



STUDY OF PHYSICOCHEMICAL CHARACTERS AND PHYTOCHEMICAL ANALYSIS OF *CLERODENDRUM INFORTUNATUM* LINN.

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Abstract: The plant body of *Clerodendrum infortunatum* Linn. is shrubby and slightly woody 1-2m height, often expressive, branched with blunt quadrangular stem. The Leaves are ovate, cordate, acuminate, entire or seriate. Flowers are light bluish purple frequently white with terminal panicles in inflorescence. It is common in Chandrapur district, ethnobotanical survey showed have more medicinal value and various chemical compound has been detected such as viz. amino acids phenols, phenols, flavonoids, diterpenoids, triterpenoids, coumarins, anthraquinones and anthracene derivatives and steroids. The study showed that the herbal products for wound treatments and their potential advantages. The information provided vision on the current scientific advancements and development of phytomedicines.

Key words: *Clerodendrum infortunatum* Linn., Physicochemical analysis, bioactive compounds, TLC.

I. Introduction : Current, traditional medicine is widely practiced, especially in developing countries. As well as the fact that traditional health care is highly sought after in terms of certain cultural elements in the lives of these individuals within these societies [26]. It is a terrestrial shrub occurring throughout the plains of India. These plants were found in their local habitat. The tribal community depends for their medical aid on local and traditional healer existing near habitat. The number of the patients interviewed in villages for using *C. infortunatum* L., as a herbal medicines to cure wounds and burns [14].

The roots and leaves of *Clerodendrum serratum* L., were with high wound healing

potency was studied on Albino rats. The result obtained higher wound healing potency of root extract as compared to leaf extract [22]. The leaves extracts of *Clerodendrum infortunatum* L., was evaluated for its wound-healing potency in experimental rats [29], [6], [18].

Many species of the genus *Clerodendrum* showed potent anti-inflammatory activity. *C. phlomidis* was reported by author [25]. Similarly *C. petasites* was reported to show moderate anti-inflammatory activity in the acute phase of inflammation in rats [16]. The use of medicinal plants is well known among the indigenous people in rural areas of many developing countries. In the past our ancestors made new discoveries of the healing power of plants through trial and error [7]. [11], stated that the patients suffering from wounds are cured by local application of leaf paste or juice of *Clerodendrum infortunatum* L., thrice a day for healthcare delivery. The phytomedicine for wound healing are not only cheap and affordable but are also purposely safe. These natural agents induce healing and regeneration of the tissue by multiple mechanisms, however, there is need for scientific validation, standardization and safety evaluation of plants of traditional medicine before they could be recommended for healing of wounds [2], [15], [10], [19].

The present investigation is aimed to investigate and characterize the leaves material of *Clerodendrum infortunatum* L., for qualitative analysis.

II. Materials and methods: The fresh leaves of plant material was collected and prepared for experimental analysis (**Fig. no.1**).

Organoleptic properties : These properties could be determined through sensory organ such properties as color, taste, and smell. It shows the physical description of the plant powders. These properties were studied by [13], [17], [12].

Physicochemical properties : These properties could be determined the identity, purity and quality of plant powders. These properties were studied by according to WHO guidelines [13],[20].

These properties such as ash content (total ash and acid insoluble ash), extractive value (water soluble and alcohol soluble extractive), moisture content and foreign matter were quantified.

Qualitative Studies on Chemical Constituents of *Clerodendrum infortunatum* L.

Secondary phytochemical screening was done according to the standard procedure adopted by the [23], [19], [30], [28], [5], [3], [4], [24].

Qualitative analysis of various phytochemicals such as amino acids (free and bound), phenols, flavonoids, diterpenoids, triterpenoids, coumarins, anthraquinones and anthracene derivatives, steroids were carried out from plant material by using thin layer chromatographic technique.

III.Result and discussion :

Organoleptic properties: Organoleptic characters such as colour, odour and taste of plant powders revealed the preliminary identification of the sources of plant materials with the help of sensory organs. The plant materials of *Clerodendrum infortunatum* L., was green in color, odour with bitter in taste (table no.1)

Physicochemical properties: These properties determined the identity, purity and quality of plant powders. It includes ash content (total ash and acid insoluble ash), extractive value (water soluble and alcohol soluble), moisture content and foreign matter (table no.2)

a) Ash value: The ash content in *Clerodendrum infortunatum* L., was 11.99% . The previous result about total ash were shows in *Clerodendrum serratum* L. (12.54 %), was reported by Shukla, N. *et al.*(2015).

