Comparative In-Vitro Parasiticidal Properties Of Euphorbia Milii And Euphorbia Microphylla Linn Root Extracts

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Abstract
Ethanolic infusions of the root of Euphorbia microphylla Linn and Euphorbia milii were investigated for antifungal activity against Fasciola gigantica, Taenia solium, and Pheritima pasthuma, respectively. The bioassay consisted of determining the time between worm paralysis and death at five dosages (10-100mg/ml) of each extract. All of the extracts demonstrated strong antibacterial action, with P. pasthuma being the most sensitive to the worms followed by F. gigantica and T. solium. The most active extracts were E milii and E microphylla Linn roots extracted with ethanol. The test used piper zine citrate (10mg/ml) and distillation water as the recognized reference medication and management, respectively.

Keywords: Euphorbia microphylla Linn, Euphorbia milii, anthelmintic, worms.

i. INTRODUCTION

Two Euphorbiaceous species are Euphorbia milii and Euphorbia microphylla Linn. For many years, species in this order have been used in African traditional ethnology, and several genus species have been shown to be beneficial to a range of diseases. Syphilis, wound dressing, chronic ulcers, and snake bites have all been treated using plants from the Capparidaceae family (Dalziel, 1937; Kerharo & Adams, 1974). Certain plant species have also been used to cure gonorrhoea, convulsions in children, as aphrodisiacs, and, most crucially, as antibiotics (Pernet, 1972).

The presence of glucosinolates, commonly known as mustard oil glucosides, is well established in the plant family. Stachydrine-type alkaloids are also prevalent in this plant family (Delaveau et al., 1973). Flavonoids are chemicals, and steroids have been detected in a few of these plants at a low level.

E milii root bark has been used to cure earaches, while bark decoction is used to treat chest pains, kidney aches, and small pox infections. The fruit contains antihelmintic effects. The fruit of E microphylla Linn has antihelmintic properties. The fruit's oil can be utilized as a fish poison (Oliver-Bever, 1986).

We describe the anthelmintic properties of Euphorbia milii and Euphorbia microphylla Linn as part of our ongoing research on euphorbiaceous species for biologic functions and elements, as well as our recent studies on additional ethnically therapeutically beneficial plants from the Niger-ian flora (Ajaiyeoba et al., 1999).

ii. ETHNOPHARMACOLOGY

E. hirta is used to treat digestive problems (diarrhea, diarrhea, parasitosis of the gut, and so on), bronchial and respiratory problems (asthma, bronchitis, hay fever, and so on), and conjunctivitis. E. hirta has also been proven to exhibit hypotensive and tonic properties. The aqueous extract has anxiolytic, antipyretic, analgesic, and anti-inflammatory properties. The stem sap is used to treat eyelid problems, while a leafy compress is used to treat irritation and burns.

Fig. 2 Ethno pharmacology

Extracts of E. hirta have been demonstrated to have anticancer properties. The aqueous extract of the plant greatly reduced the synthesis of these chemicals I2, E2, and D2. The aqueous extract reduces the presence of an in wheat, rice, grain, and sunflower crops. The ethanolic extract of the roots possesses antifungal and antibacterial effects. Before putting the root to inflamed soles, warm them with turmeric and coconut oil. E. hirta latex, like surma, is applied to the lower eyelids to cure eye sores. The root exudate shows nematicidal activity against juvenile meloidogyne incognita.

A dry herb infusion is used to treat skin disorders. To treat thrush, a fresh herbal decoction is gargled. A root decoction may also aid nursing mothers who are running short on milk. Snake bites can also be treated with seeds. The polyphenolic extract of E. hirta is antimicrobial and antispasmodic. Quercitrin is an antidiarrheal flavonoid glycoside produced from a plant. It is thought to be beneficial to the respiratory tract. In rats, an alcohol-containing solution of the whole plant exerts hypoglycemic action. It has sedative properties in the genitor-urinary system.

