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Anthelmintic Activity of Botanical Extract of *Anisomeles indica* against *Pheretima posthuma*

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ABSTRACT

Anthelmintic activity for the *Anisomeles indica* panchang was studied with the aim of drawing the pharmacological standards for this species. The study also deals with the preliminary phytochemical investigation of the panchang with various extracts such as petroleum ether to water. The anthelmintic property of the 70 % ethanolic extract of plant carried out using *Pheretima posthuma* as a test worm. Major observation in present bioassay was determination of time of paralysis and time of death. The preliminary phytochemical investigation results showed that the presence of carbohydrates, protein, glycosides- flavonoid, phenols, tannins, terpenoids and keto-steroids. The tannins, glycosides and terpenoids may be responsible for anthelmintic activity. The present study includes anthelmintic activity of *Anisomeles indica* panchang first time.

Keywords: *Anisomeles indica*, panchang, terpenoids, anthelmintic.

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INTRODUCTION

Anisomeles indica (L.) Kuntze (Family: Lamiaceae) is one of the important medicinal plant found in Southwest of Nasik's western ghat, specifically on anjeneri (altitude 1280m) and Brahmagiri (altitude 1295m) mountain near Trimbakeshwar, Maharashtra (India). It's a camphor-scented, variable herb or woody under shrub, 1-2 m in height; stems acutely quadrangular, softly pubescent¹. It is widespread used as tribal medicine, predominantly in the treatment of intestinal disorders and intermittent fever. *Anisomeles indica* have anti-microbial, astringent, carminative, ethanol extract (50%) of the herb showed hypothermic activity and when burn acts as a mosquito repellent. The essential oil present in the herb is useful in uterine affections.^{2, 3}

As the plant is very potential in pharmacological uses the hypothesis were made that its 70% ethanolic extract preparation may prepared and evaluated for anthelmintic activity.

Materials and Methods

Procurement of Plant Material

Panchang of plant *Anisomeles indica* was collected from 'Trimbakeshwar' area, Maharashtra, India, in the month of Sep-Oct 2019. Botanical identification was carried out and voucher specimen of the plant material has been deposited at Institute level.

Preparation of Plant Material

Fresh Panchang of plant *Anisomeles indica* are shade dried and powdered was prepared by passing through sieve # 40, and kept in air tight polythene bags for further study.

Collection of Worm

The Indian earthworms were collected from water logged area of soil. The collected earthworm authenticated as a *Pheretima posthuma* (Indian earthworm), are long cylindrical worms with brownish colour.

Chemicals and Instruments

Solvents and reagents were procured from Modern Chemicals and Solvents Pvt. Ltd., Mumbai, India. Other common glassware and instruments used for the study.

Preparation of Extract

The dried plant material of *Anisomeles indica* extracted using 70% ethanol as a solvent by simple maceration. The extract concentrated and dried at room temperature accordingly to remove traces of solvent, finally stored in desiccators for further study⁴ (Khandelwal KR, 2005).

Preliminary Phytochemical Investigation

The successive extractive values carry out ascending polarity of the solvent as per the procedure of C. K. Kokate, 1994⁵.

Anthelmintic Bio-Assay

The anthelmintic assay carried out as per procedure of Gururaja M.P. et al., 2009⁶. The different concentration for ethanolic extract of *Anisomeles indica* (25, 50, 75 mg/ml) and piperazine citrate (10mg/ml) as a standard were prepared. Then formulations were prepared of all concentration of sample and Standard by triturating them with 50 ml 15% tween 80. After triturating the formulation mix well for 30 minute using a mechanical stirrer. The earthworms kept in petridish the sample and standard tested separately, 15% tween 80 with distilled water is a negative control. Observation was made for time of paralysis and time for death required for earthworm. When there is no movement after vigorous shaking of petridish with earthworm consider as a time of paralysis. Time for death also noted after ascertaining that worm neither moved when shaken vigorously nor when dipped in warm water (50°C).

Results and Discussion

Preliminary Phytochemical Investigation

The presence of primary and secondary metabolites as carbohydrates, protein, glycosides-flavonoid, phenols, tannins, terpenoids and keto-steroids (Table 1).

Table 1: Phytochemical Investigation of *Plectranthus mollis*

Phytoconstituents	Extract		
	Pet. ether	Ethanol	Water
Glycosides	-	+	-
Flavonoid	-	+	-
Steroids	+	-	-
Tannins	-	+	+
Phenolic Substances	-	+	+
Terpenoids	+	-	-
Carbohydrates	-	-	+
Protein	-	-	+

+ present; - absent

Anthelmintic Bio-Assay

In dose dependant manner the anthelmintic activity of methanolic extract of *Anisomeles indica* observed. At dose 20mg/ml the *Anisomeles indica* showed paralysis in 25.43 minute and death in 43.53 minutes compared to the reference standard Piperazine citrate (10mg/ml) showed the paralysis at 20.33 minutes and death at 45.25 minutes (Table 2).

Table 2: Anthelmintic Activity of *Hyptis suaveolens*

Substance	Conc. mg/ml	Paralyzing time (min)	Death time (min)
Alcoholic Extract	25	41.28	64.21
	50	25.43	43.53
	75	13.63	25.11
Piperazine citrate	10	20.33	45.25
15% Tween	--	--	--



Figure 1: *Pheretima posthuma* (Indian earthworm)

CONCLUSION

These data and parameters have been investigated for *Anisomeles indica* to set pharmacological and phytochemical standards which could be useful to find the authenticity of this traditional medicinal system plant. In conclusion the use of *Anisomeles indica* panchang as an anthelmintic has been confirmed and further studies are suggested to isolate the active principle responsible for the anthelmintic activity.

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