

Preliminary Phytochemical Analysis And Pharmacological Studies of *Gloriosa superba* (L.)

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Abstract :-

The use of plants as medicine is as old as human civilization. People of all ages in both developing and developed countries use plants in an attempt to care various diseases and to get relief from physical sufferings. Natural products are a source for a bioactive compound and have potential for developing some novel therapeutic agents. Hence in the present study pharmacological activity, traditional benefits and phytochemical analysis of *Gloriosa superba* (L.) confirms the presence of various phytochemicals like saponin, terpenoids, steroids, flavonoids, tannins, quinones and alkaloids. The result suggests that, this plant have a great potential for curing various ailments and can be source of useful drugs.

Key Words : *Gloriosa superba* (L), phytochemical screening, pharmacological activities, traditional uses.

Introduction :-

Medicinal plants have been used from centuries as remedy for human diseases because they contain the compounds of therapeutic values. The plant kingdom has proven to be the most useful in the treatment of various diseases and they have provides an important source of all the words pharmaceuticals. The most important bioactive constituents of plants are steroids, terpenoids, carotenoids, flavonoids, alkaloids, tannins and glycosides. Plants in a facet of life have served a valuable starting material for drug development. (Singh V.K. et. al. 2003). *Gloriosa superba* (L), (Colchicaceae) commonly known as flame lily. This plant grows in many types of habitat, including tropical jungles forest thickets, woodlands, grasslands and sand dunes. The species is perennial herb growing from a fleshy rhizome. The showy flowers has six tepals each up to 5 to 7.6 centimeters long they are generally bright red to orange at maturity sometimes yellowish bases m It is, evergreen subshrub, with woody stems, grayish leaves and blue to purplish throughout the the quite wavy. (Thorp 1998).

Material and Methods :

The plant material were collected from the Akola region and identified taxonomically by using standard floras (Cook 1967, Kathikeyan, Kambale & Pradhan, Naik). The seeds of the plant *Gloriosa superba* (L), were air dried under the shade. The dried seeds of the plant are crushed to obtain powder. These powdered samples are then stored in air tight polythene bags protected from sunlight until used. The organic solvent like petroleum ether, alcohol, chloroform, acetone, benzene & aqueous extracts of each sample was prepared by soaking as 1 : 10 ratio that is 3 gm of powder sample in 30 ml of organic solvents and distilled water for 18 hr. The extracts are then filtered using whatman filter paper, and used for phytochemical study.

Phytochemical Screening :

Chemical test were carried out on the organic solvents & aqueous extract and on the powdered specimens using standard procedure to identified the constituents as described by Harborne (1973), Edeoga et. al. (2005) and Krishnaiah et. al. (2009).

Test for Alkaloids :

To the 2-3 ml of filtrate, 1 ml of dil HCL and 1 lager's reagent was added and shake well. Yellow precipitate was formed showing the presence of alkaloids.

Test for Flavonoids :

To the small quantity of extract lead acetate solution was added. Formation of yellow precipitate showed the presence of flavonoids.

Test for Steroids :

To 2 ml of extract of chloroform & 2 ml of conc. H₂SO₄ was added. The solution was shaken well. As a result, chloroform layer turned red and acid layer showed greenish yellow fluorescence.

Test for Tannin :

On addition of 5% FeCl₃ solution to the extract deep blue black colour appeared.

Test for Saponin :

To 1 ml extract 20 ml distilled water has added and shake well in measuring cylinder. Then 1 cm layer of foam was formed.

Test for Cardiac glycosides :

To the 5 ml of extract 1 ml of conc. H₂SO₄, 2 ml of Glacial acetic acid and 1 drop of FeCl₃ solution was added, Appearance of brown ring shows the presence of cardiac glycosides.

Test for Quinones :

To the 2 ml of extract conc. H₂SO₄ was added and shake well for 5 min. shows the Red Colour.

Phytochemical analysis :-**i) Qualitative phytochemical analysis**

The qualitative phytochemical screening of *Gloriosa superba (L)*, in six different extracts i.e. Petroleum ether, benzene, chloroform, acetone, ethanol and water showed that there is presence of carbohydrates, glycosides, proteins, alkaloids, saponin, steroids, flavonoids, steroids, tannins, phenolic compounds. However coumarins and Cardiac glycosides were totally absent in all extracts. Ethanol extract of *Gloriosa superba (L)*, was accounted for the presence of alkaloids, carbohydrates, glycosides, proteins, steroids, flavonoids, phenol and tannin. While acetone and water extract ethanol showed the presence of alkaloids, carbohydrates, glycosides, flavonoids, proteins, , steroids, tannins, phenolic compounds. Only Benzene and extract showed the presence of fixed oil and fats, benzene, acetone and ethanol extract analyzed least number of compounds. All the six extract showed the presence of alkaloids, proteins, flavonoids, phenols and tannins. (Table-1).

