Available online on 15.10.2025 at http://jddtonline.info

Journal of Drug Delivery and Therapeutics

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Review Article

Sanna Makki (*Cassia angustifolia* Vahl.): An Ancient Remedy in Modern Pharmacology: An Overview

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Article Info:

Article History:

Received 04 July 2025
Reviewed 21 Aug 2025
Accepted 15 Sep 2025
Published 15 Oct 2025

Cite this article as:

Najeeb J, Mohammed A, Jahan N, Ahmad P, Amin KMY, *Sanna Makki* (*Cassia angustifolia* Vahl.): An Ancient Remedy in Modern Pharmacology: An Overview, Journal of Drug Delivery and Therapeutics. 2025; 15(10):73-86
DOI:
http://dx.doi.org/10.22270/jddt.v15i10.7379

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Abstract

Objective(s): This paper aims to give a comprehensive account of *Senna* (*Cassia* spp.) and its related species, with a focus on *Senna Makki* (*Cassia angustifolia),* by comparing its traditional uses in the Unani System of Medicine with modern pharmacological evidence.

Data Sources: Classical Unani literature, historical records, and modern scientific references were reviewed. Databases such as PubMed, Scopus, and Google Scholar were searched for studies on ethnomedicine, phytochemistry, pharmacology, and clinical uses of various Cassia species.

Study Selection: Both traditional references and contemporary studies addressing medicinal uses, active constituents, pharmacological effects, and clinical safety of various Cassia species were included in the search.

Summary of the Contents of the Article: There are 250-300 accepted species of Senna distributed throughout the world. Out of them, *Cassia angustifolia* (*Senna Makki*) and *Cassia acutifolia* (Alexandrian Senna) are officially mentioned in various pharmacopoeias. Historically, *Senna Makki's* medicinal use dates back to the 9th – 10th centuries, with Arabian physicians employing its leaves and pods for different ailments. In Islamic medicine, it was prescribed for constipation, gout, haemorrhoids, arthritis, paralysis, sciatica, headaches, and back pain, and externally for wounds, pruritus, scabies, and alopecia. Its diverse therapeutic roles are reflected across Unani and other traditional medical systems, now supported by contemporary pharmacological studies.

Conclusion: *Senna Makki* exemplifies the integration of traditional medicine with modern pharmacology. While its role as a laxative is well-supported, further studies are needed to validate the wider therapeutic claims of Unani medicine in managing other challenging diseases.

Keywords: *Senna Makki; Cassia angustifolia;* Unani medicine*;* Laxative; Sennosides.

Introduction

The Cassia (Senna) is a genus of trees, shrubs, and subshrubs belonging to the family *Fabaceae*, subfamily *Caesalpinioideae*, and order *Fabales*.[1,2] *Senna* has been known to physicians since ancient times, with its species used in the Siddha, Unani, Ayurveda, traditional Chinese systems, traditional Tibetan folk medicine, and African traditional medicine.[2] There are 250-300 accepted species of *Senna* distributed throughout the world,[1] but they are mostly dispersed in tropical and subtropical regions of Africa, Asia, Europe, and Latin America. About 26 species of *Senna* have been reported to contain anthracene derivatives either in free form or as glycosides. Among them, *Cassia angustifolia* (Indian Senna) and *Cassia acutifolia* (Alexandrian Senna) are officially listed in various pharmacopoeias[3] due to their potent cathartic properties and wide availability.[4] This review provides a comprehensive account of *Senna* (*Cassia* spp.) and its related species, with a focus on *Cassia angustifolia.*

Morphological Characteristics

The genus Senna comprises mostly flowering plants (shrubs, herbs, and trees),[2,5,6,7,] and are annual or biannual shrubs with a distinctive fragrance. The *Senna* plants are small shrubs, 60-90cm in height, with pinnate or paripinnate compound leaves with opposite paired leaflets.[2,4,5,6,7,8,9] Each leaf has an average leaflet around 7-8 pairs, glabrous, yellowish-green, 2.5-5.1cmX0.4-1.3cm long. [4,6,10] They bear stout petiolules. The lamina has an entire margin, an acute apex, and a more or less

asymmetric base. Odour is little but characteristic, taste bitter.[4] Flowers are pale yellow/ bluish, consist mostly of five petals and sepals, with ten straight stamens of different sizes, and could exist as staminodes. Generally, the inflorescence formed racemes at the edge of each branch. Mostly leaves are used for medicinal purposes.[2,6,11,12,13]

Table 1: Classification of *Senna* species based on leaflets [14]

