

ANTHELMINTIC ACTIVITY OF BRYOPHYLLUM CALYGINUM LEAVES

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Summary

Aqueous extracts of leaves of *Bryophyllum calycinum* were evaluated for anthelmintic activity on adult Indian earthworms *Pheretima Posthuma*. Three concentrations (25, 50 and 100 mg / ml) of aqueous extract of leaves *Bryophyllum calycinum* were studied in a bioassay, which involved the determination of time of paralysis and time of death of the worms using Piperazine citrate as reference standard. The results indicated that 100 mg / ml concentration of *Bryophyllum calycinum* leaves was more significant than that of other concentration.

Introduction

The leaves of *Bryophyllum calycinum* (Synonym-*Kalanchoe pinnata* (Lam) Pers) belonging to the family Crassulaceae, commonly known as Parnphuti in Hindi. It is a large shrub, 3-4 m high, native of tropical America, occurring throughout the warm and moist parts of India, especially abundant in West Bengal and [1,2]. Leaves contain malic, isocratic and citric acid [3]. It also contains fumaric acid, phenolic components, glycosides of quercetin and kaemferol. The leaf was also used as an anti-inflammatory, antifungal, antibacterial, anthelmintic and also applied to wounds, burns, boils and swelling [4,5].

Material and Methods

Plant material

The leaves of *Bryophyllum calycinum* have been collected from the local area of Nandurbar (Maharashtra). This plant is authenticating by Dr. Santosh Tayade, Dept. of Botany, Art's, Science and Commerce College, Lonkheda, Shahada, Dist-Nandurbar (MS).

Preparation of extract

Collected leaves were dried and crushed to a coarse powder and extracted with macerated with water. Extract was dried over anhydrous sodium sulphate and solvent was removed in vacuum at 40°C by using rotary evaporator (Rotavapour Buchii, Switzerland). The aqueous extract was subjected to preliminary phytochemical testing for the presence of different chemical classes of compounds [6].

Worms Collection and Authentication

Indian earthworm *Pheritima posthuma* (Annelida) were collected from the water logged areas of soils. Indian earthworms are identified at Department of Zoology, P.S.G.V.P. Mandal's, Shahada, Maharashtra.

Anthelmintic activity

The Anthelmintic assay was carried as per the method of Ajaiyeoba *et al.* with necessary modifications [7]. The assay was performed on adult Indian earthworm *Pheritima posthuma*, due to its anatomical and physiological resemblance with the intestinal round worm parasite of human being [8, 9]. Because of easy availability, earth worms have been used widely for initial evaluation of anthelmintic compounds *in vitro* [10]. 50 ml. of formulation containing different concentration of crude aqueous extract (25, 50 and 100 mg/ml in distilled water) were prepared and 6 worms of same type were placed in it. Time for paralysis was noted when no movement of any sort could be observed except when the worms were shaken vigorously. Time for death of worms were recorded after ascertaining that worms neither moved when shaken vigorously nor when dipped in warm water (50°C). Piperazine citrate (10 mg/ml) was used as reference standard while distilled water as control.

Statistical Analysis [11, 12]

The data presented as Mean \pm SEM. The activities of both the leaves extracts were compared with the control. All the extracts showed significantly higher duration of paralysis and death. Values of $P < 0.001$ were considered statistically significant.

Results and Discussion

Indigenous drug system can be a source of variety of new drugs, can provide to eliminate worms, but their claimed reputation has to be verified on scientific basis. Preliminary phytochemical screening has shown the presence of saponin, tannins, proteins, and flavonoids in aqueous extract of plants. From Table 1, it is observed that 100 mg/ml conc. of leaves *Bryophyllum calycinum* shown potent anthelmintic activity while 50 mg/ml conc. taken more time for death of worms. The results are compared with the standard drug Piperazine citrate. Further study regarding isolation and characterization of active principles are responsible for activity and establishment of possible mechanisms of action are currently under progress.

Table No-1 Anthelmintic activity of aqueous extract of *Bryophyllum calycinum* Leaves

Test Substance	Concentration in mg/ml	Time taken for Paralysis (P) and Death (D) of worms in minute	
		<i>Pheritima posthuma</i>	
		P	D
Vehicle	-	-	-
Aqueous extract	25	20 \pm 0.14 *	30.68 \pm 0.35 *
Aqueous extract	50	11 \pm 0.13 **	18.35 \pm 0.104 **
Aqueous extract	100	7.4 \pm 0.15 ***	12.77 \pm 0.13 ***
Piperazine citrate	10	22.36 \pm 0.34 ***	49.75 \pm 0.78 ***

All values are Mean \pm SEM; n=6 in each group. Values are significantly different from reference standard (Piperazine citrate) * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

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