

Phytochemical investigation of plant *Boswellia Serrata*

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Abstract

Boswellia Serrata Plant has found at Panchmari in central India. The methanolic extract of root of *Boswellia Serrata* has shown important broad spectrum antibacterial activity. This work is being carried out to separate and recognized the active composition of the plant for antibacterial. The main aim of our research of our methanolic extract of the plant was significantly reported for Phytochemical using standard procedures which release the presence of different kind of interaction with chemical existence.

Keywords: biological activity, phytochemical, *Boswellia Serrata*

Introduction

Prescriptive medicines for human diseases have been broadly used in major part of the world. Floral plant are the main sources of the medicine in different under developing countries. Naturalize product from plant allocate bioactive compounds.

Boswellia Serrata (Family: Burseraceae) is an evergreen middle sized tree, which is mostly found in tropical part of Asia and Africa. In India it is found in dry hilly woodland of Rajasthan, Madhya Pradesh, Bihar Assam, Orissa and central region of Telangaana etc. *Boswellia Serrata* gum resin has been removed to have analgesics, anti-inflammatory, cancer treatment, skin disease, urinary disorder and antipyretic activity.

Material and Method

Assemble the plant used in the study had from Panchmari district of central India. The assemble plant material had cleaned shade dried, powdered crudely in a blinder and then

collected in air tight container for further use.

Preparation of extracts

Around 30 gram of the powdered plant had extracted with 75% of CH_3-OH for 37 hours in soxhlet apparatus. The were than filtered to separate residual part of the precipitate. It has than vaporized at the standard temperature to get the crude dried extract had weighed to analysis the yield. It gad stored in a deep freezer at 21°C to prevent the loss of biological activity until used.

Preliminary Qualitative Phytochemical Investigation

Qualitative Phytochemical analysis of the methanolic extract was carried out using standard procedures to identify alkaloids (Mayer's test), steroids and terpenoids (Lieberman Burchard and Salkowski tests), cardiac glycosides (killer Kiliani test), saponins (foam test), flavonoids (shinoda test), tannins and phenols (ferric chloride test)

Table 1

Test	Experiment	Observation	Inference
1.Killer Kiliani test	6 ml of each extract was mixed with 4 ml of glacial acetic acid and a drop of ferric chloride solution. Concentrated sulphuric acid was added along the side of the test tube.	Reddish brown colour at the junction of two liquid and bluish green on upper layer	Presence of cardiac glycosides
2.Ferric chloride test	160 mg of the powdered plant samples were boiled in 10 ml of water and then filtered. A few drop of freshly prepared 0.4 % of ferric chloride were added to 6 ml of the filtrate	Appearance of blue black colour	Presence of tanins
3.Liebermann-Burchard's test	6 ml of acetic anhydride was added to 2 ml of ethanolic solution of each extract and acidified with 6 ml of the filtrate	Colour change from violet to blue or green	Presence of steroids
4.Salkowski's test	8 ml of each extract was mixed with 5 ml of chloroform. To this mixture 5 ml of concentrated sulphuric acid was carefully added along the side of the test tube	A reddish brown band in the chloroform layer	Presence of terpenoids
5.Mayer's reagent test	1 ml of the extract solution, 5 drop of hydrochloric acid and 0.2 ml of potassium iodide solution were added.	Cream precipitate	Presence of alkaloids
6.Shinoda's test	In a test tube 15 mg of the extract was dissolved in 2 ml of ethanol, to which 4 drop of dilute hydrochloric acid and 40.2mg of magnesium turnings were added.	The formation of pink, reddish pink or brown colour	Presence of flavonoids
7.Foam test	About 160 mg of the powdered sample was boiled with 10 ml of the distilled water and filtered. 2 ml of the filtrate was mixed with 8 ml of distilled water and shaken vigorously till frothing	Formation of stable persistent foam	Presence of saponins

Phytochemical Investigation Roots of plant *Boswellia Serrata* by FT Infra-Red Spectrum

From the I.R. study various peaks were obtained with the help of available literature. The structure was confirmed

Presence of -OH (s)

The glycoside was acetylated with Ac_2 . It gave on acetylated product was obtained. The percentage (26.75%) of acetylated group was determined by the wiesenvberger method which confirmed the presence of four -OH groups.

Presence of O - CH₃ group (s)

The number of OCH_3 group was estimated by zinsel's method which confirmed the presence of six - OCH_3 groups.