S. No	Leaflets	Senna variety		S. No	Leaflets	Senna variety
1.	2 pairs	*Cassia absus*		17.	7-10 pairs	*C. seiberiana*
2.	3 pairs	*Cassia tora*		18.	8-15 pairs	*C. nigricans*
3.	3-5 pairs	*Cassia occidentalis*		*19.*	3-5 pairs	*C. podocarpa*
4.	6-10 pairs	*Cassia sophera*		*20.*	6-12 pairs	*C. abbreviata*
5.	8-12 pairs	*Cassia auriculata*		*21.*	3-6 pairs	*C. Petersiana*
6.	10-20 pairs	*Cassia pumila*		*22.*	3-7 pairs	*C. laevigata*
7.	8-12 leaflets	*Cassia obovata*		*23.*	8-13 pairs	*C. multijuga*, Rich.
8.	10-16 leaflets	*Cassia angustifilia*		*24.*	6-12 pairs	*C. splendida*, Vogel.
9.	16-28 leaflets	*Cassia alata*		*25.*	6-12 pairs	*C. sericea*, Sw.
10.	60-100 leaflets	*Cassia mimosoides*		*26.*	4-8 pairs	*C. cathartica*, Mart.
11.	4-8 pairs	*C. fistula*		*27.*	10-20 pairs	*C. grandis*. Linn. fil.
12.	4-6 pairs	*C. acutifolia*		*28.*	10-18 pairs	*C. quinquangulata*, Rich.
13.	8-12 leaflets	*C. glauca*		*29.*	8-15 pairs	*C. sclerocarpa*, Vogel.
14.	14-20 pairs	*C. timoriensis*		*30.*	6-12 pairs	*C. marilandica*, Linn.
15.	2 pairs	*C. rugosa*		*31.*	6-10 pairs	*C. aethiopica*, Guib.
16.	12-20 pairs	*C. javanica*				

Table 2: Some of the species of *Senna* with their medicinal uses in different countries worldwide

S. N	**Species/ Types**	**Country**	**Part used**	**Action and Medicinal Uses**
1.	*C. fistula/ C. rhombi folia*	China, North America, Egypt, India, Philippines island, Brazil, Guiana, Gold Coast	Pulp, root-bark, flowers, pods, leaves, root, fruit	leaves are antiperiodic, heal ulcers, and are used in rheumatism, and the juice of the leaves is given in erysipelas. Leaves lessen inflammation. Leaves have been beneficially used in facial paralysis and rheumatism when rubbed into the affected part. The pulp of the pod is an aggregable laxative.[14,15] Externally, the leaves are ground into a paste and applied to ringworm.[15] Root acts as a laxative, purgative, tonic, and febrifuge, also useful in skin diseases, leprosy, tuberculous glands, syphilis, and to cure burning sensations.[14,15,16] Fruit is cathartic, digestive, purgative, antipyretic, and cures leprosy, heart diseases, and abdominal pains.[14,15] Flowers are purgative; their decoction is used in stomach affections.[16] Pulp with a little almond oil is described as lenitive, used for relieving thoracic obstruction, and the heat of blood.[16] Externally, the pulp is considered a good application for gout, rheumatism, and snake bite.[15] Bark and leaves mixed and

				rubbed with oil and applied to pustules, ringworm, insect bites, facial paralysis, and rheumatism.[15] Powdered seeds are prescribed as an emetic. And the shell of the pod rubbed down with saffron, sugar, and rose water in difficult parturition.[16] Root given as a tonic and febrifuge. It is useful in fever, heart diseases, retained excretions, and biliousness.[14,15] The buds improve taste and are used as a laxative and antipyretic.[14] The flowers and leaves are said to have lenitive properties.[16]
2.	*C. tora,* Linn/ *C. toroides*/ *C. foetida*/ *C. obtusifolia*/ *C. tagara*	China, Nigeria	Leaves, seeds, and roots	Both leaves and seeds are valuable remedies in skin diseases, chiefly for ringworm and itch. Seeds are used externally and internally in all sorts of eye diseases, leprosy, and psoriasis [14,15] Pods are used in dysentery and eye diseases.[14] Root is tonic, stomachic, and rubbed into a paste with lime juice is specific for ringworm and buboes in plague.[14,15] Leaves are used as a mild laxative, anthelmintic, antiperiodic, aperient, and given to children in intestinal troubles.[14] Leaves decoction is used in children for feverish attacks. It forms a warm remedy for gout, sciatica, and joint pains. The drug is also used in snakebite.[14,15]
3.	*C. alata*/ *C. bracteata* / *C. herpetica*	India, China, Philippines Island, Brazil, West Indies, French Guiana, Gold Coast	Leaves and flowers	Leaves cure itching, cough, asthma, ringworm, skin diseases, and are used as vermicide in Ayurveda. Leaves are regarded as excellent medicine for ringworm. Used in skin diseases and is useful in snake bites. Leaves also have a purgative property.[14] In Northern Nigeria, the stem, leaf, and root decoction are used in the treatment of wounds, skin, respiratory tract infections, burns, diarrhoea, and constipation. Also in the South-Western regions, leaf decoction serves as an antidote to body and abdominal pain, stress, and toothache [17] It also cures dermal infections and convulsions.[17]
4.	*C. auriculata*	India, China, Egypt	Roots, leaves, flowers, bark, and seeds	Seeds are refrigerant and attenuant, are also used in diabetes and chylous urine. Bark is astringent and tonic. Root decoction is used as an alterative. Decorticated seeds in fine powder or paste are valued for local application to purulent ophthalmia or conjunctivitis. Flowers are used as pessaries by women to check excessive menstrual flow. Infusion of bark is used for enemas, gargles, etc. Compound syrup is prescribed for nocturnal emission.[15]
5.	*C. acutifolia* (Alexandrian senna)	Egypt, India	Pods and dried leaves	Leaves and Pods have purgative properties. Externally powdered drug mixed with vinegar and made into a plaster, applied locally in certain skin diseases. *Senna* leaves combined with henna leaves are used as a hair dye to make the hair black.[15]

