In-vitro anthelmintic activity of *Trigonella foenum-graecum* leaves and seeds (Fabaceae)

R.D. Bhalke*, S.J. Anarthe, K.D. Sasane, S.N. Satpute, S.N. Shinde, V.S. Sangle
Sanjivani College of Pharmaceutical Education and Research, Department of Pharmacognosy, Shingnapur, Kopargaon-423603, (INDIA)

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ABSTRACT

Present study reports anthelmintic activity of petroleum ether, chloroform, ethyl acetate and methanolic extracts obtained from the leaves and seeds of *Trigonella foenum-graecum* Linn. (Fabaceae) on Indian adult earthworms *Pheretima posthuma*. Phytochemical investigation shows the presence of sterol, terpenes, flavonoids, tannins and alkaloids. Amongst all extracts, ethyl acetate extract of leaves showed potent anthelmintic activity as compared with other extracts and the reference drug albendazole. Results show that anthelmintic activity is dose dependant.

INTRODUCTION

*Trigonella foenum-graecum* L. (Fabaceae) is nearly smooth erect annual. Leaflets are oblanceolate-oblong, toothed. Flowers are axillary, sessile. Calyx teeth linear. Pods are long. Seeds are traditionally used as antipyretic, anthelmintic, cure leprosy, useful in heart disease. Leaves are useful in external and internal swelling and burns[1,2]. Seeds are having wound healing activity[3].

Seeds induce uterine contractions[4], inhibit cancer of the liver[5], lower blood cholesterol levels and also have an antidiabetic effect[6]. The seed and leaves are anticholesterolemic, anti-inflammatory, antitumor, carminative, demulcent, emollient, expectorant, febrifuge, galactogogue, hypoglycaemic and laxative[7-9]. Compounds extracted from the plant have shown cardio-tonic, hypoglycaemic, diuretic, antiphlogistic and hypotensive activity[8]. One of its constituent alkaloids, called ‘trigonelline’, has shown potential for use in cancer therapy. Seeds contained alkaloids as triginelline. Furostanol glycosides as trigofoenosides A-1, trigofoenosides D-1, saponin as trigofoenoside E-1, diosgenin, gitogenin, sarsapogenin were isolated from seeds[1,2,10]. The seed contains the saponin diosgenin, an important substance in the synthesis of oral contraceptives and sex hormones[10], whilst saponins in the plant have been extracted for use in various other pharmaceutical products[4].

Present study reports anthelmintic activity various extracts of *T.foenum-graecum* leaves and seeds.

EXPERIMENTAL

Leaves and seeds of *Trigonella foenum-graecum* was collected from Ahmednagar district of Maharashtra in October 2006 and gets authenticated by Botanical Survey of India, Pune (Voucher specimen No. TF1). Leaves and seeds were shade dried, powdered and subjected to successive solvent extraction in Soxhlet extractor using petroleum ether (60-80°C), chloroform, ethyl acetate and methanol as solvents. The extracts were vacuum dried.

Anthelmintic activity[11]

The anthelmintic activity was evaluated on adult
Activity of Trigonella foenum-graecum leaves and seeds

Indian earthworms, *Pheritima posthuma* ([11]), due to its anatomical and physiological resemblance with the intestinal roundworm parasites of human beings ([12-14]), Twenty eight groups, each containing of six earthworms of approximately equal size were released into 10ml of desired extract. Petrol ether (PE), chloroform (CH), ethyl acetate (EA) and methanol (ME) extracts of leaves and seeds of *T.foenum-graecum* (20mg/ml, 40mg/ml, 60mg/ml each) in normal saline containing 5% DMF. Final pH of the medium was 7.3. Observations were made for 24 Hrs. Control worms were alive up to 24 Hrs. of observation. Results are expressed as Mean±SEM from six observations; PE-petroleum ether extract, CH-chloroform extract, EA-ethyl acetate extract, ME-methanol extract of *T.foenum-graecum*.

**RESULTS AND DISCUSSION**

Study was carried out to check whether activity is dose dependant or not, but result showed that all extracts of *T.foenum-graecum* showed significant anthelmintic activity at 20mg/ml concentration. Result showed that ethyl acetate extracts of *T.foenum-graecum* leaves required less time for paralysis and death of the worms as compared with other extracts and standard drug albendazole. It justifies the use as an anthelmintic suggested in folklore medicines.

Phytochemical investigation shows the presence of sterol and terpenes in petroleum ether extract, chlorophyll pigment and small amount of flavonoids (Shinoda test shows faint pink color) in chloroform extract, flavonoids and tannins in ethyl acetate extract and alkaloids in methanol extract. Tannins are responsible for anthelmintic activity ([16]), so ethyl acetate extract shows potent anthelmintic activity at 20mg/ml. The plant can further explored for isolation of active constituents responsible for the anthelmintic activity.

**REFERENCES**


