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Anthelmintic potential of certain ethano medicinal plants of Uttarakhand State, India

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ABSTRACT

*In the present study, ethanolic extract of ethano medicinal plants *Anemone vitifolia* and *Aegle marmelos* available in Garhwal Himalaya region of Uttarakhand was investigated for their anthelmintic potential using *Eudrilus euginea* as a test worm. Various concentrations (10, 50, 100 mg/ml) of the ethanolic extract of *Anemone vitifolia* roots and *Aegle marmelos* fruits were tested in a bioassay, which involves determination of time of paralysis (P) and time of death (D) of the worm. Both the plant extracts were able to show activity but *Anemone vitifolia* were found more active than *Aegle marmelos*, when compared to the standard drug piperazine citrate (10 mg/ml).*

Keywords: Anthelmintic activity, piperazine citrate, *Eudrilus euginea*.

INTRODUCTION

The World Health Organization found that two billion people are suffering from parasitic worm infections [1]. Despite the prevalence of parasitic worms, anthelmintic drug discovery is the poor relation of the pharmaceutical industry, the simple reason is that the nations which suffer most from these tropical disease have little money to invest in drug discovery or therapy. The gastrointestinal helminthes disease become resistant to currently available antihelmintic drugs, hence there is increasing demand towards natural anthelmintics.

Traditional system of medicine reports the efficacy of several natural products eliminating helminthes keeping this in view, the present communication deals with the comparative

evaluation of antihelmintic activity of certain ethano medicinal plants growing in Garhwal Himalaya region of Uttarakhand state.

EXPERIMENTAL SECTION

Plant material

Roots of *Anemone vitifolia* and fruits of *Aegle marmelos* were collected from Garhwal Himalaya region of Uttarakhand, India during October 2008, and authenticated by taxonomist Dr.J. K. Tewari, Department of Botany, H.N.B. Garhwal University, Srinagar, Garhwal,Uttarakhand, India. Voucher specimens were deposited in Department of Pharmaceutical Sciences, H.N.B. Garhwal University, Srinagar, Garhwal,Uttarakhand, India.

Preparation of Extract

The roots and fruits of *Anemone vitifolia* and *Aegle marmelos* were collected and dried by means of a natural sun dry and soaked in ethanol (95%) and kept aside for four days. After four days the ethanol layer was decanted off. The process was repeated for four times. The solvent from total extract was distilled off and concentrate on a water bath to syrupy consistency and then evaporated to dryness.

Preparation of test and standard sample

Three different concentrations (10, 50, 100 mg/ml) of crude ethanolic extract of both the plants were prepared by triturating the sample in distilled water containing 15% tween 80. 50 ml formulation of standard drug piperazine citrate having the concentration of 10mg/ml was prepared in 15% tween 80 and distilled water respectively. Suspension of distilled water and 15% Tween 80 was used as acontrol. The earthworms *Eudrilus euginea* (oligochetaceae) were collected and identified by Department of Zoology, H.N.B. Garhwal University, Srinagar, Garhwal,Uttarakhand, India.

Anthelmintic Assay

The anthelmintic assay was carried as per the method of (Ajaiyeoba) with necessary modifications [2]. The assay was performed on earthworms, due to its anatomical and physiological resemblance with the intestinal roundworms parasite of human being [3]. Because of easy availability,earthworms have been widely used for the initial evaluation of anthelmintic compounds invitro [4,5,6,7,8]. Seven petridishes of equal sizes were taken and numbered. 50ml of formulation of different concentrations of both the plants were placed in six petridishes and 50 ml of formulation of standard drug was placed in seventh petridish.Each group having six earthworms of similar sizes were placed in the petridishes. All the petridishes were placed at room temperature. The time of paralysis was noted when no movement of any sort could be observed except when the worms were shaken vigorously and the time for death recorded after ascertaining that worms neither moved when shaken vigorously nor when they dipped in warm water (50⁰C) [9,10,11].

Statistical analysis

The data obtained were expressed as mean \pm SEM and statistical analysis were carried out using one way ANOVA followed by Scheffe's test using SPSS software version 12 and P value <0.05 was considered as statistically significant.

RESULTS AND DISCUSSION

The anthelmintic potency of ethanolic extract of *Anemone vitifolia* and *Aegle marmelos* at various concentrations (10, 50, 100 mg/ml) was compared with the standard drug piperazine citrate (10mg/ml). All the plant extracts were found to possess anthelmintic activity.

Table 1: Anthelmintic potential of *Anemone vitifolia* and *Aegle marmelos*

Name of the plant (family)	Part used	Ethanolic extract(mg/ml)	Time taken for paralysis (P) and death (D) of worms in min \pm SEM (<i>E. eugenia</i>)	
			(P)	(D)
<i>Anemone vitifolia</i>	Roots	10	32 \pm 0.5*	47 \pm 0.4*
		50	23 \pm 0.5*	44 \pm 0.3*
		100	15 \pm 0.4*	36 \pm 0.3*
<i>Aegle marmelos</i>	Fruits	10	28 \pm 0.3*	50 \pm 0.4*
		50	25 \pm 0.3*	43 \pm 0.3*
		100	19 \pm 0.4*	38 \pm 0.5*
Piperazine citrate	-----	10	21 \pm 0.4*	47 \pm 0.5*

Values are Mean \pm SEM; n=6 worms in each group *p< 0.05 is considered as significant when compared with standard drug

The *Anemone vitifolia* was found most active against *E.eugenia* compared to standard drug. The activity may be due to the presence of various phytoconstituents present in the plant. So there is need to explore the exact active principle (s) and mechanism (s) of action for the anthelmintic activity.

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