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CNS depressant activity of *Euphorbia tirucalli L.*latex

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ABSTRACT

Miscibility studies of unsaturated polyester resin-poly(methyl methacrylate) (UPR-PMMA) blend in chloroform were carried out in different percentages of the blend components. The viscosity, ultrasonic velocity, and refractive index methods were employed for the miscibility studies at 30^0C. The interaction parameters have been obtained using the viscosity data to probe the miscibility. These values indicated that the UPR-PMMA blend is miscible. This was confirmed by the ultrasonic velocity and refractive index methods.

INTRODUCTION

Euphorbia tirucalli (Euphorbiaceae) is a succulent plant commonly distributed to tropical areas and rainforests in Amazon, Madagascar and South Africa. The plant is commonly known as Vajradruma (Sanskrit), Indian tree spurge or Milk bush (English) and Bontakalli (Kannada). The latex is used as an application for warts, rheumatism, neuralgia and tooth ache[10]. Latex is also used as antimicrobial, antiparasitic, in treatment of coughs, cancer and other maladies as folk remedy[2]. The bark of this plant is used to treat fractures[10]. Literature review also indicated that the CNS depressant activity of this species has not been scientifically evaluated so far. The present paper reports the CNS depressant effect of Latex of *Euphorbia tirucalli* in mice.

MATERIALS AND METHODS

The latex of E.tirucalli was collected form the regions of Chitradurga, Karnataka and authenticated at Department of Botany, Sahyadri Science College, Shimoga.

Preparation of plant extracts

The material was dried in sunlight, powdered mechanically and stored in airtight containers. For preparation of aqueous extract, the latex material was boiled in distilled water for 6 hours. At interval of every 2 hours it was filtered and centrifuged to get the aqueous extract. The extract was finally dried over the water bath. To prepare the Dichloromethane-Methanol and Pet ether extracts, the latex material was subjected to cold extraction. The solvent was removed completely over the water bath and finally dessicator dried.

Phytochemical screening

Standard methods (Evans and Trease; Vigar, 1984) were used for preliminary phytochemical screening of the extracts to know the nature of phytoconstituents present (**TABLE** 1).

Drug formulations

Oral suspension of the crude extracts were prepared in 1% Tween80 so as to obtain the dosage forms in the concentration of 1mg/1ml.

Animals

Albino mice weighing 25-30g were obtained from

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TABLE 1: Qualitative analysis of phytochemicals of latex extracts

Extracts	Alkaloid	Flavanoid	Steroid	Saponin	Cardiac glycoside	Phenols	Tannins	Anthraquinone
Aqueous	+	+	+	-	+	+	+	+
Dichloro methane-methanol	+	+	+	-	+	+	+	+
Pet ether	+	+	+	-	-	+	+	-

TABLE 2: Central nervous system depressant activity of *E.tirucalli* latex

Sl. no.	Treatment	Dose	Locomotor activity (scores) in 10 min		
			Before treatment	After treatment	
				30 min	60 min
1.	Control	1% Tween 80	318.33±2.11	327.17±1.64	328.67±3.13
2.	Chlorpromazine	3mg/Kg	343.33±2.47	240.83±6.11**	213.33±4.01**
3.	Aqueous	300mg/Kg	347.67±4.67	294.83±2.65**	244.17±3.52**
4.	Dichloromethane-mjethanol	100mg/Kg	320.00±2.89	284.17±4.36**	244.67±3.75**
5.	Pet ether	30mg/Kg	320.83±1.62	288.50±2.17**	253.00±3.65**

**P<0.01

the National Institute of Communicable Diseases, Bangalore, Karnataka. They were maintained at standard housing conditions and fed with commercial diet (Hindustan Lever Ltd., Bangalore) and water ad libitum during the experiment.

Acute toxicity studies

The acute toxicity studies were carried out as per stair case method[4]. Accordingly the LD_{50} of aqueous extract was found to be 3000mg/Kg, LD_{50} of Dichloromethane-Methanol extract was found to be 1000mg/Kg and that of Pet ether was found to be 300mg/Kg.One tenth of this dose was selected for the evaluation of CNS depressant effect.

EXPERIMENTAL DESIGN FOR LOCOMOTAR ACTIVITY

The animals were divided into 5 groups of six each. The animals of Group I received 1% Tween 80 in the dose of 1ml/Kg and served as control. The animals of Group II were treated with standard drug Chlorpromazine (Intas, Ahmadabad) in the dose of 3mg/Kg. i.p.[5]. The animals of Group III were treated with aqueous extract in the dose of 300mg/Kg.The animals of Group IV were treated with Dichloromethane-methanol extract in the dose of 100mg/Kg and the animals of Group V were treated with pet ether extract in the dose of 30mg/Kg.

The locomotor activity was measured by using an actophotometer. It operates on photoelectric cells and is connected in circuit with a counter. When the animal cuts off a beam of light falling on the photocell, a count is recorded. The test drugs and the standard drug were administered to the respective animals. Each animal was placed individually in the actophotometer for 10 minutes. The locomotor activity scores were recorded after 30 and 60 minutes of drug administration. The percentage decrease in the locomotor activity was calculated.

RESULTS

The qualitative phytochemical investigations of the Aqueous and Dichloromethane-Methanol extracts of *E.tirucalli* latex showed positive test for Alkaloid, Flavanoids, Steroid, Cardiac glycoside, Phenols, Tannins and Anthraquinone. The Pet ether extract showed positive test only for Alkaloid, Flavanoids, Steroid, Phenols and Tannins.

The Locomotor activity scores were more significantly reduced in animals treated with Aqueous extract followed by Dichloromethane-methanol and Pet ether extracts. The decrease in the locomotor activity scores was maximum after 60 minutes in Chlorpromazine (213.33 ±4.01) and aqueous extracts (244.17±3.52) treated animals respectively as shown in **TABLE** 2.

DISCUSSION

The CNS depressants reduce the locomotor activity in experimental animals. The standard drug Chlorpromazine is being used in major psychosis like schizophrenia and to reduce the destructive behavior in chil-

dren. The reports also indicated the use of this drug in experimental animals to evaluate the CNS depressant effect of the plant based drugs[9]. In the present study Aqueous extract followed by Dichloromethane-methanol and Pet ether extracts of *E.tirucalli* were effective in reducing the locomotor activity scores.

The effect of these extracts may be probably due to the increase in the concentration of GABA in the brain. The variation in the potency of the extracts may be due to the difference in the concentration of the constituents. Similar type of CNS depressant activity was reported in crude extracts of Pterocarpus marsupium[6]. Cistanche deserticola[7], Dalbergia malabarica[8] and Diospyros mespiliformis[1]. The results of this investigation suggested that the Aqueous extract of *E.tirucalli* latex was effective as CNS depressant. Further investigations are being undertaken to find the constituent responsible for this effect.

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