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Preliminary Phytochemical Analysis of *Clerodendrum phlomidis* (L)

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Abstract: ***Medicinal plants are important in the development of drugs and also using as folk medicine in some regions. Clerodendrum phlomidis is used to treat anti inflammatory, anti fungal, anti bacterial, anti-oxidant, arthritis, cardiac disorders in Indian traditional system. The Clerodendrum phlomidis (L) belongs to family verbinaceae. Village peoples are using fresh Clerodendrum phlomidis (L) leaf juice to treat common disease like allergy, fungal infection. The plant is large shrub, grow in dry land. The study was started with extraction process to knowing the phytochemical elements. Extracted by the solvent like petroleum ether, chloroform and ethanol using Soxhlet apparatus. This extracted sample is used to the phytochemical analysis. It was confirmed that samples contain many biological active compound like Polyphenols, Tannins, Alkaloids, Terpinoids and Glycosides are very high content in leaf extract of Clerodendrum phlomidis. Glycosides mainly used in the treatment of cardiac diseases, arrhythmia. This has pharmaceutical potential.***

Keywords: *Clerodendrum phlomidis*, phytochemical, glycosides, cardiac, arrhythmia

1. Introduction

Most of the plants are used as herbal medicine having a role in the field of traditional medicine. More than 7000 plants species are medicinal plants. Medicinal plants are play important role in health care of about 80% in the world and largely depend on traditional medicine, recognized by WHO. *Clerodendrum phlomidis* member family verbinaceae, used by rural peoples as medicine for the allergy, fungal infection and pimples. *Clerodendrum spp.* is cosmopolitan in distribution and has been used in the Indian and Chinese traditional medicine for ages. A decoction of *C. Phlomidis* leaves is used to effective treating bronchitis, headache weakness and digestive problems (Rajashekaran anitha et al 2005). *Clerodendrum phlomidis* is important and well-known medicinal plant one of the highly traded plant from tropical forest as the leaves and root are widely used in unani , siddha, ayurveda and folk medicine to treat various disease(chellaih muthu et al 2012). Anti fungal activity on both plant and animal pathogens in *Clerodendrum phlomidis* and *Clerodendrum inermae* (MK muruga raja Mohan et al 2010). *Clerodendrum phlomidis* as many biological activities like anti-microbial, anti-malaria, anti oxidant, anti diarrheal, anti bacterial, anti inflammatory (K. Balaji D kilimazhi et al 2014). Village peoples are using fresh leaf juice to treat common disease like allergy, fungal infections for humans and animals. The plant grows in dry land like a large shrub. Leaves are bitter in taste. Bitter tasted plants are highly related to cardiac stimulant or depressive activities.

2. Material and methods

2.1 Collection of plant material

The fresh leaves are collected in Baraguru, Chikkanayakana halli Taluk, Tumkur district. The plant was identified by Dr. Y N Seetharam, taxonomist, Tumkur University, Tumkur. The collected leaves are washed with water and dried in shaded condition at room temperature. Later on few days it was grinded well and fine powder was collected for further studies.

2.2 Screening of phytochemical analysis

Analysis of standard phytochemical according to procedure described below. Plant extract was taken in test tubes and add chemicals and find out the drug on basis of observation or reaction.

The procedures of the tests are mentioned below.

a) Detection for carbohydrates
500 mg of extract was dissolved in 5 ml of distilled water and filtered. The filtrate was used to test the presence of carbohydrates.

Molisch's test: 10 gm of alpha napthol was dissolved in 100 ml of 95% methanol to prepare Molish reagent. Two drops of Molish reagent and few drops of concentrated H_2SO_4 is added, formation of purple-violet ring indicates the presence of carbohydrates.

b) Detection of Glycosides
0.5 gm of the extract was hydrolyzed with 20 ml of HCl (0.1 N) and filtered. The filtrate was used to test the presence of Glycosides.
Keller-Killiani test: To the extract, few drops of glacial acetic acid and one drop of 5% $FeCl_3$ and concentrated H_2SO_4 was added, formation of reddish brown colour at the junction of two liquid layers and upper layer turned bluish green indicates the presence of glycosides.

c) Detection of Saponins
Foam test: 1 ml of extract was diluted to make up to 20 ml with distilled water and slowly shaked in a graduated cylinder for 15 minutes. One cm layer of foam indicates the presence of saponins.

d) Detection of Alkaloids
0.5 gm of the extract was dissolved in 10 ml of dilute HCL (0.1N) and filtered. The filterate was used to test the presence of alkaloids.

Mayer's test: Readily available from SD Fine chemicals, Mumbai. Filtrate was treated with Meyer's reagent; formation of yellow cream colored precipitate indicates the presence of alkaloids.

Dragendrodroff's test:

Dragendroff's reagent:

a) Dissolve 8 gm of bismuth subnitrate in 20 ml of nitric acid.
b) Dissolve 27.2 gm of Potassium iodide in 50 ml of distilled water, mix (a) and (b) and adjust the volume to 100 ml with distilled water.

Filtrate was treated with Dragendroff's reagent; formation of red colored precipitate indicates the presence of alkaloids.

e) Detection of Flavonoids

Alkaline reagent test: To 100 mg of extract, few drops of NaOH solution were added in a test tube. Formation of intense yellow color that becomes colorless on addition of few drops of of dilute HCl indicates the presence of Flavonoids.

f) Detection of Phenolics and Tannins

100 mg of extract was boiled with 1 ml of distilled water and filtered. The filtrate was used for the following test,

- **Ferric chloride test:** To 2 ml of filtrate, 2 ml of 1% ferric chloride solution was added in a test tube. Formation of bluish black color indicates the presence of phenolic nucleus.
- **Test for Tannins:** To the extract 0.5 ml NaOH was added, formation of precipitate indicates the presence of tannins.

g) Detection of Phytosterols and Triterpenoids

0.5 gm of extract was treated with 10 ml chloroform and filtered. The filterate was used to test the presence of Phytosterols and Triterpenoids.