6.	*C. glauca*, Lam.	India, China, Guadelpe	Bark and leaves	Bark and leaves are used to treat diabetes and gonorrhea.[15,19] possess anti-inflammatory, anti-oxidant, and anti-diabetic properties.
7.	*C. pumila*, Lam or *Chamaecrista pumila/ Senna prostrata* Roxb /*Cassia prostrata*	India, China	Seeds	Seeds are given as a purgative.[14]
8.	*C. sophera*, Linn/ *Cassia eoromendeliana*	India, China, Philippines Island, Arabia, Syria	Bark, leaf, seed, root, and root-bark	It is considered to have expectorant properties.[14] Bark, leaves, and seeds are cathartic, and the juice of leaves is specific for ringworm, also for dhobi-itch.[14,15] Root is administered internally with black pepper for snake bites.[14] Infusion of bark or powdered seed with honey is given in diabetes.[14] Ointment of the bruised seed and leaves is applied for ringworm, pityriasis, and psoriasis.[15] Infusion of the fresh leaves is a useful injection for gonorrhea. Internally used as an anthelmintic.[15] Externally used for washing syphilitic sores. Mixed with sugar given for jaundice.[14,15] The plant is used as an expectorant.[14]
9.	*C. timoriensis*, DC.	India, China	Flowers	This species is used for treating toxins, scabies, itching, and skin diseases, and as an anthelmintic medicine. It is also used as a general tonic, antitumor, and in blood disorders.[20]
10.	*C. occidentalis*, Linn.	Philippines Island, Mexico, Central America, Brazil, West Indies, Gambia, French Guiana, Gold Coast, Nigeria, West Africa, South Africa	Leaves, seeds, and roots	Decoction of these parts is used as a Purgative. Seeds are also febrifuge.[15] Root is useful in ringworm, elephantiasis, and scorpion stings.[14] Root juice is useful in ringworm, heals wounds, and cures ascites.[14] Seeds are used in cough and whooping cough, winter cough, and cough in animals. To treat convulsions in children.[14,15] Seeds and leaves with grease applied externally to treat slight sores, itch, blisters, etc.[15] Infusion of the root is used as an antidote to various poisons, as well as fevers, in neuralgia, and dropsy.[15] Leaves are aphrodisiac, stomachic, cure cough, hiccup, asthma, fever, sore throat, and biliousness.[14] They are used in the treatment of hypertension, dropsy, diabetes, rheumatism, ringworm, and eczema.[21] A decoction of leaves, root, and flowers is used in hysteria to relieve spasm and flatulence of dyspeptic, nervous women [15] Fruits are used to cure scorpion stings.[14] Aerial parts of *S. occidentalis* are used for the treatment of parasitic skin infections.[21]
11.	*C. rugosa*, Don.	Brazil	Seeds, roots	Seeds are used to treat parasitic worm infestations. Roots are used in the treatment of poisonous snake bites.[22]

12.	*C. javanica*, Aublet.	Guiana, China, Southeast Asian countries	Bark, leaves, pods	Bark is used as one of the ingredients in an antidiabetic ayurvedic formulation. Leaves have been proven to be active against Herpes simplex infection [23] Pods are used medicinally as a substitute for cassia fistula. Pods are used as a purgative. It is applied to treat gastric pain, cold, malaria, measles, chickenpox, and constipation. It is also used as an antimicrobial agent. [24]
13.	*C. seiberiana*, DC.	Guadeloupe, French Guiana, Gold Coast, West Africa, South Africa		The liquid obtained after soaking the roots in water is used for a bath to remedy tiredness and body massage. A decoction of the bark, leaves, or root is used for the treatment of dysentery, diarrhoea, and vomiting. The twigs are also used for the treatment of trypanosomiasis. Root bark is used in the treatment of dysmenorrhea and pain associated with gastric ulcers.[25]
14.	*C. nigricans*, Vahl.	French Guiana, Senegal	Roots and leaves	All parts are used as an antiperiodic agent. [26] The pulverized leaves are employed as an appetizer and febrifuge. While the leaf decoction is used in treating fevers.[26,27] The root infusion is administered as a purgative and vermifuge. [26, 27] A pinch of the grounded leaves is taken with water for the treatment of peptic ulcers.[27] The leaves of *C. nigricans* Vahl are claimed to possess analgesic, antiulcer, and antioedema activities, and they are beneficial in the treatment of gastrointestinal disorders [26]
15.	*C. obovata*	French Guiana, West Africa, South Africa, Egypt, Arabia, Syria, Europe	Leaves	Laxative and purgative. Externally, leaf powder is applied to certain skin diseases. *Senna* leaves combined with henna leaves are used as a hair dye to dye grey hair black.[15]
16.	*C. podocarpa*, Guill. And perr.	French Guiana, Gold Coast	Leaves, roots, and flowers	The infusion or decoction of the leaves is given as a mild laxative. In large doses, it acts as a purgative. The decoction of the leaves, root, and flowers is given for the treatment of venereal diseases in women. The fresh leaves are ground and applied as poultices to the swellings and wounds, and are used both internally and externally for skin diseases and yaws.[28]
17.	*C. absus*, Linn.	Gold Coast, Tropical Africa	Seeds and leaves	Seeds are attenuant and astringent, used to strengthen the sight when used as a collyrium, plaster of seeds on wound application, and on penis sores. Powdered seeds are introduced beneath the eyelid in case of purulent ophthalmia and conjunctivitis, possess diuretic and stimulant properties, and are used as a cathartic in habitual constipation. They are efficacious in case of ringworm and aphrodisiac.[15]

