

EVALUATION OF HEPATOPROTECTIVE ACTIVITY OF CLERODENDRON  
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**ABSTRACT**

The root portions of the *Clerodendron paniculatum* Linn roots extracted with ethanol by cold maceration process. The extract were vacuum dried and subjected to phytochemical screening for the detection of various phyto constituents. Polyphenols in plant extracts react with specific redox reagents (Folin- Ciocalteu reagent) to form a blue complex that can be quantified by visible-light spectrophotometry. Flavonoids are potent antioxidants and have aroused considerable interest recently because of their potential beneficial effects on human health in fighting diseases. The capacity of flavonoids to act as hepatoprotectant depends upon their molecular structure. Preliminary phytochemical screening of Petroleum ether, Ethanol, Ethyl acetate, Water extract of *Clerodendron paniculatum* Linn, were done which gives information about active constituents such as carbohydrates, starch, mucilage, saponins, flavanoids, tannins, phenolic compounds in the different extract and was more in Ethanolic and, Ethyl acetate extract. The extracts exhibited potent activity against hepatic cells. The study reveals that *Clerodendron paniculatum* possess better hepatoprotective activity.

**KEYWORDS:** *Clerodendron paniculatum* Linn roots, Hepatoprotective activity.**INTRODUCTION**<sup>[1,2,3,4,5]</sup>

Historically, crude plant extracts are used as natural medicine for the remedy of human infectious sicknesses. Flora are rich in a ramification of phytochemical consisting of tannins, terpenoides, alkaloids, and flavonoids that have been located in vitro to have antimicrobial homes. Despite the fact that the mechanism of motion and efficacy of these natural extracts in most cases continues to be had to be established scientifically. Worldwide incidence of infectious diseases as a result of microorganism is a major public health problem. Giant ethno botanical information exists in India from ancient time. The dictionary of Indian folk-medication and ethno botany consists of 2532 flowers. India has about forty five, 000 plant species and a lot of them had been studied for their medicinal residences. About 2000 figures are available within the literature and typically 500 species are utilized by indigenous structures. even though early (4500-1500 BC) origins and a long history of utilization in the final two centuries, the Ayurveda had received very little authentic support and hence less attentions were observed from suitable clinical practitioners and researchers. A large volume of work is now being finished at the Botany, Pharmacognosy, Biotechnology, Chemistry and Pharmacology of natural drug treatments.

The importance of ethno medicine has been realized and paintings is being finished on psycho energetic vegetation, home treatments and vegetation offered via street drug carriers. Fewer well known ethno medicines have been identified which might be used to treat intestinal, joint, liver and pores and skin diseases. Revel in indicates that a changed collection policy offers the nice probabilities for the invention and development of agents for the remedy of AIDS (received immune deficiency syndrome) and most cancers.

**MATERIALS AND METHODS**<sup>[6,7,8,9,10]</sup>**Collection and authentication of plant materials**

The root of *Clerodendron paniculatum* Linn, belongs to the family *Verbenaceae* was collected from Pathanamthitta district of Kerala. Taxonomical identification of the plants were done by Dr. Thomas Mathew, Marthoma College Thiruvalla and the voucher herbarium specimen were deposited in college museum asVSCp-14.

**Preparation of the extract**

**Material:** Sample *Clerodendron paniculatum* Linn root powder.

**Method:** By cold Maceration.

**Procedure:** *Clerodendron paniculatum* Linn, roots washed separately using water and extracted with 90% ethanol as solvent. The macerate collected after one week. The solvents were allowed to evaporate to obtain the dried extracts. It was then weighed and percentage yield was calculated. The extracts were stored properly in a desiccator for further studies.

#### Animals

Wistar albino rats weighed about 130-210g were divided into seven groups of six rats each. Animals were housed at a temperature of  $23 \pm 2^\circ\text{C}$  and relative humidity of 30–70%. All animals were allowed free access to water and fed with standard commercial rat chow pellets. The study was approved by the Institutional Ethical Committee, which follows the guidelines of Committee for the Purpose of Control and Supervision of Experimental Animals (CPSCEA).

#### Grouping of Animals

**Group I:** Control group received normal saline in a (5ml/kg p. o).

**Group II:** Toxic Control group received CCl<sub>4</sub> in liquid paraffin (0.7 ml/kg, 1:1, v/v, i. p, on alternate days).

**Group III:** Standard group received Liv 52 in a dose of (100mg/kg p.o).

**Group IV:** Receive with EECp (200mg/kg orally)+ CCl<sub>4</sub>, 1.5 ml/kg, i.p.

**Group V:** Receive with EECp (400mg/kg p.o)+ CCl<sub>4</sub>, 1.5 ml/kg, i.p.

#### Assessment of Hepatoprotective activity

On the seventh day after administration of last dose of test samples the rats were anesthetized by light ether anaesthesia and blood was collected by making intra-cardiac puncture. It was allowed to coagulate for 30 min and serum was separated by cold centrifugation at 2500 rpm for 15 min. The centrifugate was used to estimate the serum SGPT, SGOT, SALP, and total protein content were determined. Finally the rat liver were isolated and subjected for histopathological changes.

