

REVIEW ON PHYTOCHEMICAL CONSTITUENTS AND PHYTOPHARMACOLOGICAL ACTIVITIES OF SENNA AURICULATA LINN

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ABSTRACT

Senna Auriculata has been used since ancient times to treat various ailments, this plant is widely used in the Ayurvedic medicine treatment. About the *senna auriculata* more specific information in the form of medicine is mentioned in old golden heritage Ayurvedic literature and other alternative medicine practices. It is screening of variety phytochemical constituents such as steroids, proteins, quinines, alkaloids, phenols, tannins, flavonoids, and terpenoids. The phytopharmacological survey revealed that the different *senna auriculata* part was used in as treatment of antidiabetic, antioxidant, anti-anthelmintic, antibacterial, antimicrobial and anticancer and support ancient use. The present review focuses on its phytochemical constituents and phytopharmacological activities.

KEYWORD: *Senna Auriculata* Antibacterial Activity, Antidiabetic Activity, Anthelmintic activity, Antioxidant Activity, Antimicrobial activity and Anticancer Activity.

INTRODUCTION

Senna auriculata was traditionally used to treat of various disease, it belongs to the Fabaceae family. There synonym is *Cassia auriculata* L. The local name is known as *Cassia auriculata*, Tarvad, Matura tea tree, Avaram. It is mainly found in the arid regions of India ana Sri Lanka. The leaves are alternate, stipulate, paripinnate compound, very numerous, closely place, rachis 8.8-12.5 cm long, narrowly furrowed, slender, pubescent, with an erect linear gland between the leaflets of each pair, leaflets 16-24, very shortly stalked 2-2.5 cm long 1-1.3 cm broad, slightly overlapping, oval oblong, obtuse, at both ends, mucronate, glabrous or minutely downy, dull green, paler beneath, stipules very large, reniform-rotund, produced at base on side of next petiole into a filiform point and persistent.

It's flowers are irregular, bisexual bright yellow and large (nearly 5 cm across), the pedicels glabrous and 2.5 cm long. The racemes are few-flowered, short, erect, crowded in axils of upper leaves so as to form a large terminal inflorescence stamens barren, the ovary is superior, unilocular, with marginal ovules.

The fruit is a short legume, 7.5-11 cm long, 1.5 cm broad, obtuse, tipped, with long style base, flat, thin papery, undulately crimped, pilose, pale brown. 12-20 seeds per fruit are carried eachin its separate cavity.

This plant different part is used in treatment of Antibacterial, Antidiabetic, Anthelmintic activity,

Antioxidant, Antimicrobial activity and Anticancer Activity and traditional Medicine in Ayurvedic system. Also used in the dietary supplement to living organisms but also use traditionally treat of various ailments.

Scientific Classification

- Kingdom: Plantae
- Clade: Tracheophytes, Eudicots, Rosids.
- Order: Fabales
- Family: Fabaceae
- Genus: *Senna*
- Species: *S. auriculata*
- Binomial Name: *Senna Auriculata*
- Synonyms: *Cassia auriculata* L. and *Cassia densistipulata* Taub.
- English Name: Tanner & acutes cassia
- Marathi Name: Taravad
- Status: Native
- Edible parts: Young leaves and flowers

Phytochemical Constitutions of *Senna Auriculata*

Phytochemical constituent is responsible for the specific activity. The several chemical constituents are differentiated form different morphological parts of the plant using different isolated methods that shows the various pharmacological activities.

Root: Phytochemical examination of plant roots isolated new flavonoid, glycosides and that were identified as 7, 4-dihydroxy flavone-5-O-beta-D-galactopyranoside and also anthraquinone glycosides and that was found to be

such as 1,3-dihydroxy-2 methyl-antraquinone, 1,3,8-trihydroxy-6-methoxy-2-methyl-antraquinone, rutinoid and flavone glycoside; Based on phytochemical analysis and spectral IR, UV, PMR and mass data.

Leaves: A total of twenty-nine chemical constituents were identified in the leaves of *Senna auriculata*. The main constituents such as 3-O-Methyl-d-glucose (48.50%), α -Tocopherol- β -D-mannoside (14.22%), Resorcinol (11.80%), n-Hexadecanoic acid (3.21%), 13-Octadecenal, (Z) - (2.18%) and 1, 2, 3, 4-Tetrahydroisouquinolin-6-ol-1-carboxylic acid (1.98%)

Flower: The flowers of *senna auriculata* represent a significant amount of alkaloids, flavonoids, saponins, phenols, tannins, terpenoids, carbohydrates, steroids and amino Acids.

Seed: The seeds of the plant contain 4.8% of light-yellow fatty acid. It is low in inaccessible ingredients and is an oil that is nondrying oil. Major components of fatty acids are linoleic acids, palmitic and oleic and. The oil contains about 75 % unsaturated fatty acid. The ethanolic seed extract revealed the presence of benzoic acid, resorcinol (0.21%), 2-hydroxyl methyl ester (0.07%), glycine, 1-methylbutyl ester (0.10%).