18.	*C. mimosoids*, Linn.	Gold Coast, South Africa	Roots	Root is given in spasms of the stomach. The plant is sometimes used medicinally as a cure for colic.[14,15] Leaves are used in the treatment of asthma, typhoid fever, stomach problems, etc. The roots and seeds are useful in whooping cough and antispasmodic; the seeds are used as a stimulating drink.[29]
19.	*C. abbreviate*, Oliv.	South Africa	Root, stem-bark, leaf, fruit	Roots are ground into powder, mixed with water, and used to wash dirty blood, referring to a woman who has miscarried. It is an aphrodisiac and is an abortifacient. Decoction of the stem bark is taken orally to treat stomachache and malaria. Leaf decoction may be taken to treat malaria. It may also be used to treat skin rashes associated with HIV and AIDS infections. Fruit decoction is taken to treat malaria. It possesses antimicrobial, antimalarial, anthelmintic, antioxidant, and antidiabetic properties.[30]
20.	*S. Petersiana*	East Africa	Leaves, roots	The leaf extract showed cytotoxic properties against breast cancer cells.[31] Samples from the plant aerial part also displayed mild antilipidemic effects with significant antihyperglycemic properties.[31] The leaves are utilized to manage malaria and typhoid fever.[32] Roots are employed as medicine for coughs, stomach aches, and sexually transmitted diseases such as syphilis [32] Plant leaves were reported to show antifungal and antibacterial activities.[32]
21.	*C. lanceolata*, Linn /*C. angustifolia*/ *C. elongata*	Egypt, India (22,33)	Pods and dried leaves	Are laxatives and purgatives. Externally powdered drug mixed with vinegar and made into a plaster, applied locally in certain skin diseases.[15] It is also used in irritable bowel syndrome, haemorrhoids, and weight loss.[1] A mixture of powdered seeds mixed with curd is useful to treat ringworms [1]
22.	*C. laevigata*, Wild.	Brazil, Gold Coast	Aerial parts	Anti-inflammatory and antinociceptive (pain-relieving) effects have been demonstrated in both in vitro and in vivo studies using the ethanol extract of aerial parts.[33]
23.	*C. multijuga*, Rich.	Brazil	Leaves	Used for treating gastrointestinal, respiratory, and skin conditions.[34]
24.	*C. quinquangulata*, Rich.	Brazil		No documentation available
25.	*C. sclerocarpa*, Vogel.	Brazil		No documentation available
26.	*C. marilandica*, Linn.	North America	Leaves	The leaves and seed pods act as effective cathartics, promoting bowel movements.[14]
27.	*C. bearensis*, Miq.	East Africa		No documentation available
28.	*C. aethopica*, Guib.	Ethiopia, Nobia	Leaves	Leaves are used to treat constipation by promoting bowel movements, thereby aiding in the easy passage of stool.[14]

29.	*C. goratensis*, Fres.	Nigeria	Seeds, leaves	Seeds are used as a substitute for coffee. Leaves are cooked as a vegetable in some regions.[35]
30.	*C. splendida*, Vogel.	Brazil		No documentation available
31.	*C. sericea*, Sw.	Brazil		No documentation available
32.	*C. grandis*. Linn. fil.	Brazil, Guiana, West Indies	Fruit pulp, leaves	The fruit pulp and decoction of leaves are used to induce bowel movements; reportedly more potent than *Cassia fistula*.[36]
33.	*C. cathartica*, Mart.	Brazil		No documentation available

Figure 1: *Cassia angustifolia*

Table 3: Modern scientific reports on the pharmacological actions of the species of *Senna*

S. No.	Variety/ Species	Part used	Extract used	Pharmacological activity	Reference
01.	*Cassia angustifolia*	Leaves	Aqueous extract	Antimicrobial activity	Morid Ahmadi *et al.* 2024[1]
02.	*S. alata*	Leaves	Methanolic extract	Antimicrobial activity against multi-drug resistant (MDR) bacterial strains	Tatsimo *et al.* 2017[3]
03.	*S. macranthera*	Flower	Aqueous extract	Antimicrobial activity against *C. glabrata, C. tropicalis,* and *C. albicans*	Nascimento *et al*. 2020[3]
04.	*S. occidentalis*	Dried fruits	Ethanolic extract	Antimicrobial activity against *S. aureus, E. coli*	Essien *et al*. 2018[3]
05.	*S. podocarpa*	Leaves and roots	Aqueous extract	Anti-gonorrhoea activity against *Neisseria gonorrhoeae*	Malmir *et al*. 2015[3]
06.	*S. singueana*	Leaves	Ethanolic extract	Antimalarial activity against *Plasmodium berghei*	Hiben *et al*. 2016[3,37]
07.	*S. singueana*	Leaves	70% aqueous acetonic extract	Anthelmintic activity against *Haemonchus contortus larva*	G. Mengistu *et al*. 2017[37]
08.	*S. spectabilis*	Leaves	Aqueous extract	Antiprotozoal activity against *Trypanosomal brucei rhodesiense*	Lim *et al*. 2018[3]
09.	*S. racemosa*	Roots, bark, and leaves	Alcoholic extract	Antiprotozoal activity against *Giardia intestinalis* and *Entamoeba histolytica*	Moo-Puc *et al*. 2007[3]

