



STUDIES PHYTOCHEMICAL SCREENING AND ANALGESIC ACTIVITY OF LEAF EXTRACT OF CLERODENDRUM INFORTUNATUM LINN

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ABSTRACT

A hydroalcoholic extract from *Clerodendrum infortunatum* linn, traditionally used for pain management, and evaluated by phytochemical screening and analgesic activity in adult albino rats. By the hot plate method, compared with diclofenac sodium, the hydroalcoholic extract showed significant analgesic activity.

KEYWORDS: Phytochemical screenig, Extraction and analgesic activity, Diclofenac sodium, *Clerodendrum infortunatum* Linn leaves.

INTRODUCTION

Different species of *Clerodendrum* genus have been traditionally used over centuries and their antioxidant and hepatoprotective potential have Already been proved. Various parts of the plant are used by tribes in colic, scorpion sting and snake bite, tumors and certain skin diseases. The leaves are slightly bitter, cure inflammation, skin diseases and good in small pox. The plant parts are also used in Indian folk medicine in the treatment of bronchitis, asthma, fever, diseases of the blood, inflammation, burning sensation and epilepsy. The plant was found to contain triterpenes, steroids and flavonoids. The antioxidant, antimicrobial, anti-malaria, anthelmintic and analgesic activities of the plant have further created an upsurge in investigations on the plant. The objective of the present study was to extract the flavonoid from the leaves of *C. infortunatum* and investigate its analgesic activity effects in rat.

Clerodendrum infortunatum Linn Well known for their traditional uses in various regions around the globe. This is commonly known as Saraswat leaf other name are Bhant (Hindi), Bhagri (Sanskrit), Khanduchakka, Bhandari (Marathi) Bhat Ghetu (Bangali), Bhandika, Bhantaka, Bhargi (Sanskrit).

Analgesic

Analgesic are pain killer substances, which act by causing the absence of pain without consciousness. The word analgesic is derived from Greek an ("Without") and along ("Pain"). Analgesic drugs act in various ways on the peripheral and central nervous system. Analgesics defined as a state of reduced awareness to pain, and analgesics are substances which decreases pain

sensation (Pain Killer) by increasing threshold to pain stimuli. The commonly used analgesic are Aspirin, Paracetamol (Non-Narcotic) and (Narcotic) Types.

Plant profile

- Kingdom: plantae.
- Order: lamiales.
- Family: lamilaceae.
- Genus: *Clerodendrum*.
- Species: *C. infortunatum*.
- Bionomial name: *clerodendrum infortunatum* Linn.
- Vernacular name: Hill Glory Bowar, Khanduchakka, Bharanghi, Bhagri.

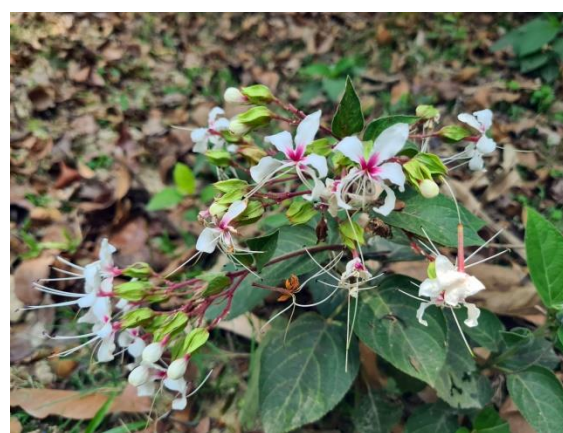


Fig. 1

MATERIALS AND METHODS

Plant material

Plant material the fresh leaves of *C. infortunatum* linn.

Were collected locally (Nagpur district of Maharashtra) in autumn as it contains the maximum active constituents at that time. Which was then identified and authentication at Department of Botany, Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur.

Drying and size reduction

The leaves of *Clerodendrum infortunatum* linn. Were shade drying under normal environmental conditions and then subjected for size reduction to coarse powder in a mechanical grinder.

Preparation and extraction of plant material

About 1kg of coarse powder material was added subjected to successive extraction with 80% ethanol and 20% water (hydroalcoholic) extraction in soxhlet apparatus. The extraction was continued until solvent in the thimble becomes clear indicating the completion of the extraction. After extraction, the solvent was distilled off and extract was poured in petri plate and concentrated at room temperature.

Phytochemical screening

The Phytochemical screening tests are performed to *clerodendrum infortunatum* linn leaves of hydroalcoholic extracts and the results are depicted in table 1.

Table No.1: Analgesic activity of leaf extract by eddy's hot plate method.

TEST	OBSERVATION	INFERENCE
1.Shinoda test	Magenta red color is observed	Flavonoids are present
2.Lead acetate test	Yellow precipitate are formed	Flavonoids are present
3.With sodium hydroxide	Yellow coloration (Thus decoloration after addition of HCL) (acid)	Indicating presence of flavonoids

Analgesic activity of *Clerodendrum infortunatum* Linn. Leaves extract



Fig No. 2: Analgesic activity by eddy's Hot plate method.