Euphorbia microphylla is a kind of Euphorbia. Linn is used in Ayurvedic medicine to alleviate diarrhea and severe bleeding piles. Plant latex was used to cure ring worm and eruptive blisters. According to Bhaavaprakaasha, the plant is an expectorant that relieves severe coughs, skin disorders, and parasitic infections, encourages development, and has aphrodisiac and anti-aging properties.

iii. PHARMACOLOGICAL ACTIVITIES

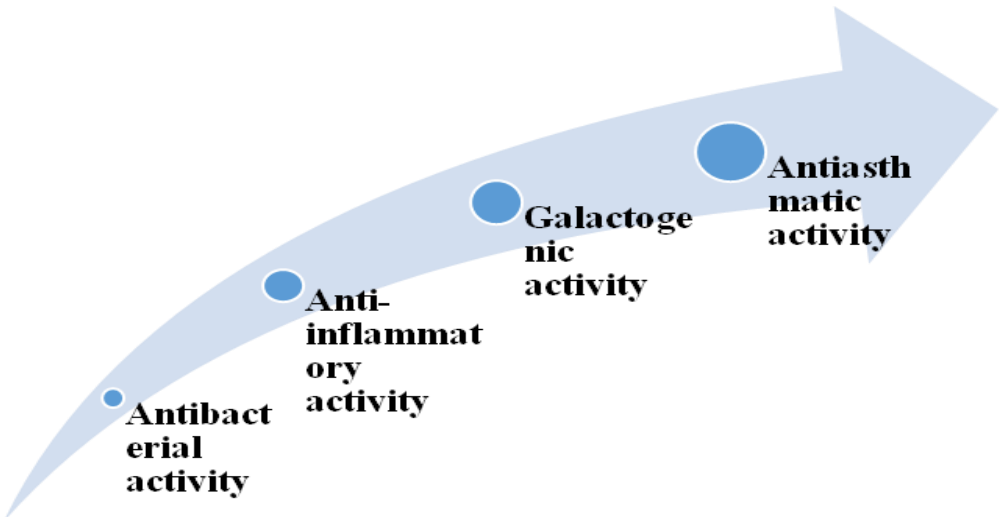

Fig. 3 Pharmacological Activities

- **Antibacterial activity**

E. hirta ethanol extract hindered the spread of S. aureus, E. coli, the bacteria Pseudomonas, and Staphylococcus, but E. hirta water and chloroform extracts inhibited the formation of Klebsiella pneumonia. The extracted compound is antibacterial and noncytotoxic.

- **Anti-inflammatory activity**

An n-hexane extract of aerial parts of E. hirta demonstrated anti-inflammatory action in a mouse model of phorbol acetate-induced ear inflammatory processes. It has dosage-dependent impacts.

- **Galactogenic activity**

Powdery E. hirta has galactogenic effects in guinea pigs before puberty by increasing mammary gland growth and promoting secretion.

- **Antiasthmatic activity**

Because of its bronchial tube unwinding and respiratory depression activity, E. hirta is thought to have antiasthmatic properties.

Both the seeds and the leaves are used to cure parasites and digestive disorders in youngsters in Tamil Nadu. In the northeast of India, they are said to be energizing and laxative. In the Konkan state, the pulp is used to cure fungus. As a snake-bite therapy, the extracted juice or power plant is mixed with wine and put directly to the region of harm.
It has also been demonstrated that E. microphylla Linn is useful in the treatment of dysentery and diarrhea. Antioxidants and antiviral properties are found in E. microphylla Linn. The plant is commonly used in pharmaceutical goods. It may have antioxidant, anticancer, anti-malarial, anti-rash, and anti-dysentery properties. The current study aims to investigate the details of the antibacterial impact of the Euphorbia E microphylla Linn extract. E. microphylla Linn is also useful in the treatment of dysentery and loose stools. E. microphylla Linn possesses antioxidant and antiviral properties. It is frequently used in medicine. It may have antioxidant, anticancer, anti-malarial, anti-rash, and anti-dysentery properties. The current research aims to investigate the specificity of the antibacterial action of Euphorbia E microphylla Linn extracts.

iv. MATERIALS AND METHODS

4.1 Plant collection and authentication

Plants were collected from Patan region near Karad and herbarium stored at SGM College Karad. Plants authenticated by scientist-C at Botanical survey of India, Pune.

4.2 Plant extraction

Plant components were immersed for 72 hours in redistilled hexane and formaldehyde at room temperature (29°C). After the solvent was removed, the percentage yields were calculated, and the plant extracts were stored in specimen vials in a freezer until they were needed for inspection.

4.3 Worms' collection and authentication

Taenia solium (tapeworm, 2.4-2.8g) and Fasciola gigantica (liverfluke, 0.05- 0.07g) were recovered from freshly slain animals at Ichalkaranji's sloter house. Pheritimia pasthuma (earthworm, 0.06-0.6g) was collected from flooded areas of Koyana Dam. The Chemistry department of SGM College Karad verified all three types of worms.

