

QUALITATIVE PHYTOCHEMICAL ANALYSIS AND PHARMACOLOGICAL STUDIES OF ACACIA ARABICA (LAMK.) WILLD

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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 cure various diseases and to get relief from physical sufferings. Natural products are a source for bioactive compounds and have potential for developing some novel therapeutic agents. Hence in the present study pharmacological activity, traditional benefits and phytochemical analysis of Acacia Arabica (Lamk.) willd 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 - Acacia Arabica, 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). Acacia Arabica (Lamk.) willd, (Mimosaceae) commonly known as Babul, Kikar or Indian gum. Arabic trees has been recognized world wide as a multipurpose trees. It is widely distributed throughout arid and semiarid zones of the world. Pods straight or slightly curved, with constrictions between the seeds giving the appearance of string. Seeds deep blackish- brown smooth, sub- circular, compressed belonging to Family Mimosaceae. (Rajvaidhya.S. et al, 2017)

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 fresh seeds of the plants Acacia Arabica (Lamk.) willd 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 ml of Mayer'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. H_2SO_4 , 2 ml of Glacial acetic acid and 1 drop of $FeCl_3$ solution was added, Appearance of brown ring shows the presence of cardiac glycosides.

Test for Quinones

To the 2 ml of extract conc. H_2SO_4 was added and shake well for 5 min. shows the Red Colour.

Phytochemical analysis

i) Qualitative phytochemical analysis

The qualitative phytochemical screening of *Acacia Arabica* (1 amk.) willd 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 *Acacia arabica* (L.amk.) willd 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.

Table -1 : Qualitative phytochemical screening of various extract of *Acacia arabica* (Lamk.) willd

Sr. No.	Constituents	Chemical Test	Extracts					
			P	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	Fech. 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

Tender leaves beaten into a pulp are used as gargle in spongy gums, sore throat and as wash in hemorrhagic ulcers and wound. Decoction of bark is largely used as an astringent douche in gonorrhoea, cystitis, vaginitis, leucorrhoea, prolaps of the uterus and piles. (Nadkarni KM et.al 2005) Decoction of pods is beneficial in urogenital diseases and prevents premature ejaculation, gum administered in the form of mucilage in diarrhea, dysentery and diabetes mellitus in leucorrhoea, useful in wound healing and useful in burning sensation. (Gilani AH, 1999). 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)

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