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Research Article

PHYTOCHEMICAL, ANTIMICROBIAL ACTIVITY OF DIFFERENT EXTRACT OF *DALBERGIA SISSOO* LEAVES

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ABSTRACT

Traditional system of medicine consists of a greater number of plants with different medicinal and pharmacological benefits and hence represents a valuable tank of new bioactive molecules. In the present investigation, *Dalbergia sissoo* plants were collected from kada, District Beed, which is used widely as traditional medicine in the treatment. The study was carried out to evaluate the phytochemical and potential antimicrobial activity against five types of bacteria (Staphylococcus aureus, *Salmonella typhimurium Proteus vulgaris*, *Pseudomonas aeruginosa* and megaterium) and two fungi (*Aspergillus niger* and Aspergillus flavus) of five extracts. To assess the antimicrobial activity of five extracts by using Cylinder plate or cup plate method. The obtained results showed a potential effect as maximum zone of inhibition was 8 mm, 7mm and 6 mm in aqueous, ethanol and acetone extract respectively.

Key words: *Dalbergia sissoo,* phytochemical, antibacterial activity.

INTRODUCTION

From old days to recent civilization, human beings are depending on nature for running their life smoothly from day to day. Plants remain a main source of drugs and now a day's much emphasis have been given to nutraceuticals. The role of traditional medicines in the solution of health problems is invaluable on a world level. Medicinal plants continue to supply valuable therapeutic agents, both in modern and in traditional medicine[1]. The side effects of the modern medicine as well as traditional medicines are gaining importance and are now being studied to find the scientific basis of their therapeutic actions[2]. Research work on medicinal plants has more intense and information on these plants has been exchanged. Research work will go a longer way in the scientific exploration of medicinal plants for the benefit of man and is likely to decrease the dependence on synthetic drugs[3]. Herbal drugs are used in traditional methods of treating the diseases worldwide. Several types of medicinal plants are existing in the nature and are effective in treating different type of diseases[4]. Herbal medicine is a success of popular therapeutic diversity. In recent times there has been a tremendous increase in the use of plant-based health products in developing as well as developed countries, resulting in an exponential growth of herbal products globally[5]. Many species of *Dalbergia* are important timber trees, valued for their decorative and often fragrant wood, rich in aromatic oils[6]. The most famous of these are the rosewoods, so named because of the smell, but several other valuable woods are yielded by the genus[7]. The scientist's Swedish brothers Nils and Carl Dalberg, who lived in the 18th century gives generic name Dalbergia honors. The plant is native to India; it is the state tree of Punjab (India). The plant is used in treatment of leprosy, jaundice, gonorrhea and syphilis etc.

TRADITIONAL USES

Different parts of *Dalbergia sissoo* are traditionally used in treating different diseases. Sissoo oil extracted from seeds is used to treat blue itching, burning on the skin, and scabies. Leaves: Finely ground paste of 8-10 leaves of sissoo and 25 g of palm candy taken in the morning alleviates profuse menstruation. 50-100 ml decoction of the leaves taken thrice in a day is useful in Painful micturition and to cure boils and pimples. 10-15 ml juice (leaves) taken thrice in a day helps in eliminating pus in urine and in treating jaundice. The leaves warmed and tied on breast and consuming the decoction of the leaves removes swelling of the breast. The 3 to 6 g. bark powder or decoction of the leaves is most useful in gonorrhea. Decoction of the bark and leaf is used in leprosy. Make a decoction of 10gm sissoo bark with 500 g of water and it should be boiled till the liquid reduces to half. Mix the juice of the bark and consume for forty days every morning which helps in leprosy[8].

MATERIAL AND METHOD

The fresh leaves of *Dalbergia sissoo* are collected from Kada, District Beed. The fresh leaves were dried under shade, powdered and pass through 40 mesh sieve and stored in closed bottle for further use. The powder was extracted with water, ethanol, chloroform, and acetone and petroleum ether by Soxhlet apparatus. Phytochemical analyses were carried out for all the extract as per the standard methods[9].

ANTIMICROBIAL ACTIVITY

Bacterial and fungal strains: The test organisms were purchased from NCIM, NCL Pune. Bacteria were incubated at 37^{0}C in incubator for 24 hrs. They were further stored at 4 ^{0}C in the refrigerator to maintain stock culture. Here qualitative

antimicrobial screening was carried out using the cylinder-plate or cup-plate method[10].

Table 1: Phytochemicals present in various extracts of *Dalbergia sissoo* leaves

Name of chemical constituent	Water	Ethanol	Chloroform	Acetone	Petroleum Ether
Carbohydrate	-	+	-	-	-
Alkaloids	-	-	+	+	+
Glycosides	+	+	+	+	+
Saponins	-	+	+	+	+
Phytosterols	+	+	-	-	-
Phenols	+	+	+	+	+
Tannin	+	+	+	+	+
Flavonoids	+	+	+	+	+
Protein and amino acid	-	+	-	+	-

RESULT AND DISCUSSION

Phytochemical analysis of plant extracts using aqueous, ethanol, chloroform, acetone & petroleum ether extract. Phytochemical analysis shows that all extract shows presence of glycoside, saponin, phytosterols phenols, tannin and flavonoid were found in *Dalbergia sissoo* shown in Table 1. The antibacterial activity of aqueous, ethanol, chloroform, acetone and petroleum ether extract were investigated using cup plate method against the selected bacteria such as *staphylococcus aureus, salmonella typhimurium, P. Vulgaris, Pseudomonas aeruginosa, B. Megaterium* out of five extract three shows varying degree of antibacterial activity against pathogens. It is shown in Table 2.

Table 2: Antimicrobial activity of *Dalbergia sissoo* leaves in different solvent

Sr. No.	Name of organism	Aqueous extract mm	Ethanol extract mm	Chloroform extract mm	Acetone extract mm	Petroleum ether extract mm
1	*Staphylococcus aureus*	5	6	-	1	-
2	*Salmonella typhimurium*	7	7	-	2	-
3	*Proteus vulgaris*	8	4	-	-	-
4	*Pseudomonas aeruginosa*	7	6	-	6	-
5	B. megaterium	8	6	-	3	-
6	*Aspergillus* niger,	-	-	-	-	-
7	*Aspergillus flavus*	-	-	-	-	-

CONCLUSION

Phytochemical analysis indicates that all extract shows presence of glycoside, phenols, tannin and flavonoid were found in *Dalbergia sissoo* leaves. Carbohydrate was found only in ethanol extract while **s**aponin was found in extracts of ethanol, chloroform, acetone and petroleum ether and not water extract. Phytosterol was found only in water and ethanol extract but alkaloid was not found in water and ethanol extract. Protein and amino acid were found only in ethanol and acetone extract. Aqueous, ethanol and acetone extract show antimicrobial activity. But Aspergillus Niger and Aspergillus flavus does not shows antimicrobial activity in all solvents. Also Chloroform and Petroleum ether extract does not show antimicrobial activity.

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