4.4 Anthelmintic assay

Two equivalent worms were placed in 9cm Petri dishes with basic extract solution in five different concentrations (10, 20, 50, 80, and 100mg/ml in distilled water, respectively). This method was repeated for each variety of worm.
Except when the worms were extremely disturbed, the mean times for paralysis (P, in minutes) were measured when there was no movement. After confirming that the worms did not move when shaken violently or submerged in warm (50°C) water, the periods of death (D, minutes) were recorded. Piperazine citrate (10mg/ml) was employed as the chemical, while pure water served as the control. This method is comparable to the one we previously employed (Ajaiyeoba & Okogun, 1996).

v. RESULTS

The extract yields (%) and results of anthelmintic studies on the ethanolic extracts of both species' leaves are shown in Table 1, while the intrinsic anthelmintic capabilities of the root extracts are shown in Table 2. Pheritimia pasthuma and Fasciola was gigantica were used to test the anthelmintic effects of E microphylla Linn and E milii root extracts. P. pasthuma and Taenia solium helminths were employed to investigate the bioactivity of root ethanolic extracts from both plants. Using the Null hypothesis, P 0.05 (n = 2) was utilized to assess relevance. The findings are summarized in Tables 1 and 2.

vi. DISCUSSION

Tables 1 and 2 show that the four ethanolic extracts of Euphorbia s microphylla Linn and Euphorbia milii roots have intrinsic anthelmintic activity. With all of the worms examined, the extracts indicated concentration-dependent anthelmintic action, with 100mg/ml giving the shortest period of paralysis (P) and death (D) for all worm species. For all of the Worm types tested, the data from both tables demonstrated that the plant roots were more active as an parasitic activity.

Table 1 reveals that earthworms were particularly sensitive to the ehtanol-based root extract of E microphylla Linn. It produced paralysis in two minutes and death in eight seconds, whereas the tested medicine produced P and D against F. gigantica in 20 and 60 minutes, respectively.
With F. gigantica, the anthelmintic effects of the roots ethanolic extracts were significant. Worms were paralyzed or killed in 3-6 minutes at 100mg/ml, while piperazine, which citrate did in 1-3 minutes. Worms in clean water lived for 5-48 days (Table 1).

Table 2 reveals that the ethanolic extract of E. milli roots has the highest efficiency against earthworms. When the reference drugs' parameters were 20 and 60min, respectively, P = 2min and D = 5min. Table 2 shows that tape worms were the most responsive to E microphylla Linn root extract.

The earthworms were frequently the most susceptible to the extracts, particularly when compared to the original medicines, piperazine citrate (10mg/ml). At 100mg/ml, P varied from 2 to 5 minutes for earthworms, whereas D ranged from 5 to 8 minutes. At 100mg/ml, the extracts were more effective in killing rather than paralyzing T. solium (tapeworms). E milii root extract paralysis / death times were 6/13min; Euphorbia microphylla Linn.

Most worm expellers, such as piper zine citrate, paralyze the worms, allowing them to be evacuated from human and animal faces. Not only did the extracts have this power, but they also killed the worms, especially at 100mg/ml. Finally, the folkloric use of these plants in traditional African contexts (i.e., for their antibacterial properties) was validated, since extracts displayed anthelmintic capabilities against the several worms used in the study.

We are actively working on extracting antibacterial pollutants from these extracts for future release.

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Table 1 Anthelmintic activity of E milii and E. microphylla Linn root extract

Extracts[a]	Yield (%)	Conc. (mg/ml)	Time of Paralysis (P) and Death (D) of Worms in minutes (±SEM) [b] P. posthuma P	P. posthuma D	T. sodium P	T. sodium D
E. Microphylla Linn	4.8	10	13 ±0.5	>60	22 ±0.1	34 ±0.5 (root)
		20	9 ±0.3	48 ±0.2	23 ±0.3	31 ±0.2
		50	7 ±0.2	32 ±0.6	15 ±0.8	28 ±0.1
		80	3 ±0.5	16 ±0.5	8 ±0.2	10 ±0.1
		100	2 +0.9	8 +0.2	3 +0.5	5 +0.2
E. milii (root)	12.3	10	16 ±0.2	>60	26 ±0.3	39 ±0.9
		20	14 ±0.5	51 ±0.2	21 ±0.2	33 ±0.5
		50	11 ±0.3	45 ±0.5	19 ±0.1	30 ±0.5
		80	7 ±0.8	38 ±0.3	7 ±0.3	9 ±0.1
		100	5 +0.5	31 ±0.1	3 ±0.8	6 ±0.9
Piperazine citrate		10	20 +0.3	60 ±0.5	1 ±0.2	3 ±0.05

[a] Extracts /reference drug were dissolved with distilled water.
[b]All values were significant (P <0.05). In the control (distilled water treated), P. Posthuma lived 48 hr, F. gigantic lived 5 hr.