10.	*S. alata*	Leaves	Alcoholic extract	Anthelmintic Activity	Anbu J *et al*. 2013[38]
11.	*S. alata*	Flowers	Volatile oil (LA)	Antifungal activity against *Candida* and *Aspergillus* species	Essien EE *et al.* 2011[38]
12.	*S. singueana*	Flowers	Essential oil (LA)	Antifungal activity against *Candida albicans*	Adedoyin B *et al*. 2019[37]
13.	*S. alata*	Leaves	N-hexane, ethyl acetate, butanol, and aqueous extract	Antiviral activity against dengue virus Serotype-2 strains	Angelina A *et al*. 2017[38]
14.	*Senna singueana*	Leaves	Aqueous extract	Laxative activity	Odoh SE *et al*. 2018[37]
15.	*S. racemosa*	Stem bark	Methanolic extract	Anti-Giardia activity against *Giardia intestinalis* infection	Caamal-Fuentes *et al*. 2016[3]
16.	*S. spectabilis*	Leaves	Decoction	Antidepressant or anticonvulsant activity	Nkantchoua *et al.* 2018[3]
17.	*S. singueana*	Root bark	Aqueous extract	Antinociceptive activity	Kariuki HN *et al.* 2012[37]
18.	*S didymobotrya*	Leaves	Dichloromethane extract	Antipyretic activity	Mworia *et al*. 2019[3]
19.	*S. septemtrionalis*	Aerial part	Ethanolic extract	Anti-inflammatory	Arana-Argaez *et al.* 2019[3]
20.	*S. singueana*	Leaves	Alcoholic extract	Antidiabetic activity	Ibrahim and Islam, 2014[3]
21.	*S. alata*	leaves and flowers	Aqueous extract	Antidiabetic activity	Naowaboot J *et al.* 2015[38]
22.	S. singueana	Stem bark	Aqueous extract	Antidiabetic activity	Ibrahim MA et al. 2014[37]
23.	*S. singueana*	Bark	Alcoholic extract	Antioxidant activity	M. Sobeh et al. 2017[37]
24.	*S. alata*	Leaves	Methanolic extract	Antioxidant activity	Panichayupakaranant P *et al*. 2004[38]
25.	*S. alata*	Leaves	Aqueous extract	Anti-lipogenic activity	Naowaboot and Wannasiri, 2016[3]
26.	*S. singueana*	Bark	Alcoholic extract	anti-apoptotic activity	Sobeh M *et al*. 2017[37]
27.	*S. alata*	Leaves	Decoction	Dermatophytic Activity against *S. pyogenes, S. aureus, K. pneurnoniae, E. coli, S. rnarcescens, P. cepacia*, and *P. aer uginosa*	Benjamin TV and Lamikanra A, 1981[38]
28.	*S. alata*	Leaves	Aqueous extract	Antihyperlipidemic activity	Naowaboot J *et al.,* 2015[38]

Cassia angustifolia:

In Unani medicine, it is known as *Sana Makki,* "Mecca Senna," and is commonly known as Indian Senna or Tinnevelly Senna due to its historical cultivation and trade routes. Highlights the origin in Tirunelveli and trade routes through Arabian ports. It is the best variety among all *Senna* varieties; its function lasts up to 7 years.[11,18] Its leaves are lanceolate in shape with entire margins and pinnate venation. The apex is acute, ending in a sharp spine, while the bases of the leaflets are asymmetrical, bearing transverse lines that are more prominent on the lower surface. Both surfaces are covered with trichomes, although the pubescence is less dense.[3,8,10] The texture is firm yet flexible,[8] and the color varies from pale green, yellowish green, and pale yellow to greenish yellow.[7,8,10,13,18] Leaves are 3-6 cm long, greenish-yellow in colour.[11,12,13] Flowers are yellow/bluish. The flowers consist mostly of five petals and sepals. Generally, the inflorescence formed racemes at the edge of each branch.[3,6,11,12,13] The primary pharmacological action of *Senna* is purgation, attributed to the presence of cathartic acid in its leaves.[18]

Table 4: Taxonomical classification of *Cassia angustifolia*[1]

Botanical Name	**Cassia angustifolia**
Kingdom	Plantae
Sub Kingdom	Tracheobionata
Division	Magnoliophyta
Class	Magnoliopsida
Subclass	Rosidae
Order	Fabales
Family	Caesalpinacae
Genus	*Cassia*
Species	*angustifolia*

Table 5: Vernacular names of *Cassia angustifolia* [1,4,5,6,7,8,9,10,15]

Language	**Names**
Common names	*Senna, Indian senna*
English	*Indian Senna*, *Tinnevelly Senna*
Arabic	*Sana Makki*
Persian	*Sana*
Urdu	*Sana*, *Barg-e-Sana*
Sanskrit	*Swarnpatri, Bhumiari, bhupadma*
Hindi	*Sanaya, Sanai, Hindisana*
Tamil	*Nila-vakai*
Telugu	*Nela-tangedu*
Kannada	*Nelavarike*
Malayalam	*Nila-vaka*
Marathi and Bengali	*Sonamukhi*
Canada	*Nelavrika, Sonamukkhi*
Punjabi	Sarna

Temperament: Hot 2 Dry 1[9]

Dose: 3-5 gm (Laxative), 7-9 gm (Purgative)[9]

Substitute: Turbud (*Ipomoea turpethum*), Banafsha (*Viola odorata*), Halela Zard (*Terminalia chebula*)[1]

Side Effects:

