of Moringa oleifera test sample 100mg/ml conc. paralysis occurred at 31 mins. and death occured within 33 mins. So these 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. At higher concentration showed haemorrhagic spot on the body of the worms. The comparative evaluation amongst the drugs shows that Betel leaf has potent anthelmintic activity as compared to Drum stick leaves.

CONCLUSION

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

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