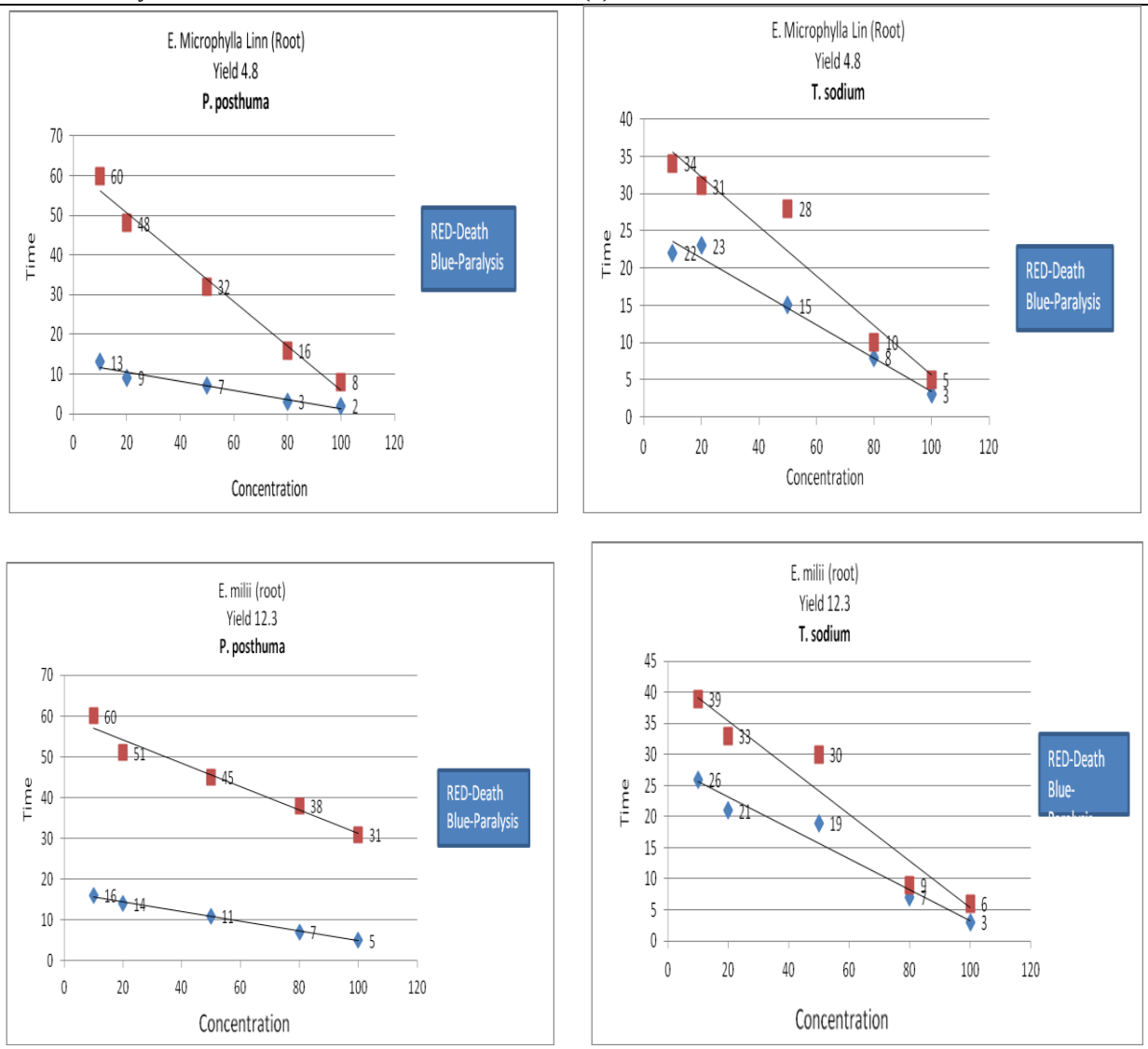

Fig. 3 Anthelmintic activity of E milii and E. microphylla Linn root extract

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