



A Review on *Cochlospermum gossypium*

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Abstract

Cochlospermum gossypium is a gum yielding and flowering tree which belongs to the family Bixaceae. This is native to tropical regions of America, Africa and India. Plant has wide medicinal importance hence it is used in traditional medicinal systems from the ancient times. Researches on *Cochlospermum gossypium* has contain numerous active constituents like alkaloids, steroids, flavanoids, tannins, glycosides, phenolic compounds are has Anti bacterial, anti oxidant, anti proliferative, Hepato protective properties. This plant gum is used for diaahoea, dysentery and pharyngities. This article assembles the phytochemicals and pharmacological activities of *Cochlospermum Gossypium*.

Keywords

Cochlospermum gossypium, phytochemicals, pharmacological activities

INTRODUCTION:

Cochlospermum gossypium tree which is belongs to the family Bixaceae. It is a flowering plant and native to India, Thailand and Burma, Southeast Asia grown in forest, hill areas. This tree flowers are used for temple offering. The genus cochlospermum compose of 14 species of trees belongs to Bixaceae family and few species are belongs to cochlospermaeaceae family. Which are distributed throughout the world and native to tropical regions particularly Latin America, Africa, Australia and Indian Subcontinent.^[1] *C.gossypium* gum is in unani medicine Qurs-e-sartaan is used for antipyretic, tuberculosis, hectic fever and also used for diaahoea, dysentery and pharyngities.^[2] *C.gossypium* plant parts like leaves, stem and bark, wood also contain important phytochemicals constituents which are medicinally very useful.^[3]

Synonyms: cochlospermum religiosum, Bombax gossypium, Maximiliana gossypium.

Scientific classification: [4]

Kingdom	:	Plantae
Subkingdom	:	Tracheobionta
Super division	:	Spermatophyta
Division	:	Magnoliophyta
Class	:	Magnoliopsida
Subclass	:	Dilleniidae
Order	:	Violales
Family	:	Bixaceae
Genus	:	<i>Cochlospermum</i>
Species	:	<i>gossypium</i>

Vernacular names: [4]

Language	Name
Hindi	Galgol
Sanskrit	Pitakarpasa
Urdu	Kontopala
Tamil	Tanaku
Telugu	Kondagogu
Bengali	Sonali simul
Malayala	Appa kudakka
Marathi	Generi

Botanical description:

Cochlospermum gossypium is a small tree growing to a height of 7.5 m (25 ft) usually found in dry deciduous especially on stony hills. **Bark** is 20-25mm thick, smooth and pale grey in colour and surface is dark grey, branchlets are thick. **Leaves** are glabrous above, densely brownish tomentose below and the arrangement of leaves is alternative distichous. Leaf base is chordate. The leaves appear at the tips of the branches leaves are simple, palmately 3-5 lobed, alternate, and estipulate. ^[5]

Flowers of the *C.gossypium* tree are the most conspicuous part of the tree. Flowers are bisexual, buttercup shaped and colour of the flower is bright yellow in colour and stamens are in orange. Flowers are large and with prominent sepals.

Fruits are brown in colour and oval shaped. Fruits are come in the form of capsules made up of five segments. The capsules are splits and open to release the seeds which embedded in the silky cotton present in the capsules. Wood is soft, light and dark brown color. Plant containing numerous seeds surrounded by pale brown cottony hair. ^[6]



Figure no: 1 cochlospermum gossypium tree

Distribution:

The plant habitat is terrestrial and this species is distributed thought to be native to Central and Southern India, globally distributed in Indo-Malaysia. Within India, it occurs almost all over except western coastal districts. It is particularly common in hot, dry and stony regions. This tree is also found in Telangana forests.

Chemical constituents:

Cochlospermum gossypium plant material used in siddha and unani system of medicine from ancient times. This plant material contains many primary and secondary metabolites like flavonoids, tannins, steroids, lipids, starch, phenols and sugars. More amounts of phenols of secondary metabolites were found to be rich in leaves and bark of this plant.

Chemical constituents like Gallic acid, Ellagic acid, 2, 3-Dihydrobenzoic acid, Thymol, Syringaldehyde, Quercetin, cynarine are identified through the LC-MS analysis of dichloromethane leaf extract of *Cochlospermum gossypium*. ^[6]

Sasikala A et al quantification of primary and secondary metabolites of leaves and stem bark of *Cochlospermum gossypium* describes the presence of chemical constituents like alkaloids, steroids, carbohydrates, flavonoids and phenolic compounds and it determines the high amount of phenolic compounds in leaves and stem bark of *C.gossypium*. ^[7] VinodV.T.P, Sashidhar, R. B.Sarma, Compositional analysis and rheological properties of gum kondagogult revealed that uronic acids to be the

major component of the polymer. Gum Kondagogu being rich in rhamnose, galactose and uronic acids.^[8] Janaki, B, Sashidhar, Physicochemical analysis of gum kondagogu. It revealed that gum kondagogu had

higher amount of fiber, protein, tannin, calcium and potassium contents than karaya gum.^[9]