Animals

Male Albino rats weighing 140-190 gm of both sex were used for this study. The animals were bred and housed in the central animal house of the Department of Pharmacology, Gurunanak College of Pharmacy, Nagpur, Maharashtra. The animal were housed in group of 6-10 under environmentally controlled condition with free access to water and standard food. Food was withheld overnight prior to experimental while water was still provided ad libitum. The experimental was conducted in accordance with Ethical Committee. Application for permission for animal experiments was submitted to Institutional Animal Ethics Committee (IAEC). The IAEC protocol registration no. (Reg.No.675/RE/S/02/CPSEA).

Drugs

Standard drug Diclofenac sodium (Voveran SR-100) tablet was purchased from market.

Experimental Design

- The animal was group into 4 group of six animal each.
- The first group served as a control receiving normal saline 10ml/kg.

- The second group served as a standard 12mg/kg.
- The third and forth group served as ethanolic extract using 100mg/kg and 50mg/kg dose.
- All treatment were administered orally.
- Evaluation of analgesic activity of the extract was also carried out using hot plate method.
- The rats were placed on a hot plate maintained at 55°C within the restrainer.
- The reaction time (in seconds) or latency period was determined as the time taken for the rats to react to the thermal pain by licking their paws or jumping.
- The reaction time was recorded before (0 min) and at 15, 30, 45, and 60 min after the administration of the treatment.

Reaction time for treatment - reaction time for saline
 $\times 10045 \text{ sec} - \text{reaction time for saline}$

- Data were presented as mean $\pm$ standard error mean (SEM).

Analgesic activity

Values are expressed in MEAN±S.E.M. for five animals each group. Table no.2

Group	Dose mg/kg	Reaction time in sec				
		0min	15min	30min	45min	60min
Control	-	2.50±0.5	2.75±0.75	3.25±0.25	3.00±0.40	3.00±0.40
Diclofenac	12.5mg/kg	2.75±0.25	6.25±0.25	6.50±0.5	4.60±0.40	4.50±0.47
CIE	50mg/kg	2.75±0.47	4.50±0.5	5.50±0.95	5.25±0.62	4.75±0.25
CIE	100mg/kg	2.25±0.62	4.25±0.62	6.00±0.91	5.00±1.15	4.50±0.28

Values are expressed in MEAN±S.E.M. for five animals each group.

Percentage protection of the *Clerodendrum infortunatum* Linn leaves extracts by Eddy's Hot plate method.
Table no.3

Group	Dose (mg/kg)	%protection			
		15min	30min	45min	60min
Control		-	-	-	-
Diclofenac	12.5	56	57.6	40.2	38.8
CIE	50	38.8	50	47.6	42.1
CIE	100	47	62.5	55	50

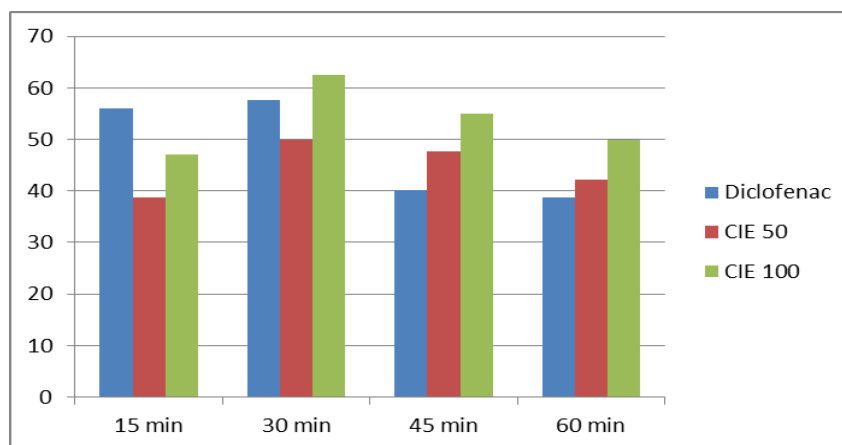


Fig No.3: Comparative graph of standard and extracts.

CONCLUSION

The leaves of *Clerodendrum infortunatum* Linn. were collected, dried and authenticated. The dried parts were pulverized to make coarse materials which are used for experimental work. Total 1kg of plant material was accurately weighed and defatted with petroleum ether. The defatted marc was then refluxed with 80% ethanol for 12 hours. The Ethanolic extract was then subjected for evaluation of analgesic activity. The Phytochemical screening was performed its due to chemical test was performed are present of flavonoids. The maximum activity showed by dose of 100 mg/kg which contains only flavonoids and extracts of *Clerodendrum infortunatum* Linn did not showed any toxicity in rat up to 100 mg/kg body weight hence doses are selected 1/10th and 1/20th that is 100 and 50 mg/kg body weight p.o. The analgesic activity was performed under thermal models (Eddy's Hot method)

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