1. When *Senna* is used alone, it causes nausea, spasm, thirst, and irritation; so, always take it along with rose petals or *Anisun* (*Pimpinella anisum*) seeds. Make it in powder form and then detoxify with almond oil. [12]
2. Toxic to the liver.[13]
3. Indian *Senna* can cause some side effects, including cramps, diarrhoea, and stomach discomfort. Long-term use can also change the amount or balance of some chemicals in the blood (electrolytes) that can cause heart function disorders, muscle weakness, liver damage, and other harmful effects.[2]
4. Causes nausea, restlessness, and abdominal pain.[1]

Toxicity study:

Chronic use of laxatives has been associated with alterations in intestinal morphology, including changes in the shape and rarefaction of microvilli, mitochondrial damage, increased lysosomes in colonocytes, plication of the lateral cell membrane with widened intercellular spaces, and the presence of intracellular inclusions. One study reported that sennosides induced melanosis coli in 12–31% of constipated patients after 4–13 months of use, which resolved within 5–11 months following discontinuation.[4]

Corrective: In USM, the side effects of senna are corrected by giving *Roghane Badam* (almond oil), *Gule Surkh* (rose flower), *Namak Toam* (common / table salts).[9]

Table 6: Pharmacological actions of leaves of *Cassia angustifolia* in Unani and Ethno-medicine

Actions mentioned in the Unani system of medicine	**Actions mentioned in Ethno-medicine**
Purgative[7,8,10,11,12,13,18,44]	Laxative[6,14]
Carminative[7,11,13,44]	Purgative[6,14]
Laxative[10,11,13]	Anti-inflammatory[3,6,14]
Cathartic[10]	Appetizer[6,14]
Anti-inflammatory[44]	Digestive[6,14]
Detergent/Blood purifier[13]	Demulcent[14]
Deobstruent[13]	Emetic[14]
Concoctive[1,9,44]	Intestinal infestation[14]
Detoxicant[9,44]	Skin diseases[6, 14]
Purgative for phlegm, yellow bile[1]	Anti-pyretic[14]
Colon stimulant[9,44]	Carminative[14]
Stomachic[9,44]	Abortifacient[14]
Diluent[9,44]	
Drying action[44]	
brain scavenger[1]	
cardiac tonic[1]	

Table 7: Some compound Formulations of leaves of *Cassia angustifolia* and their uses in the Unani System of Medicine [11,13]

S.no	Compound formulation	Uses
01.	*Itriphal Sanayi*	Constipation, flatulence, bleeding piles[39,40,41]
02.	*Itriphal Ustukhuddus*	For evacuation of phlegm and black bile [40,42]
03.	*Itriphal Shahtra*	Syphilis, headache, vertigo, hair falling[40,42]
04.	*Itriphal Mus'hil*	For evacuation of morbid humours from the brain, Chronic headache [39,40]
05.	*Itriphal Aftimoon*	Melancholia[41]
06.	*Itriphal Zamani*	Constipation, Melancholia, cold, headache, colic[41,43]
07.	*Itriphal Shahtra alwi khan*	Headache, black bile diseases [39,42]
08.	*Itriphal kishneez*	Melancholia, cardiotonic[39]
09.	*Itriphal Kanbeli*	Intestinal worms, morbid humours evacuant, and arthritis[39]
10.	*Itriphal Mulayyan*	Headache, Tinnitus[39,43]
11.	*Jawaris Ood mulayyan*	Appetizer, constipation, Stomachic, headache[42]
12.	*Habbe Shibyar*	Evacuation of morbid humours from the brain, headache
13.	*Habbe Aftimoon*	Melancholia, black bile diseases [41]
14.	*Habbe Falij*	Paralysis[41]
15.	*Habbe Jehat*	Headache[39]
16.	*Habbe Ayarij*	Paralysis, facial palsy, headache, Melancholia, stomach pain[39]
17.	*Habbe Mubarak*	Stomach pain, constipation[39]
18.	*Habbe Mafasil*	Joint pian[39]
19.	*Habbe Halila*	Melancholia[39,42]

Medicinal uses of *Cassia angustifolia* in Unani Medicine:

Leaves of *Senna Makki* have long been used in Unani Medicine to treat various ailments.

1. *Senna* and its preparations are used to treat chronic constipation.[7]
2. The paste made from powdered leaves mixed with vinegar is applied to skin conditions to help eliminate pimples, pityriasis alba, and patchy hair loss.[1]
3. Due to its blood-purifying properties, its syrup is used to treat skin issues such as itching and scabies.[12]
4. Powdered *Senna* leaves are used for constipation, occasional fever, arthritis, sciatica, gout, knee osteoarthritis, asthma, and more.[13]
5. Its decoction is also used for skin ailments such as pruritus and scabies.[13]
6. *Senna* leaves are applied topically as an ointment to promote wound healing.[45]
7. Consuming 100 g of *Senna* with 70 ml of olive oil orally helps to expel phlegm and alleviates joint and back pain.[45]
8. Taking 4.5 g of *Senna* powder with honey for 3-7 days can relieve joint pain.[45]
9. A mixture of 27 g *Senna* and 7-14 g rose petals (both in powder form) with sugar is used to treat piles, sciatica, and gout, functioning as a blood purifier, deobstruent, carminative, and diuretic.[45]
10. A blend of powdered *Cassia angustifolia* and *Cassia fistula* seeds with curd can treat ringworm.[1]
11. It is believed to help prevent premature greying when *Senna* and *Henna* leaves are ground together and applied as a head mask.[1]
12. Besides its laxative effects, it is also used for loss of appetite, hepatomegaly, splenomegaly, indigestion, malaria, skin diseases, jaundice, and anaemia.[6]
13. It aids in purging phlegm, black bile, and yellow bile, making it useful for headache, epilepsy, migraine, joint pain, asthma, and colic.[44]
14. The plant is also used for leprosy, poisoning symptoms, foul breath, bronchitis, and tumours.[14]