The acid insoluble ash value in *Clerodendrum infortunatum* L., 3.99%. The

earlier worked shows as, in *Clerodendrum serratum* L. the acid insoluble ash (3.62 %), was reported by by Shukla, N. *et al.* (2015),the values very closer to ach other between two species.

b) Extractive value

The water soluble and alcohol soluble extractive value was found in *Clerodendrum infortunatum* L. as (22.30% & 24.37%), where as in *Clerodendrum serratum* L., water soluble extractives (22.45 %), and alcohol soluble extractives (6.49 %) were reported by Shukla, N. *et al.* (2015).

c) Moisture content / Loss on drying : The results shows the amount of moisture content in *Clerodendrum infortunatum* L. as (8.05%).

d) Foreign materials:The foreign materials content of *Clerodendrum infortunatum* L. as (1.89%). According to API part-I (Volume-III-2008) the foreign matters should not be more than 2%.

Qualitative Analysis of *Clerodendrum infortunatum* L.: Eight major chemical compounds were qualitatively analyzed by thin layer chromatography of selected plant species i.e. amino acids, phenols, flavonoids, anthracene derivatives, coumarins, diterpenoids, triterpenoids and steroids and the results obtained they were summarized in table no 3.(**Fig. no. 2 & 3**)

Twelve different Rf values of amino acids (free and bound) were detected from the plant materials. All obtained Rf values were compared with the 22 standards amino acids. The depicted Rf values as Butyric Acid, Argenine, Cystein, iso-leucine, lycine, methionine, Ornithine, Phenyl alanine, Proline, Threonine, Tyrosine, Valine . The detection of phenol with four Rf value (0.05,0.23,0., 0.80 and 0.97) were detected with blue bands. The flavanoids with two Rf values were found (0.61 and 0.88) with Yellow bands. The anthraquinons and anthracene having five different Rf values were spotted (0.10, 0.14, 0.54, 0.74, and 0.88) with Yellow and red bands. The coumarins having two different Rf values were observed (00.73 and 0.78). The diterpenoids having four different Rf values were detected in (0.11, 0.50, 0.75 and 0.94). The triterpenoids having two different Rf values was found (0.13 and 0.98) and steroids

having two Rf values were detected (0.25 and 0.90).

Flavonoids, Triperpenoids and steroids was observed from *Clerodendrum infortunatum* L., through TLC reported by Acharya, N. S. and Patel, J. J. (2016).

IV. Conclusion: The qualitative phytochemical screening of *Clerodendrum infortunatum* L. showed that it has abundant amount of

phytochemicals compounds such as amino acids, phenols, flavonoids, coumarins, terpenoids, tri terpenoids, anthroquinones and steroids. From the findings of the study it may be concluded that the leaves extract of plant materials play very important role in wound healing and bone fracture. Etnobotanically it has great medicinal value. Therefore it needs to explore for future prospects.

Table no.-1 : Organoleptic properties

Sr. No.	Name of Plants	Appearance	Colour	Smell	Taste
1.	<i>Clerodendrum infortunatum</i> L.	Powder	Green	Odour	Bitter

Table no.-2 : Physicochemical parameters

Sr.no.	Parameters	<i>Clerodendrum infortunatum</i> L.
A.	Ash value (% w/w)	
1	Total ash	11.99
2	Acid insoluble ash	3.99
B.	Extractive value (% w/w)	
1.	Water soluble extractive	22.30
2	Alcohol soluble extractive	24.37
C.	Moisture content / Loss on drying (% w/w)	8.05
D.	Foreign materials (% w/w)	1.91

Table No.3. Detection Bioactive compound through Thin layer chromatography

Sr. No	Compounds	Band colour	RF value	Total no. of bands
1.	Phenols	Blue	0.05, 0.23, 0., 0.80, 0.97	04
2.	Flavonoids	Yellow	0.61, 0.88	02
3.	Anthroquinone and anthracene	Yellow and red	0.10, 0.14, 0.54, 0.74, 0.88	05
4.	Coumarins	yellow blue and Blue	0.73, 0.78	02
5.	Diterpenoids	--	0.11, 0.50, 0.75, 0.94	04
6.	Triterpenoids	--	0.13, 0.98	02
7.	Steroids	--	0.25, 0.90	02

