

## A Comprehensive Study of Phytochemical constituents and Screening of Anthelmintic activity of *Euphorbia thymifolia* Linn.

\*Sobin K Paul, Vipin Sharma, Akhil S Sharma, Sunil Goyal

*Mahatma Gandhi College of Pharmaceutical Sciences, Sitapura, Jaipur*

---

### ABSTRACT

Anthelmintics are the drugs that either kill or paralyse and expel infesting helminthes. Helminthiasis is prevalent globally, but it is more common in developing countries with poor personal and environmental hygiene. In the human body, gastrointestinal tract is the abode of many Helminthes, but some also inhabit the tissues or the larvae migrate into the tissues. They harm the host by depriving him of nutrition causing nutritional deficiencies including anemia. They may also cause injury to organ and intestinal or lymphatic destructions. Helminthiasis is rarely fatal but is a major cause of ill health. Although some synthetic drugs are available to control the infection produced by the helminthes, the development of more effective and safe drugs from reasonably less expensive natural source is our main consideration. This can be approached through the study of indigenous traditional plant remedies.

The present study explains the anthelmintic potential of a traditionally used medicinal plant of India. In the present communication, the whole plant of *Euphorbia thymifolia* Linn. was extracted with ethanol and ethanolic extract was fractionated with petroleum ether and ethyl acetate. The extracts were evaluated for phytochemical constituents. The extracts were investigated for anthelmintic activity against Adult Indian earthworm, *Pheretima posthuma*, which has anatomical and physiological resemblance to the intestinal round worm in humans. Various concentrations were used in the bioassay in which the paralysis and death time of the worm was determined. All the extracts showed significant anthelmintic activity.

**Key Words:** Phytochemical, Anthelmintic activity, *Euphorbia thymifolia* Linn.

---

### INTRODUCTION

*Euphorbia thymifolia* Linn. is commonly known as 'duddi' or in Sanskrit means 'Laghu didhika or Raktavindaka'. It belongs to the family Euphorbiaceae. This plant is bitter, acrid, sweet and used as thermogenic, laxative and diuretic. This plant is widely used in the ayurveda to cure many diseases like vitiated condition of constipation, helminthiasis and ringworm skin diseases and leprosy.

### OBJECTIVE

The present study was focused in the phytochemical screening and study of anthelmintic activity of *Euphorbia thymifolia* Linn.

### EXPERIMENTAL METHODS

1. Extraction: The whole plant of *Euphorbia thymifolia* Linn. was extracted with ethanol by hot extraction method using soxhlet apparatus and the dried total ethanolic extract was fractionated with petroleum ether and ethyl acetate. The extracts were concentrated under vacuum.
2. Preliminary Phytochemical Evaluation: The extracts were subjected to qualitative chemical test for alkaloids, carbohydrates, flavanoids, glycosides, sterols, triterpenoids and saponins. Total phenolic content and total flavanoid content were estimated quantitatively by

Folin-Ciocalteu method and aluminium chloride colorimetric method respectively.

3. Anthelmintic activity Screening: The extracts were investigated for anthelmintic activity against Adult Indian earthworm, *Pheretima posthuma* using albendazole as standard. Various concentrations of extracts were used in the bioassay in which the paralysis and death time of the worm was determined as the measure of Anthelmintic activity.

### RESULTS AND DISCUSSION

1. Preliminary Phytochemical Evaluation: All the three extracts showed the presence of alkaloids, phenolics, flavanones, flavanoids and sterols. Terpenoids and saponins were present in alcoholic and petroleum ether extract. The total phenolic content in the petroleum ether extract and ethyl acetate extract was found to be 15 mcg/ml and 50.5 mcg/ml respectively, in gallic acid equivalents. The total flavanoid content in the petroleum ether extract and ethyl acetate extract was found to be 12.38 mcg/ml and 39.95 mcg/ml respectively, in quercetin equivalents.
2. Anthelmintic Activity Screening: Ethyl acetate extract was found to have better anthelmintic activity compared to the petroleum ether extract and was found to be comparable with the albendazole control.

### CONCLUSION

Concentration (mg/ml)	Ethyl acetate extract		Pet.Ether extract		Albendazole oral suspension(200mg/100ml)	
	Paralysis in minutes	Death in minutes	Paralysis in minutes	Death in minutes	Paralysis in minutes	Death in minutes
20	55.25±0.25	109.9± 0.82	88.08 ±0.44	14.35 ±0.21	17.45±0.11	31.11± 2.0
100	6.12± 0.13	25.36± 0.27	13.86± 0.61	44.77 ± 0.6	8.3± 0.22	14.19± 0.64
200	4.5± 0.5	16.05± 0.53	11.29 ±0.23	22.27± 0.16	4.5± 0.5	9.41± 0.20

The phytochemical evaluation of the plant extracts revealed the presence of alkaloids, flavanoids, sterols, triterpenoids and saponins.

The ethyl acetate extract of *Euphorbia thymifolia* possess excellent anthelmintic activity which is comparable with the albendazole control. The finding is of high importance as it serves as the basis for the development of more effective and safe therapy for Helminthiasis from reasonably less expensive natural source.

The presence of flavonoids in the extract may provide further scope for the study of anti-inflammatory studies and antioxidant studies.

#### REFERENCES

1. Abdul Rahuman A, Gopalakrishna G, Venketasan P, Geeta K. "Isolation and identification of mosquito larvicidal compound from *Euphorbia thymifolia* L." *Parasitol Res.* 2008 Jan 3.
2. Yang CM, Cheng HY, Lin tc, Chinang LC, Linn CC. "Euphorbia thymifolia suppresses herpes simplex virus-2 infection by directly inactivating virus infectivity virus infectivity" *Clin. Exp Pharmacol Pysiol* .2005 May-Jun; 32(5-6):346-9
3. Linn CC, Cheng HY, Yang CM, Linn TC. "Antioxidant and antiviral activities of *Euphorbia thymifolia*." *J Biomed Sci.* 2002 Nov-Dec; (6 Pt2):656-64