Medicinal uses of *Cassia angustifolia* in other Traditional medicine:

1. The tea made from crushed leaves is used to treat throat inflammation and constipation. [46]
2. The plant is employed to treat hypertension, dropsy, diabetes, fevers, biliousness, rheumatism, ringworm, and eczema; leaves and young pods are eaten, usually steamed or cooked in vegetable dishes or salads; seeds are roasted and used as a coffee substitute.[47]
3. Some crude and partially purified fractions of *Senna* flowers show antibacterial activity against *Staphylococcus aureus, Streptococcus faecalis,*

Micrococcus luteus, Bacillus subtilis, and *Pseudomonas putida*. [48]

4. It also treats skin infections, convulsions, and acts as a purgative.[38]
5. Leaf decoction is used as an antidote for body and abdominal pain, stress, and toothache. [38]
6. Decocted stem, leaf, and root are used for wounds, skin and respiratory infections, burns, diarrhoea, and constipation. [38]
7. In Egypt, leaf decoction has been used as a bowel stimulant to promote peristalsis and reduce water absorption from the colon to prevent constipation. [38]
8. In Cameroon, stem, bark, and leaves are used for gastroenteritis, hepatitis, ringworm, and skin infections.[38]
9. It can be mixed with herbs like ginger, cloves, fennel, cinnamon, and coriander, often for anti-nausea effects.[2]
10. *Senna* is used as a diuretic for liver disorders.[3]
11. The plant is rich in tannins, used for tanning leather and ink production.[3]
12. In traditional medicine, it is used to treat diabetes and cancer.[3]
13. It is also used as a natural dye and in paper manufacturing.[3]

Evidence-based medicinal uses of the leaves of *Cassia angustifolia*

1. It exhibits significant anticancer activity against liver cancer.[49]
2. *Senna* is primarily used for therapeutic purposes as a blood purifier, to treat skin conditions, and to relieve constipation.[1]
3. The aqueous extract of *Senna* leaves is used as an abortifacient, to hasten labour, and for the treatment of diarrhoea and upper respiratory tract infections.[38]
4. *Senna* leaves exhibit anti-inflammatory, laxative, and intestinal motility–enhancing effects.[46]
5. The ethanolic extract of *Senna* leaves shows hepato-renal protective effects and is used in the management of diabetes.
6. The aqueous extract of *Senna* leaves has anti-lipogenic and antifungal activities, useful for managing diabetes, controlling weight, and treating skin conditions such as scabies and ringworm.
7. The methanolic extract of *Senna* leaves demonstrates antibacterial and antidiabetic activities, and is used for the treatment of gonorrhoea, gastrointestinal and skin diseases, urinary tract infections, and diabetes.
8. The ethanolic extract of *Senna* leaves exhibits antimicrobial, antioxidant, anti-inflammatory, anticancer, and antiviral activities. It is also used as a purgative, expectorant, astringent, vermicide, and for the treatment of malaria and superficial fungal infections.
9. The hexane extract of *Senna* leaves possesses anti-implantation, anti-gonadotropic, and anti-progesterone properties, and is traditionally used for uterine cleansing.
10. The anthraquinone fraction of *Senna* leaves exhibits antifungal activity and is used for treating skin infections.
11. The petroleum ether extract of *Senna* leaves shows immunomodulatory effects and acts as an immune stimulant. [38]
12. A decoction of *Senna* leaves is administered for both communicable and non-communicable diseases, including malaria, typhoid, gonorrhoea, bilharzia, cancer, epilepsy, and ulcers.[37]
13. In ethnoveterinary practice, cattle with abdominal cramps are treated with a thick liquid prepared by pounding fresh *Senna* leaves.[37]
14. For puff adder bites, an infusion of *Senna* leaves is administered orally for five consecutive days.[37]
15. Root powder is applied for wound healing, typically over five days. [37]
16. Snake bites are treated by chewing the bark and swallowing the juice.[37]
17. Powdered dried stems, leaves, bark, and roots mixed with butter are applied to swollen areas.[37]
18. A mixture of powdered leaves, stems, roots, flowers, and bark taken with water is traditionally used for epilepsy.[37]
19. The leaf extract of *Cassia angustifolia* exhibits significant antifungal activity against fungal strains such as *Candida albicans*, *Candida parapsilosis*, and *Candida auris*.[2]
20. Hot-water extracts of *Senna* leaves administered orally in type 2 diabetic patients to relieve constipation and help normalize red blood cell function. They are also reported to correct skin infections, liver disorders, neurological disorders, and certain physiological disturbances. [50]