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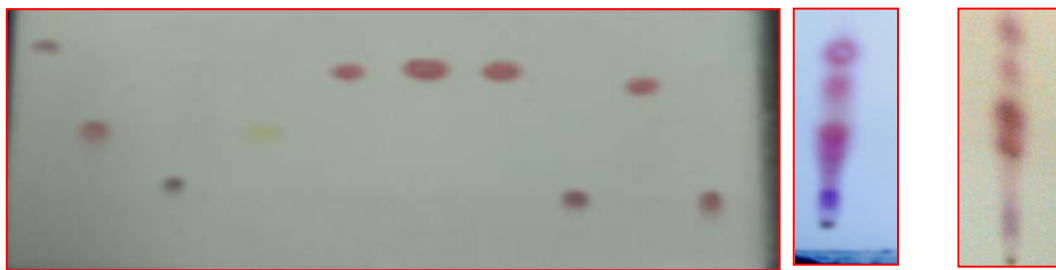
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Plant habit- *Clerodendrum infortunatum L*



Glut Gly. Hist. Hydro.proli. Iso-leu nor- leu. Leu. Lyc. Meth A1 A2

Fig: 2 : Detection of standard Amino acids and Detection of free and bound Amino acids (A1 & A2) from *Clerodendrum infortunatum L*

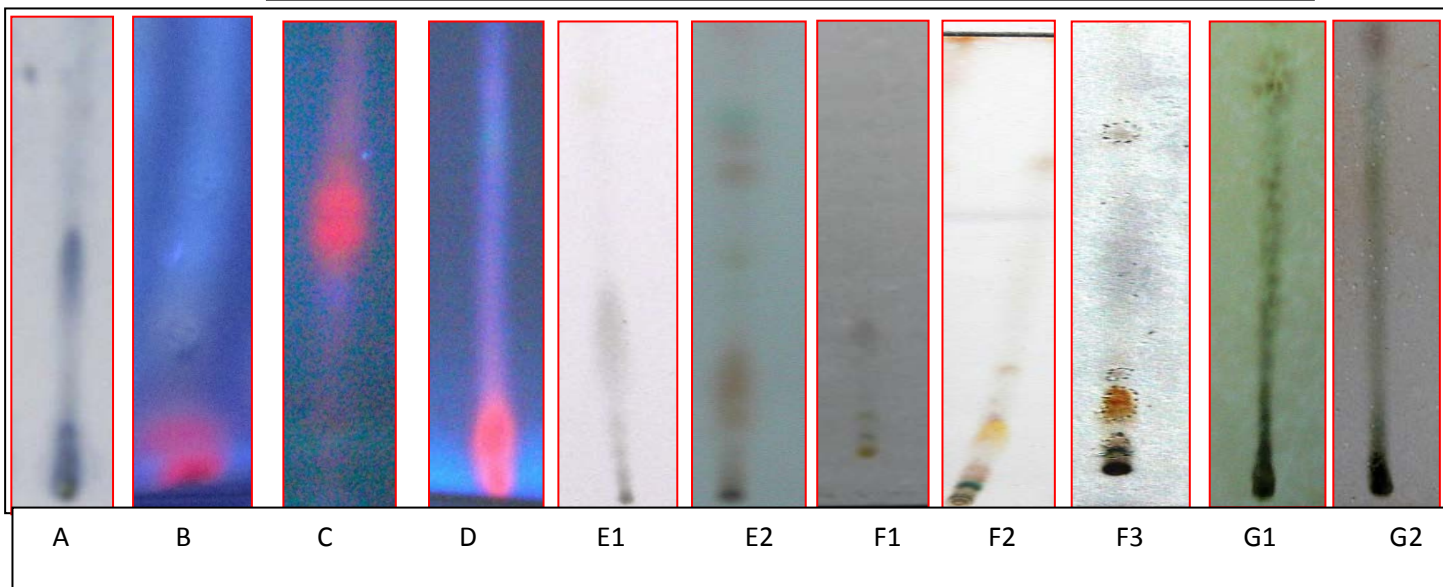


Fig: 3:- Detection of Secondary metabolites :-A: Phenol B: Flavonoid C: Anthroquinone D: Coumarins E1: Diterpenoids E2:Diterpenoids F1: Triterpenoids F2: Triterpenoids F3: Triterpenoids G1:Steroids G2:Steroids