#### RESULT

Phytochemical analysis of *Clerodendron paniculatum* root extract showed a positive response for the presence of carbohydrates, starch, mucilage, saponins, flavanoids,

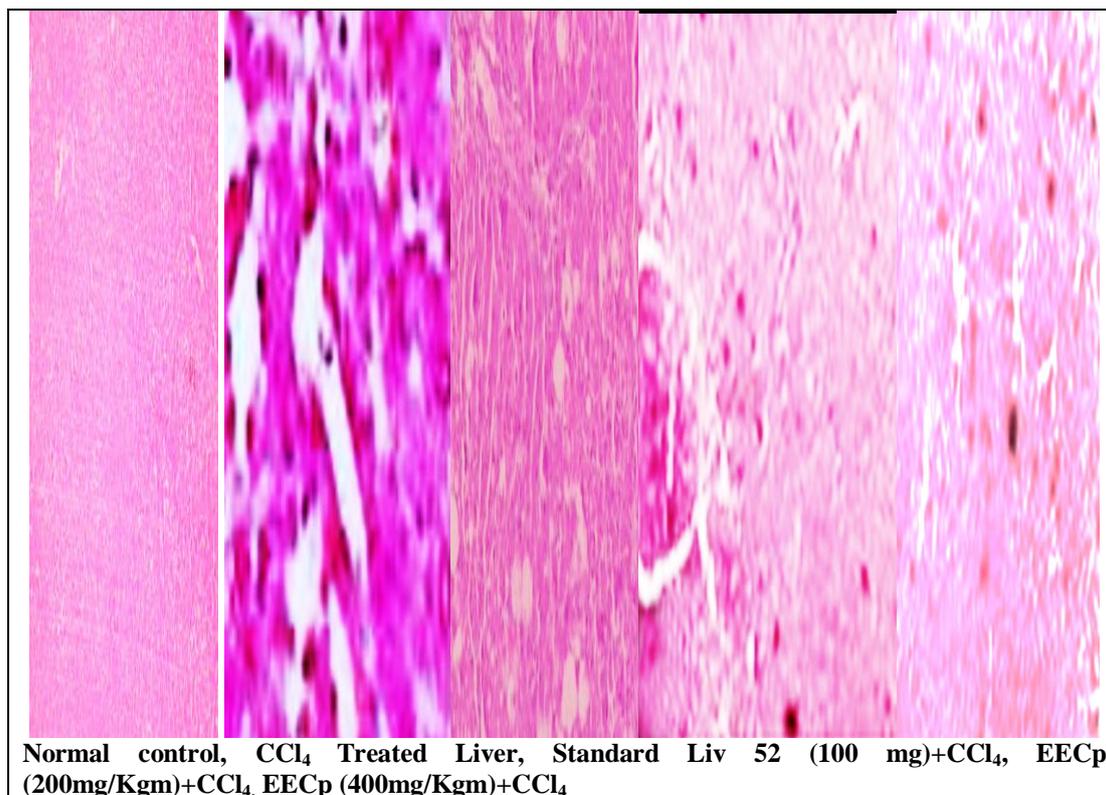
tannins, phenolic compounds. Rats treated with CCl<sub>4</sub> (0.7ml/kg body weight) suffered from hepatotoxicity. The serum levels of SGPT, SGOT and bilirubin level were significantly elevated and protein level was significantly decreased as shown in Table. Treatment with EECp extract 200mg/kg, described Table for 7 days significantly decreased enzyme levels and bilirubin level. Meanwhile it showed increase in protein level in the blood, when compared to control and CCl<sub>4</sub> treated group ( $P < 0.0001$ ). Results were also comparable with standard drug Liv-52 (100mg/kg p.o).

#### Histopathological observations

Histopathology of normal rat liver revealed prominent central vein, normal arrangement of hepatic cells (A). Microscopic examination of CCl<sub>4</sub> treated liver section shows necrosis and fatty degeneration (B). Liver section treated from silymarin protected the structural integrity of hepatocyte cell membrane and recovery of hepatocyte cells (C).EECp extract 200mg/kg, EECp extract 400mg/kg, Shows in Fig Treated groups showed maximum recovery of hepatocytes, attenuated the fatty degeneration and necrosis and finally exhibited a significant protection against CCl<sub>4</sub> induced liver toxicity.

**Table 1: Effect of EECp extract on Hepatoprotective activity.**

Groups	Treatment	SGPT ( $\mu\text{ml}$ )	SGOT ( $\mu\text{ml}$ )	Serum bilirubin (mg/ml)	Total Protein (mg/ml)
I	CONTROL	128.40 $\pm$ 0.0577	30.15 $\pm$ 0.0516	2.065 $\pm$ 0.0073	4.570 $\pm$ 0.0070
II	CCl <sub>4</sub> (0.7ml/kg)i.p	249.2 $\pm$ 0.0365	58.33 $\pm$ 0.0040	4.925 $\pm$ 0.0033	3.010 $\pm$ 0.0025
III	Standard Liv -52 (100 mg)+CCl <sub>4</sub>	145.30 $\pm$ 0.0166	35.41 $\pm$ 0.0040	2.310 $\pm$ 0.0036	4.825 $\pm$ 0.0155
IV	EECp (200mg/Kgm)+CCl <sub>4</sub>	135.55 $\pm$ 0.0033	23.46 $\pm$ 0.0049	1.110 $\pm$ 0.0047	2.415 $\pm$ 0.0042
V	EECp (200mg/Kgm)+CCl	142.48 $\pm$ 0.0060	32.02 $\pm$ 0.0047	1.902 $\pm$ 0.200	3.322 $\pm$ 0.0022



**Fig 1: Histopathological observations.**

Significant hepatoprotective activity was observed treated with the *Clerodendron paniculatum* extract compared to the standard. Phytochemical analysis of *Clerodendron paniculatum* root extract showed a positive response for the presence of carbohydrates, starch, mucilage, saponins, flavanoids, tannins, phenolic compounds.

#### CONCLUSION

Hepatoprotective activity of *Clerodendron paniculatum* shows better activity compared to the standard. Phytochemical analysis of *Clerodendron paniculatum* root extract showed a positive response for the presence of carbohydrates, starch, mucilage, saponins, flavanoids, tannins, phenolic compounds. Hepatoprotective Activity of *Clerodendron paniculatum* root extract may due to the reason it is a flavonoid.

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