Chemical constituents

Table 7: Class of Phytochemicals present in *Cassia angustifolia*

Class of Phytochemicals	Compounds Identified	Activity	References
Anthraquinones & Derivatives	Anthraquinone, Chrysophanol, Emodin, Aloe-emodin, their glycosides, Monoanthrones & Dianthrones	Major active constituents: laxative/cathartic activity	3,7
Anthracene Glycosides (Sennosides)	Sennosides A–D	Pharmacologically active cathartics	7,8,46
Flavonoids	Kaempferol, Isorhamnetin	Antioxidant & therapeutic potential	46
Alkaloids	Piperidine, Cassine, Pyridine & homologous alkaloids	Few reported minor constituents	3
Terpenoids	Triterpenoids, Sesquiterpenoids	Common terpenoids in *Senna* spp.	3
Steroids	Stigmasterol, β-Sitosterol, Daucosterol, (-)-7-Acetoxy-9,10-dimethyl-1,5-octacosanolide, (E)-Eicos-14-enoic acid, Friedelin	Lipid components, structural role	3
Essential Oils & Resins	Essential oils, Chrysophanic acid, Resin	Bioactive, contribute to therapeutic activity	2,3,15
Phenolic Compounds	Six phenolics isolated from bud & flower (by LC-ESI-MS)	Abundant potential biomarkers for herbal therapy	3,4,5,8,10
Other Constituents	Calcium oxalate (~12%), Galactomannan, Sulphated derivative	Structural/storage role	15,46

New Extraction Techniques of Sennosides and Anthraquinone:

The extraction of bioactive constituents such as sennosides and anthraquinones from *Senna* has been the subject of considerable pharmacognostic investigation. Among these, sennosides are the most important anthracene glycosides contributing to the well-known cathartic activity of the plant. Several extraction methods have been described, with particular emphasis on their optimization for commercial use. Calcium sennosides of varying strengths are commonly obtained by solvent extraction procedures. In one widely employed method, powdered *Senna* leaves are subjected to treatment with 90% methanol or 80% acetone for six hours, followed by extraction with cold water for three hours. This procedure yields an extract containing approximately 17–18% sennosides, corresponding to about 62% recovery of the total sennoside content.[7]

Anthraquinones, another major class of phytoconstituents present in *Senna*, have also been extensively studied due to their pharmacological relevance. Recent advances in extraction technology have introduced microwave-assisted extraction as an efficient and environmentally friendly approach. Using the SP-Microwave system (CEM), which is operated via **Synergy™** software, anthraquinones can be rapidly and selectively isolated, demonstrating the potential of modern techniques to enhance yield and reduce processing time.[17,51]

Summary

Senna species hold an important place in traditional and modern medicine, with a particularly prominent role in Unani pharmacotherapy.[1] The genus has been extensively studied not only for its therapeutic potential but also for its botanical characteristics, classification, and ethnomedicinal applications.[52] Morphological evaluations, particularly the classification of *Senna* species based on the number of leaflets, provide an essential taxonomic framework for differentiating among species.[14] This botanical diversity is further reflected in the wide distribution of more than 260 species, many of which are valued in various cultural and regional healthcare systems.[1]

Medicinal applications of *Senna* extend across multiple countries worldwide, with different species being utilized according to local traditions.[3] Such ethnomedicinal practices include its use as a purgative, anthelmintic, febrifuge, and in the management of skin, gastrointestinal, and infectious diseases.[36,48] The global distribution of vernacular names[1] underscores the widespread recognition of the plant and its integration into diverse medical traditions.

Modern scientific reports have provided strong evidence in support of these ethnomedicinal uses,

attributing a broad spectrum of pharmacological activities to the genus.[3] Crude extracts, fractions, and isolated metabolites of *Senna* have been shown to possess antioxidant, anti-inflammatory, analgesic, antimicrobial, antimalarial, antifungal, antiviral, antidiabetic, antihyperlipidemic, anticancer, and hepatoprotective effects.[37,38] Such findings bridge traditional applications with experimental validation, highlighting the genus as a versatile source of bioactive compounds.

Among the species, *Senna makki* (*Cassia angustifolia*) occupies a special place in the USM.[2] It is described with distinct temperament (*Mizāj*),[9] specific therapeutic indications, and corrective (*Musleh*) substances [9] to minimize side effects, reflecting the holistic approach of Unani pharmacology. Classical texts emphasize its use as a purgative (*Mushil*) and blood purifier (*Musaffi*), while modern studies confirm its pharmacological relevance through the presence of sennosides and anthraquinones.[3,7,8] However, adverse effects such as abdominal cramping, electrolyte imbalance, and potential dependency upon prolonged use are well-documented,[1,4] underscoring the need for correctives and cautious therapeutic application.

In addition to Unani medicine, the phytochemical richness of *Senna* has been substantiated by modern studies, with anthracene derivatives, flavonoids, alkaloids, terpenoids, steroids, essential oils, and phenolic compounds being widely reported. [2,3,4,5,8,10,15] Anthraquinone is one of the major phytoconstituents found in the Senna genus.[3] Advances in extraction techniques, such as solvent-based and microwave-assisted extraction, have enhanced the yield and efficiency of key metabolites like sennosides and anthraquinones, supporting their commercial use in modern pharmaceutics. [7,17,51]

Conclusion:

This review paper on *Senna* integrates traditional knowledge with contemporary pharmacological insights, providing a multidimensional perspective. Its ethnobotanical diversity, global medicinal applications, rich phytochemical profile, and validated pharmacological activities collectively reinforce its position as an important medicinal genus with continuing relevance in both traditional and modern systems of medicine. Future research on *Senna* should aim to integrate traditional knowledge with cutting-edge scientific approaches, ensuring that *Senna* continues to evolve as a safe, effective, and globally relevant medicinal plant.

Conflicts of interest

The authors report that they have no conflicts of interest.

Author Contributions: All authors have equal contributions in the preparation of the manuscript and compilation.

Source of Support: Nil

Funding: The authors declared that this study has received no financial support.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data supporting this paper are available in the cited references.

Ethical approval: Not applicable.

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