- **Leibermann's test:** To 2 ml of filtrate in hot alcohol, few drops of acetic anhydride was added. Formation of brown precipitate indicates the presence of sterols.
- **Leiberman-Bucharat test:** To the extract, few drops of acetic acid and concentrated H_2SO_4 were added, deep red ring at the junction of two layers indicates the presence of triterpenes.

3. Result and Discussion

The extraction of leaves in three solvents to analyse the different qualitative tests to know presence of biological active molecules like carbohydrates, saponins, alkaloids, flavonoids, phenolics and tannins, phytosterols and triterpenoids shown in table 1.

Table 1: Preliminary phytochemical analysis different extracts of *Clerodendrum phlomidis*

S/No	Test	(Per Ether)	(chloroform)	(Ethanol)
1	**Test for carbohydrates** Molisch's test	+	+	+
2	**Test for Glycosides** Keller-Killiani test	+(High)	+	+
3	**Test for Saponins** Foam test	-	-	+(Slightly)
4	**Test for Alkaloids** a) Mayer's test b) Dragendrodroff's test	 + +	 + +	 + +
5	**Test for Flavonoids** Alkaline reagent test	-	-	-
6	**Test for Phenolics and Tannins** a) Ferric chloride test b) Test for Tannins	- -	+ +	+ +
7	**Test for Phytosterols and Triterpenoids** a) Leiberman-Bucharat test b) Salkowaski test	 + +	 + +	 + +

(+) Present, (-) Absent

4. Conclusion

The investigation of phytochemical analysis leads by procedure of Rosenthler and Middeletone shows glycosides are high content in petroleum ether, saponins slightly in ethanol, flavonoids are absent in these extracts. This documentation is beneficial to future study of scientists and researcher about this plant photochemical. In this plant glycosides are high; it is related to heart stimulant or depressant activity and also this plant have good therapeutic potential

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References

[1] Amithaverma,baharahmed,anti-hepatotxic activity of *clerodendumphlomidis.* International journal of pharm tech research 1(4), 1028-1031,2009.
[2] Akhilesh K Yadav, Madan M Gupta, quantitative determination of bioactive phenylethonoid glycosides in *clerodendrumphlomidi*s using HPTLC. Medicinal chemistry research 23 (4), 654-1660, 2014.
[3] Gupta reena, duggalsanjiv, kapoorBhupinder. Subchronictaxicity study of aqueous extract of *clerodendrumphlomidis* leaves. International journal of drug development and research 4 (3), 197-207, 2012.
[4] K Ilango, Numaran, Vehitra. Preliminary phytochemical analysis and screening of *clerodendrumphlomidis*. Linn for its antipyretic activity. Archives of pharmaceutical science and research 1 (1), 10-13, 2009.
[5] K. Bhalaji, D. kilimazhi. GC-MS analysis of various extract of *clerodendrumphlomidis*Leaf. International journal of pharmacy and pharmaceutical, sciences 6(1),226-232,2014.
[6] Middeltone, H., 1956. Systematic Qualitative Analysis. Edward Arnnold Publishers Ltd., London, pp. 91-94.
[7] MK maruga raja mohan, shrihari Mishra, comprehensive review of *clerodendrumphlomidis* a traditionaly used bitter. Zhang xi yijie he xuebao = journal of chinese integrative medicine 8(6), 510-524,2010.

[8] M. sathish, R.priyadarshini, PG.sunitha, T saraswathy. Antimicrobial activity of extract and isolated compounds of *clerodendrumphlomidis*. Int. J. pharm sci 5(4), 362-366, 2013.
[9] Muhammad nasir Hayat Malik, Alamgeer, umesalma, Abdul Qayyum and Sadiasamreen. Phytochemical analysis and cardiac depressant activity of aqueous methonolic extract of *Morusnigra*L. fruit. Journal of applied pharmaceutical science 2 (12), 39, 2012.
[10] Neeta shrivastava, Tejaspatel. *Clerodendrum* and healthcare: An overview. Medicinal and aromatic plant science and biotechnology 1 (1),142-150, 2007
[11] Rosenthaler, L., 1930. Chemical investigations of Plants. G. Bell and Sons, London, pp 23-29, 119-132.
[12] Rajasekarananitha, ponnusamykannnan, antifungal activity of *clerodendruminerme* (L) and *celrodendrumphlomidis* (l). Turkish journal of biology 30 (3), 139-142, 2006
[13] R. devika, Justin kovilpillai, phytochemical and invitromicropropagation studies of *clerodendrumphlomidis*(L). journal of pharmacy research 5(8),4396-4398, 2012.
[14] Ram prakash, medicinal values of *clerodendrumphlomidis* – A review. Int. journal of pharmacology and biological science
[15] Shruthisrivatsava, Jatinjaiswal, Hemandragautham, Sunil singh, Surabhisharma. Phytochemical analysis of leaves of *Hibiscus rosa-sinensis*.research journal of pharmognosy and phytochemistry 5 (4), 0975-2331, 2013.
[16] Sona wane suvarna, rambhau, desphponde, pradanvaravindrapande Prasad, Dr. prabhakarrao, shahonevijaychandrakanth. Phytochemical and pharmacolocal activity of agnimantha (*cleroendrumphlomidis*)- A review. Int J. ayurvedicherbal med 4, 1615-1621, 2014.