

Qualitative Phytochemical analysis and Pharmacological Studies of *Salvia officinalis* (Linn.)

Khadse PM

Assistant Professor, Department of Botany, Shri R.L.T. College of Science, Akola, India

Email : pramodkhadse12@gmail.com

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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 compounds and have potential for developing some novel therapeutic agents. Hence in the present study pharmacological activity, traditional benefits and phytochemical analysis of *Salvia officinalis* (Linn.) 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.

Keywords: *Salvia officinalis*, 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 et. al. 2003). *Salvia officinalis* (Linn.) (Lamiaceae) commonly known as Sage. This plant has been recognized world wide as a multipurpose plant. It is, evergreen subshrub, with woody stems, grayish leaves and blue to purplish throughout the world, it has long history of medicinal and culinary uses and in modern times as an ornamental garden plant. The common name Sage is also used for a number of related and unrelated species. Sutton (2004).

MATERIAL AND METHODS

The plant material were collected from the Akola region and identified taxonomically by using standard floras (Cook 1967, Kambale and Pradhan, 1988, Naik, 1998). The fresh leaves of the plants *Salvia officinalis* (Linn.) were

air dried under the shade. The dried leaves 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 ml of 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.

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	+	-	-	-	-	+
		Biuret Test	+	+	+	+	+	+
7.	Proteins	Millions Test	+	-	+	+	-	+
		Borntragers Test	-	-	+	+	-	-
8.	Anthraquinone glycosides	Keller - Killiani Test	-	-	-	-	-	-
		Shinoda Test	+	+	+	+	+	+
9.	Cardiac glycosides	Lead Acetate Test	+	+	+	+	+	+
			+	+	+	-	-	-
10.	Flavonoids		+	+	+	+	+	+
11.	Quinone		+	+	+	+	+	+
12.	Coumarins		+	+	+	+	+	+

(Note : '+' = Present and '-' = Absent) where, = Ethanol, and W = Water extract respectively.

P.E. = Petroleum ether, B = Benzene, C = Chloroform, A = Acetone E

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

The qualitative phytochemical screening of *Salvia officinalis* (Linn.) 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, coumarins, flavonoids, steroids, tannins, phenolic compounds. However, steroids and Cardiac glycosides were totally absent in all extracts. Ethanol extract of *Salvia officinalis* (Linn.) was accounted for the presence of alkaloids, carbohydrates, glycosides, proteins, coumarins, flavonoids, phenol and tannin. While acetone and water extract showed the presence of alkaloids, carbohydrates, glycosides, flavonoids, proteins, coumarins, tannins, phenolic compounds. Only Petroleum ether and water 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 diabetes 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.

Pharmacological Studies

Tender leaves are used since ancient time forwarding of evil, snakebites, increasing womans fertility (Greer, 2017). Decoction of leaves is beneficial in urogenital diseases, diuretic, haemostatic, emmenagogue and tonic (Kintzios, 2000). Sage is singularly good for the head and brain it quickeneth the senses and memory, strengtheneth the sinews, have the palsy, restoreth health to those that and memory, useful in wound healing and useful in burning sensation. (Herball,1597). 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 and Spiridon, 2000). Experimental studies have proven its antidiabetic, antihypertensive, antispasmodic, antibacterial, antifungal activity, antiplaque, antioxidant, antiviral activity, catalytic and galactagogue. The scientific studies have proven the clames of traditional system of medicine (Farzana et. al. 2014). Extracts of the leaves may have positive effects on human brain function. The *thujone* present in *Salvia* extracts may be neurotoxic (Lopresti, 2017).

Conflicts of interest: The authors stated that no conflicts of interest.

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