Phytopharmacological Activities

Antibacterial activity

Senna auriculata buds, seedling and dried stage with various solvents such as Dimethyl sulfoxide, water and methanol were determined to have antibacterial activity in the drying stage of the flowering, it concluded that fresh flowers of the *cassia auriculata* have potent antibacterial activity. In vitro studies of *C. auriculata* flower methanol extract shows antibacterial effect by using agar disc diffusion method. *Senna auriculata* was determined with minor Stock cultures were maintained at 4°C on Petri plate of nutrient agar improvements by the disc diffusion technique of Bauer, Kirby, Sherris, and Turck. Crude extract was prepared impregnated discs and dried well. The test was directed at three different groups of crude extract (0.25%, 0.50% and 1.00%). Antibiotic discs filled with floral extract were placed on the surface of inoculated media plates and left at room temperature for 30 minutes and incubated at 37°C for 24 hours for compound propagation. The relative susceptibility of microorganisms was observed, measured and recorded in millimeters on crude extracts indicated by a clear area of protest around the disc.

Antidiabetic activity

Several studies have noted the anti-diabetic activity of *Cassia auriculata*. For example, the anti-diabetic action of the ethanolic flower and the bud extract of *Cassia auriculata* were studied using a high-fat diet and a streptozotocin-induced animal model. Aqueous extract of *cassia auriculata* at a dose 400mg/kg showed significant reduction in FBG and glycosylated hemoglobin (GHb) in

rats that had a better antihyperglycemic effect than glipalamides, while methanol extracts strongest enzyme. The possible mechanism by which *Cassia auriculata* flower extract its antihyperglycemic action may be due to the pancreatic secretion of insulin from the β -cells of the islets or the increased transport of blood glucose to the peripheral tissues. This is evident from the increased level of insulin in diabetic rats treated with *cassia auriculata* flower ethanol extract. Furthermore, *cassia auriculata* flower ethanol extract enhance total Erythrocyte receptor membrane insulin binding sites that increase simultaneously in plasma insulin.

Anthelmintic activity

The anthelmintic activity of methanolic, chloroform and petroleum ether leaf extract of *Cassia auriculata* against earthworms and the methanolic extract show more anthelmintic activity. It is also responsible for Antiparasitic against blood-sucking parasites *Rhipicephalus microplus*, *Hippobosca maculata*, *H. bispinosa*, *Damalinea caprae* and *P. cervi*.

Antioxidant activity

The ethanol and methanol extracts of *Cassia auriculata* flowers showed antioxidant activity based on radicals such as 1,1-diphenyl-2-picrylhydrazyl (DPPH) and 2,2'-azinobis-(3-ethylbenzothiazoline-6-sulfonic acid). Various fractions of petroleum ether, ether, ethanol and methanolic extracts of *cassia auriculata* flowers, suggest that petroleum ether from these extracts is less potent for scavenging and reducing power.

Antimicrobial activity

Methanol extract from the *cassia auriculata* leaves has been shown to inhibit the growth of bacteria against *Vibrio cholerae* and *Staphylococcus aureus*. Potential preventive action against fungal strains (*Candida albicans*, *Candida tropicalis* and *Aspergillus niger*) and bacterial strains (*Staphylococcus aureus*, *Bacillus obesus*). Methanol extract of the fresh flowers of *cassia auriculata* plant exhibited a restrictive zone against *Proteus mirabilis* and *Staphylococcus aureus*. The leaves and flowers extract of *cassia auriculata* also showed bactericidal action against Extended Spectrum Beta Lactamase (ESBL) producing *E. coli* and antiviral properties. Aqueous extracts of the *senna auriculata* leaves of methanol and chloroform show anti-microbial effects by the method of propagation. Methanol and chloroform extracts show stronger inhibitory action than aqueous extracts. The saponins rich extract of *cassia auriculata* root is used as a natural remedy to cure various infections and diseases caused by microorganisms.

Anticancer Activity

Cassia auriculata leaf extract inhibits the proliferation of MCF-7 and Hep-2 cells induced apoptosis, making *Cassia auriculata* leaf extract a candidate as new anti-cancer drug. For MCF-7 AND Hep-2 cells with C50 values of IC 50 values of 400 and 500 mg, respectively *Cassia auriculata* leaf extract inhibited both cell lines in a

dose-based manner. A class of triterpene glycosides present in Flavonoids and procyanidins, 3-O-beta-D-xylopyranosides, in *Cassia auriculata* leaves extract is responsible for the anti-cancer activity against MCF-7 and Hep-2 cells.

Cassia auriculata leaf extract is cause apoptosis, which is useful in in-vitro method in human larynx cancer, breast cancer and cell lines. Isolated compounds obtained from *Cassia auriculata* are useful for the prevention of colon cancer cell line HCT, and various compounds in *Cassia auriculata* have chemo inhibitory activity.

RESULT AND CONCLUSION

Collectively, the studies cited in this overview suggest that *cassia auriculata* plant and its extracts may have therapeutic value in the context of many pathologies. the plant is the source of many therapeutically important chemical constituents, ayurvedic, and folklore claims suggest the traditional Indian medicine practice. *Cassia auriculata* is the main ingredient in various herbal formulations such as avarai kudineer, Kalpa herbal tea, talapotaka churna, sugnil, and avarai panchanga choornam.

Further, Studies have shown that it has Antibacterial Activity, Antidiabetic Activity, Anthelmintic activity, Antioxidant Activity, Antimicrobial activity and Anticancer Activity. The basis mechanisms of pharmacological activities with new methods using collaborative research and modern technology with traditional health principles will pay a lot of dividends to improve in the near future.

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