Presence of -OH₃ group (s)

The IR spectrum of the glycoside showed a peak at 3418.76

cm^{-3} which confirmed the presence of -OH group (s)

Presence of -OCH₃ group (s)

The peak at 2924.25 cm^{-1} in the IR spectrum confirmed the presence of - OCH_3 group (s)

Aromatic Ring

The peak at 4730.56 cm^{-1} confirmed the presence of aromatic ring

Two adjacent H atoms in benzene ring

The peak of 842.26 cm^{-1} confirmed the adjust H atom of benzene ring

Chelated >C=O group (s)

The peak at 1657.74 cm^{-1} proved the above point

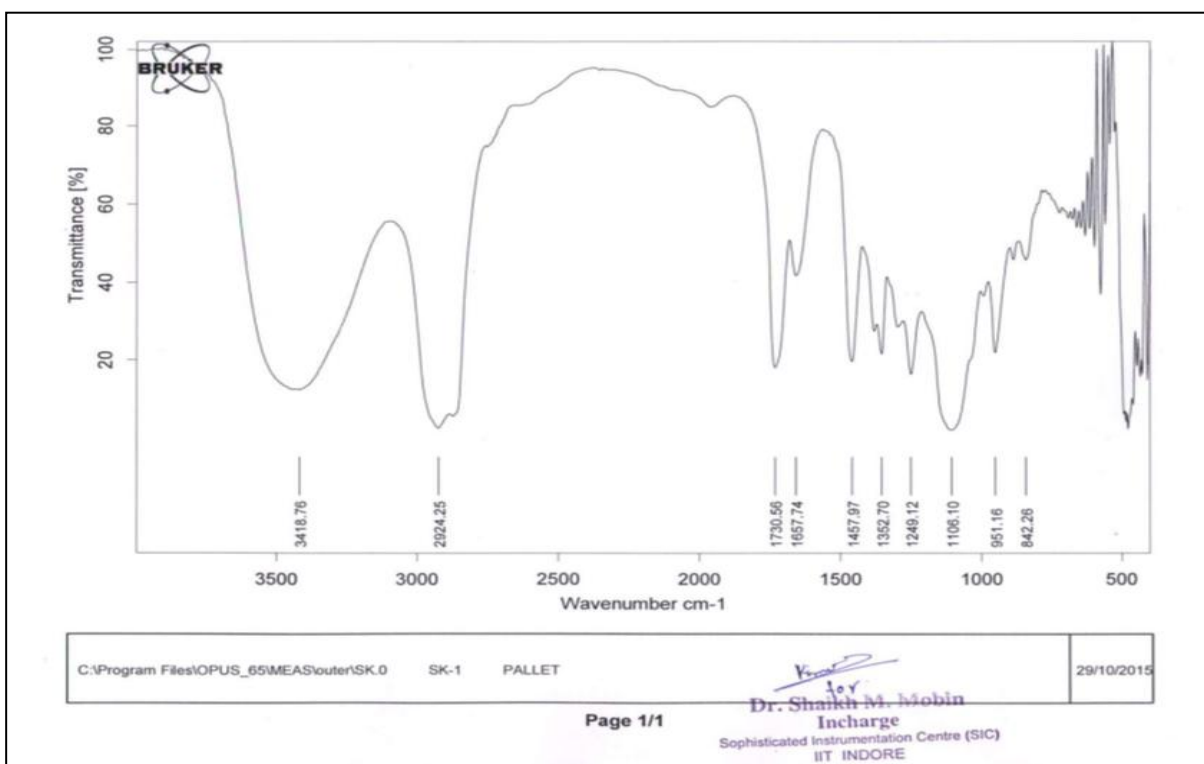


Fig 1

Table 2: Some characteristic IR absorption bands.

S.no	Structural assignment	Peak cm^{-1}
1	-OH	3418.76
2	- OCH_3	2868
3	Aromatic ring	1585
4	Two adjacent H atom in benzene ting	778
5	Chelated C=O	1618
6	-OH bonding and C-O stretching of secondry -OH group	1457.97
7	-OH bonding and C-O stretching of primary -OH group	1249.12
8	C-vibrations	1106.10

NMR spectrum of the 6, 7, 8, 3, 4 penta methoxy flavone

With the help of N.M.R. and available literature are recorded below in the table and structure was assigned