This could make, this plant useful for treating infertility use against snakebites and different ailments as having a potential of providing useful drugs of human use. This is because of pharmacological activity of any plant is usually traced to a particular compound.

Table -1 : Qualitative phytochemical screening of various extract of*Salvia officinalis*

(Linn.)

Sr. No.	Constituents	Chemical Test	Extracts					
			P.E.	B	C	A	E	W
1.	Alkaloids	Mayer's Test	+	+	+	-	+	+
		Wagner's Test	+	+	-	+	-	+
		Dragendroff's Test	-	+	+	+	+	+
2.	Carbohydrates & Glycosides	Fehling's Test	+	-	+	-	+	+
		Benedict's Test	+	-	+	+	+	+
3.	Steroids	Salkowski's Test	+	+	+	+	-	-
4.	Saponin	Foam Test	+	+	-	-	-	-
5.	Phenolics & Tannin	FeCl ₃ Soln. Test	-	-	-	-	-	-
		Lead Acetate Test	+	+	+	+	+	+
6.	Fixed Oils & Fats	Spot Test	-	+	-	-	+	-
7.	Proteins	Biuret Test	+	+	+	+	+	+
		Millions Test	+	-	+	+	-	+
8.	Anthraquinone glycosides	Borntragers Test	-	-	+	+	-	-
9.	Cardiac glycosides	Keller – Killiani Test	-	-	-	-	-	-
10.	Flavonoids	Shinoda Test	+	+	+	+	+	+
		Lead Acetate Test	+	+	+	+	+	+
11.	Quinone		+	+	+	-	-	-
12.	Coumarins		-	-	-	-	-	-

(Note : '+' = Present and '-' = Absent)

where, P.E. = Petroleum ether, B = Benzene, C = Chloroform, A = Acetone
E = Ethanol, and W = Water extract respectively.

Pharmacological Studies:-

The alkaloid rich plant has long been used medicines in many cultures . It has been used in the treatment of gout , infertility open wounds , snakebites, increasing womans fertility, ulcers, arthritis cholera, kidney problems, itching leprosy, cancer (Lal,2011) . Extracts of rhizomes are applied topically during child birth to reduce labor pain beneficial in urogenital diseases, diuretic, haemostatic, emmenagogue and tonic (Dounias 2014). In past centuries, it was also used for hair care, insect bites and wasp stings, nervous conditions, mental conditions, oral preperation for inflammation of the mouth ,tongue and throat, and also to reduce to fevers (Kintzios ,Spiridon E 2000). The sap is used to treat acne and head lice, in pregnant woman it may cause abortion. The scientific studies have proven the clames of traditional system of medicine (Farzana et. al. 2014). Others uses

References:-

- 1) Singh V.K., Singh S., Singh D.K. (2003) – Pharmacological effects of spices. In recent progress in medicinal plants, phytochemistry pharmacology, vol. 2, Houston, Texas, USA : Stadium Press.
- 2) Thorp, J.R. and M.Wilson (1998). The National weeds strategy, *Gloriosa superba*. Archived 2012-02-05 at the wayback Machine weeds Australia.
- 3) Bairwa Ranjan, Singhal Manmohan, Balwant Singh (2011). Medicinal uses of *Trachyspermum ammi* : A Review, *The pharma Research*, 5 (2) : 247 – 258
- 4) Davidson Alan and Tom Jaine. (2014). *The Oxford Companion to food*, Oxford University Press, USA. 805
- 5) Kamble, S. Y. and Pradhan, S. G. (1988), *Flora of Akola District, Maharashtra (B.S.I.)*
- 6) Naik V. N. (1998), *Flora of Marathwada, Vol. I & II*, Amrut Prakashan, Aurangabad
- 7) Cok T. (1967), *The Flora of Presidency of Bombay, Vol. II*, B.S.I. Calcutta
- 8) Harborne, JB (1973) *Phytochemical methods*, London, Chapman & Hall Ltd. Pp. 49-188.
- 9) Chopra RN, Nayar SL, Chopra IC. (2002). *Glossary of Indian medicinal plants*. Ed 6, New Delhi NISCIR, 2.
- 10) Farzana M.U.Z.N. et.al. (2014). A review of ethnomedicine, phytochemical and pharmacological activities of *Acacia nilotica* (Linn) willd. *J. pharm. Phyto.chem.*3(1): 84-90.
- 11) Greer, John Michael (2017). *The encyclopedia of natural magic (first.ed.)*. Woodbury.MN: Llewellyn Publications.p. 185.
- 12) Kintzios ,Spiridon E (2000). *The genus Gloriosa*, CRC press.pp.10-11.
- 13) Lal,H.S. and P.K.Mishra.(2011). *Gloriosa superb* – an endangered plant spotted for the first time from forest of Tpchanchi, Hazaribag (Jharkhand) India. *Science research reporter* 1(2) 61-64.
- 14) Dounias,E.*Gloriosa superba* L. Archived (2014) at the wayback machine Protabase record display, plant esources of tropical Africa (PROTA).