

## ANTI-DIARRHEAL ACTIVITY OF ETHANOLIC EXTRACT OF *CALOTROPIS PROCERA* R. Br. ROOTS

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### ABSTRACT

*Calotropis procera* R. Br. (Asclepidaceae) is a shrub which widely distribute in the world. The plant is used in the treatment of many disease and disorder both in humans and veterinary application. The present work was undertaken to investigate the anti-diarrhoeal activity of ethanolic extract of root (200 mg/kg BW) of *Calotropis procera* against castor oil induced diarrhoea in experimental animal and was found to be significant results.

**Key-words:** *Calotropis procera*, diarrhoea, root extract, loperamide

### INTRODUCTION

Plants have been utilized as medicine for thousand of years. These medicine initially took the form of crude drug such as tinctures, teas, poultice, powder, and other herbal formulation, the specific plant to be used and the methods of application for particular ailments were passes down through oral history. Eventually information regarding medicinal plants was recorded in herbals. In more recent history, the uses of plants as medicines have involved the isolation of active compounds. Drug discovery from medicinal plants led to the isolation of early drugs such as cocaine, codeine, digitoxin, and quinine, in additional to morphine, of which some are still in use. Isolation and characterization of pharmacologically active compounds from medicinal plants continue today<sup>1-3</sup>.

*Calotropis procera* R. Br. (Asclepidaceae), is a shrub which widely distribute in the world and in India. Mainly plants are not cultivated while plants are found from wild

sources. Traditionally the plant is used to cure many diseases and disorders viz., pain, anxiety, mental disorders etc.<sup>4-7</sup>

It is a large and stout shrub 2-4 m height, exuding copious milky sap when cut or broken. Leaves are 10-18 cm long, sessile, decussate, ovate, oblong to elliptic ovate, base cordate, apex obtuse or shortly acuminate, sub-glabrous corolla lobes, spreading, recurved, ovate lanceolate, not uniformly coloured, flower waxy white, petals 5, purple-tipped inside and with a central purplish crown, carried in stalked clusters at the ends of the branches; fruit grey-green, inflated, 8 to 12 cm long containing numerous seeds, which are ovoid and 0.6 cm long with a bright silky white coma.<sup>7</sup>



**Fig. 1** *Calotropis procera*

The active principles are madaralbin, madarfluavin, caoutchou and calotropin, a very active poison of the digitalis type. The leaves of *Calotropis procera* contain calotropin, calotoxin, ascorbic acid, calatin, calotropagenin, D-glucose polysaccharide containing D-arabinose, D-glucosamine and L-rhamnose and 3-proteinase. Calotropin shows digitalis-like action on the heart, but its action is not cumulative and is less harmful. The flowers contain cyanidiglycoside, quercetin-3-rutinoside, procesterol, cycloedole,  $\alpha$ - and  $\beta$ -amyrins and new tripenecalotropenyl acetate etc. is

isolated. The latex contains calotropain  $\alpha$ -calotropin, guggentin gigitol,  $\beta$ -sitosterol etc. and a powerful bacteriolytic enzyme, a very toxic glycoside calactin (which concentration increases on insect or grass hopper attack as defence mechanism).

The root bark has benzylisovaleryl. Benzylvaleryl, long chain fatty acid and isomerase. Lupeol is isolated from latex. Quercetin-3-rutinoside is identified in the roots, stem, leaves, flowers and latex. Whole plant contains  $\alpha$ - and  $\beta$ -amyrin,  $\beta$ -amyrin, teraxasterol, gigitin, gigitin, gigitol, iso-gigitol,  $\beta$ -sitosterol and a wax.<sup>7</sup>

## **MATERIALS AND METHODS**

**Collection and authentication of plant material:** The plant material (Roots) of *Calotropis procera* was collected from various sites situated in Mandsaur, (M.P.) and identified by the botanist of K. N. K. College of Horticulture, Mandsaur, and Voucher specimen no. (C-PG/132) was deposited in the Department. The roots are shade dried, and crushed to make powder, sieved with mesh size 40 and stored in air tight container for further use.

### **Extraction of root of *Calotropis procera***

The dried roots were powdered and soaked in ethanol (95%) and kept aside for four days. After four days ethanolic layer decanted off. The solvent from the total extract was distilled off and concentrate was evaporated on a water bath to a syrupy consistency and then evaporated to dryness.

### **Preparation of Suspension**

The dried ethanolic extract of *Calotropis procera* root were suspended in vehicle (0.6 % sodium CMC) and shaken by mechanical shaker.

### **Animals**

Rat of either sex weighing between 100 and 120 gm were selected they were kept at 22-25 (or at room temp.), 12 h light/dark cycle and had free access to food and water.

### **Activities studied**

A dose of 100-200 mg/kg body weight was used orally for various studies. Acute toxicity studies were studied. For the activities the rat were divided into three groups each containing six rats. Group I received vehicle; Group II was given standard, Group III 100-200 mg/kg extract, respectively.

## **Determination of Anti-Diarrhoeal activity**

### **Castor oil inducing diarrhoea**

Male and female albino rats weighing 100 to 150 gm were used after overnight food. For the experiment, the rats were housed in individual cases with no access to drinking water. The loperamide administered 1mg per kg oral dose standard, controlled received the solvent only and the suspension of *Calotropis procera* is dose given to each six animal treated, one hour after the doses one ml of castor oil was administered orally, stool were collected on non wetting paper sheets of uniform weight up to after administration the castor oil, urine was drained by gravity in every 15 min. during the first hour and the net stool weighted termed early diarrhoeal excretion was recorded.

## **RESULTS**

### **Acute toxicity studies**

The alcoholic extract of plant *Calotropis procera* was found to be safe up to 1000 mg /kg body weight by oral route. Observation for study of general behaviour were done after 1 h. of treatment showed that all mice were comparable and no mortality and toxicity and extract were found to be safe, so too dose level i.e. 200 mg/kg and 400 mg /kg body weight were selected for the present study.

### **Anti-Diarrhoeal activity**

After oral administration of ethanolic extract of *Calotropis procera* root it shown significant Anti-Diarrhoeal activity as compared to control was observed with both the dose (200 mg/kg BW) in the Castor oil inducing diarrhoea method used. In the method Castor oil inducing diarrhoea, maximum Anti-Diarrhoeal effect was observed after 1 day. This effect is quiet comparable with the standard drug loperamide till a period of 1 day.

**Table-1 Anti-Diarrhoeal effect of standard and test drug**

Group	No. of Animals	Wight of faecal matter (mg)	Mean
Normal	1	294.2	502.5±42.42
	2	548.2	
	3	563.3	
	4	539.4	
	5	560.8	
	6	509.3	

Loparamide	1	536.2	
	2	433.5	
	3	493.6	467.9±19.61
	4	403.5	
	5	491.2	
	6	449.5	
<i>C. procera root extract</i>	1	319.4	
	2	408.2	
	3	336.2	346.3±18.19
	4	395.7	
	5	316.1	
	6	302.3	

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