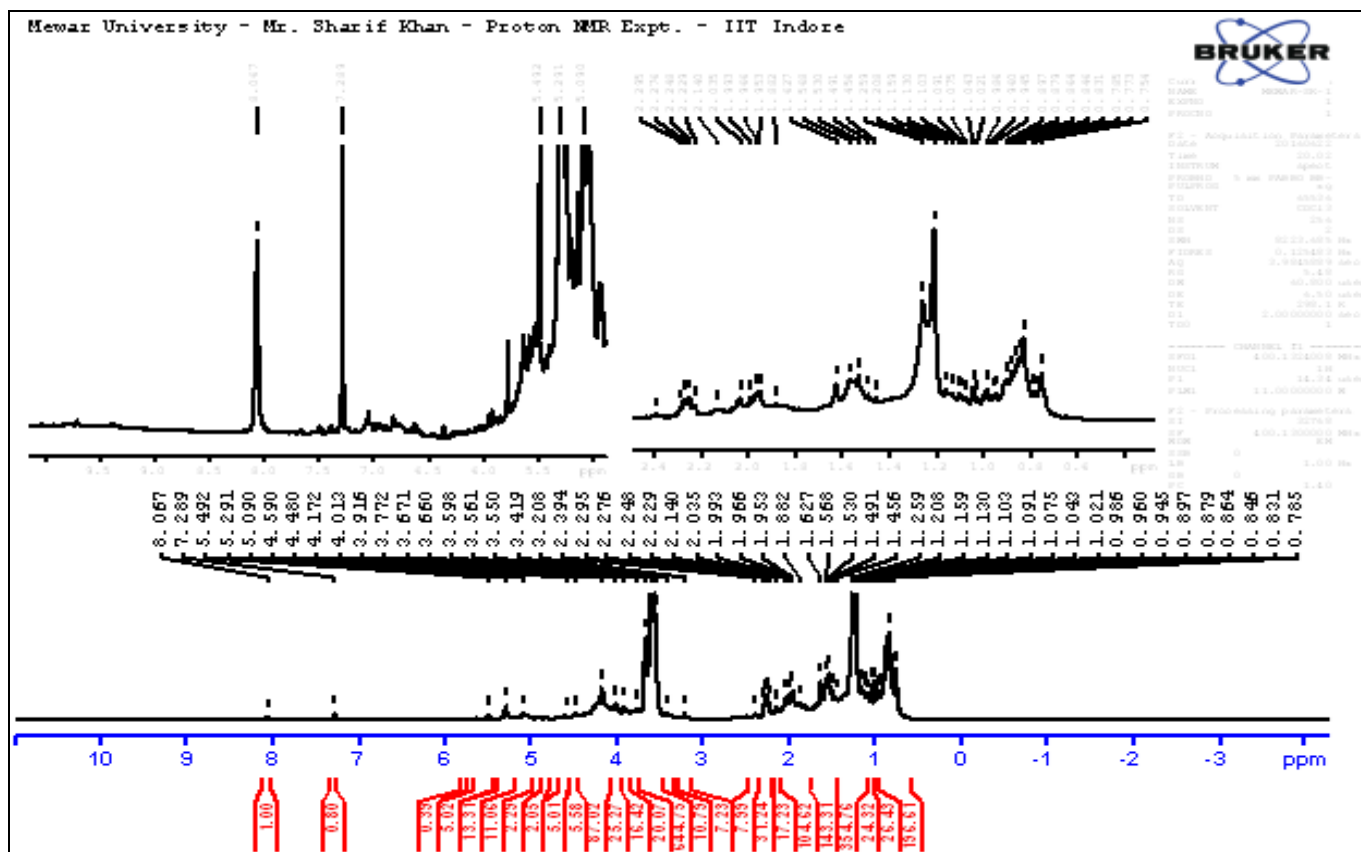


Fig 2

Table 3

S.NO	S.Value	No. of protons	Assignment
1	3.92	3	6-OCH ₃
2	3.99	3	7-OCH ₃
3	4.03	3	8-OCH ₃
4	4.06	3	3'-OCH ₃
5	7.14	3	4'-OCH ₃
6	6.36	1	H-2'
7	7.43	1	H-6'
8	5.94	1	C'' 'anomeric
9	7	3	proton
10	9	3	OH
11	7.6	3	OH
12	9	3	OH
13	4.31	1	OH
14	4.11-4.60	6	C'' 'anomeric protons Proton of glucose

Result and discussion

The curative features of medicinal plant are due to presence of various kinds of secondary metabolites thus the preliminary investigation tests might be applicable in the confirmations of the biological active compound and then may lead to discovery of drug and development.

The result of phytochemical investigation of methanolic

extract of the plant is given in the following table:

The Phytochemical investigation of methanolic extract of the roots of *Boswellia serrata* revealed the presence of cardiac glycosides, flavoroids, tannins, saponins and phenols. Terpenoids and alkaloids have been reported in the root extract of *Boswellia serrata* in addition to above Phytochemical

Table 4: P bmhytochemical investigation of methanolic extract of the roots of *Boswellia serrata* parts.

Secondary Metabolites	Methanolic Extract of The Root Parts Of the <i>Boswellia Serrata</i>
Glycosides	+
Steroids	+
Alkaloids	+
Saponins	+
Phenol	
Tannins	+
Flavonoids	+

Conclusion

The extract of compounds is very useful which kill or inhibits wide range of gram positive and gram negative bacteria.

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