

## Research Article

**Anthelmintic activity of fruits of *Embelia ribes* Burm.**

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**ABSTRACT**

The ethanolic extract of the seeds of *Embelia ribes* was evaluated for its anthelmintic efficacy *in vitro*. Graded doses of the extract (10,50,100,200 µg/mL) showed significant anthelmintic activity, with their sensitivity when compared with the standard. Ivermectin and levamisole were used as reference drugs.

**Keywords:** *Embelia ribes*, Anthelmintic, Ivermectin, levamisole.

**I. INTRODUCTION**

Helminthiasis is among the most important animal diseases inflicting heavy production losses. The disease is highly prevalent particularly in third world countries due to poor management practices. Chemical control of helminthes coupled with improved management has been the important worm control strategy throughout the world<sup>1</sup>.

Fruits of *Embelia ribes* are used as antifertility<sup>2</sup> and anti-implantation properties<sup>3</sup>. Fruits are acrid, astringent, anthelmintic, bitter, brain tonic, carminative, diuretic, febrifuge, laxative, stimulant, and thermogenic. It is useful in skin diseases, leprosy, nervous debility, dyspepsia, flatulence, colic, tumors, asthma, fever, ascaris infestation and general debility. Embelin and its 2,5-isobutylmine salts have been reported to possess anti-tumor, analgesic, anti-inflammatory and antioxidant activities<sup>4-6</sup>.

It is reported *Embelia ribes* effective against tapeworm<sup>7</sup>.

Previously isolated constituents are- Alkaloid, christembine, Embelin (2,5-dihydroxy-3-undecyl-1,4-benzoquinone), fatty ingredients, a resinoid, tannins and minute quantities of a volatile oil<sup>6</sup>.

*Embelia ribes* Burm (Family- Myrsinaceae) fruits were collected from agriculture college, Indore. The sample was authenticated by our pharmacognosy department where the voucher specimen (SOP/HF-01/08) is deposited.

**II. EXPERIMENTAL****2.1 Preparation of extract**

The drug was dried in the shade. The dried fruits were powdered mechanically and extracted 95% ethanol by using soxhlet extractor. After 72h extract was concentrated under reduced pressure (22-26 mmHg) at 50-60°C (yield 12.5%).

The presence of phytochemicals, alkaloids (Draggendorff's), flavonoids (Shibata's reaction), saponins (Frothing test), tannins (5% ferric chloride), terpenoids (2,4 dinitrophenylhydrazine), glycosides (fehling's solution), steroids (Liebermann's Burchard test) and anthraquinones (Borntrager's test) were evaluated<sup>8</sup>.

A Preliminary phytochemical screening gave positive test for glycoside and tannins.

**2.2 Evaluation of anthelmintic activity**

Anthelmintic activity (*in vitro*) by microwell plate assay<sup>9</sup>. Levamisole and ivermectin were used as reference standard. The extract was dissolved in 1 % DMSO.

The free living roundworm *Rhabditis pseudoelongata* (strain L.Lamy) was used for the anthelmintic screening. Roundworm strain was collected from choithram hospital and research centre, Indore. The worms were cultivated at 25°C in a moist atmosphere in darkness in a solid medium constituted of autoclaved rabbit faeces. Three replicates were used for each concentration of ethanol extract.

### III. RESULTS

The ethanolic extract of the seeds of *Embelia ribes* (10-200 µg/mL) exhibited potent anthelmintic activity (Table I). This result may lend support for the traditional use of the plant as an anthelmintic.

Preliminary phytochemical screening shows presence of glycoside and tannins.

Tannins, the secondary metabolite, occur in several plants have been reported to show anthelmintic property by several

investigators. Tannins, the polyphenolic compounds, are shown to interfere with energy generation in helminth parasites by uncoupling oxidative phosphorylation or, binds to the glycoprotein on the cuticle of parasite, and cause death<sup>10-12</sup>. Further research is to be carried out to fractionate and purify the extract, in order to find out the molecule responsible for the anthelmintic activity observed.

**Table I: Anthelmintic activity of the ethanolic extract of seeds of *Embelia ribes*.<sup>a</sup>**

S. No.	Tested material.	Conc.(µg/mL)	ED <sub>50</sub> (µg/mL)
1.	<i>Embelia ribes</i>	10,50,100,200	96.4(70.6-140.2)
2.	levamisole*	1,2,4,8	3.9(2.8-5.2)
3.	Ivermectin*	0.5,1,2,4	2.7(2.1-3.2)

<sup>a</sup>All determination were done in triplicate.

\*Reference standards

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