Table 1: Phytochemical constituents reported in different parts of plant *C.gossypium* by various authors

S.NO	plant part	Chemical constituents	Author and year	Reference no
1	Leaves	Isorhamnetin-3-glucoside	V,gayaridevi,B.N.Rooban,V.Sasikala,2010	10
2	Leaves and callus	Myricetin	AbhavyaPandey, Alok Sharma, PayalLodha, IJPRS 2015	11
3	Bark& leaves	Quantification of primary & secondary metabolites	Sasikala. A et al.2013	7

Pharmacological activities:

Cochlospermum gossypium has several pharmacological activities, and potential to provide health to the society. It is used as anti microbial, anti bacterial anti carcinogenic, anti oxidant, and Hepato protective activity, and also used as stimulant, sedative and is useful in cough, gonorrhea, syphilis and trachoma. Plant is used in the treatment of immunity system and memory power especially below the age of 12 years kids.^[12]

This belief led to many *in vivo* and *in vitro* investigations by various methods and shown positive results for various activities. Some of the pharmacological activities of *C.gossypium* as follow.

Anti-bacterial activity:

G.Bhagavanth, Madhusudhan, A.Ramakrishna, D.Ayodhya Gold nanoparticles (AuNPs) were prepared from HAuCl₄ using gum kondagogu, by adopting green synthesis, The arrangement of the

gold nano particles was recognized through the adjustment in the shade of the arrangement from yellow to red. The integrated particles were described by different systems. The orchestrated, new gum-based impetus was extremely proficient, simple to plan, stable, savvy and eco-accommodating. The synthesized gold nanoparticles showed good antibacterial activity.^[13]

Cochlospermum religiosum leaves are traditionally used to treat jaundice and liver diseases^[14]. Roots of *Cochlospermum religiosum* is found to be hepatoprotective^[15] and traditionally the bark is used for treating jaundice^[16]. *Cochlospermum religiosum* stem bark paste is plastered over the bone fractured areas for over a month^[17].

Cochlospermum gossypium stem bark and root powder is traditionally used for pregnancy and ash of fruit mixed with coconut is used for the treatment of scabies^[18].

Table 2: Pharmacological activities reported on *C.gossypium* by various authors

S.NO	Plant extract	Plant part used-work done	Biological activity	Author and year	Reference
1	Acetone extract	Whole plant	Anti bacterial	Goud et al (2005)	19
2	Methanolic extract	Leaves and flowers	Anti microbial	JamunaB. A, Ravishankar R, Praddepa V, Malaysian Journal of Microbiology 2011	20
3	Methanol extract	Callus and leaves	Anti carcinogenic	Abhavya P, Alok S, Payal L. Int J Pharm Sci Res 2015	11
4	Ethanol extract	Leaves	Hepato protective	Jyothi Y, Sangeetha D. J Indian ChemSoc 2015	21
5	Methanolic extract	Leaves	Anti oxidant	Ponnamma et al. (2017)	22
6	Ethyl acetate extract	Leaves	Anti bacterial	Ponnamma et al. (2017)	22
7	Gold nano particle constructs on B16F10 melanoma cells: an in vitro model.	Gum	Anti proliferative	KalaighanaSelvi, S.Mahesh Kumar 2017	23

Medicinal uses:

Bark and root powder traditionally used for fertility. Ash of fruit mixed with coconut is used for the treatment of scabies. Gum is the ingredient of unani medicine Qurs-e-sartaan is used for antipyretic, tuberculosis, hectic fever. Gum is used for diarrhoea, dysentery and pharyngitis and also used as an emulsifying agent; it serves as a good substitute for gum tragacanth in American countries. The dried leaf and flowers are used as stimulants, antipyretic, laxative and sedative. [24]

CONCLUSION:

Cochlospermum gossypium has pharmacological activities like anti microbial, anti oxidant, anti bacterial and Hepato protective properties. Inquires about on this plant are expanding step by step as a result of its strong pharmacological employments. The different phytochemical actions brought about isolation of various powerful chemical compounds which are reason for its particular pharmacological actions. Based on the nativity of this plant and having medicinally active constituents and pharmacological activities research works are still going on. The main intension of review article was collates the research work done till now.

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CONFLICT OF INTEREST:

None of the authors of this paper has a financial or personal relationship with other people or organizations that could inappropriately influence or bias the content of the paper.

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