Phytochemistry, Pharmacology and Unani traditional uses of Kasni (Cichorium intybus Linn.): A Review

Shamshiya Khatoon*

Assistant Professor, Department of Ilmul Saidla, Hayat Unani Medical College and research center, Lucknow (UP) 226101, India

Abstract

Kasni (Cichorium intybus Linn.) is highly praised in many traditional systems of medicine for medicinal properties of its leaves, seeds and roots. It is grown in Punjab, Kashmir, Andhra Pradesh, Karnataka and Maharashtra. In traditional medicine, all parts of the plant are used as diuretic, laxative, antibilious, antipyretic, blood purification, appetizer and strength of the stomach. It is also used in the treatment of hepatic failure, jaundice, intermittent fever and mild states of chronic skin diseases. It contains glycosides, flavonoids, saponins, caffeic acid derivatives, inulin, lactucin, sonchuside A, cichoriolide. The scientific analysis of kasni demonstrates many of the activities mentioned in Unani literature. Nevertheless, further research is needed to identify the mechanism, active constituent, and usefulness of kasni in clinical practice. Given the encouraging results against neurological disorders in the prefaces, this aspect should be thoroughly investigated to make it a standard medicine.

Keyword: Kasni; Hepatoprotective; Unani medicine; esculatin

1. Introduction

Kasni (Cichorium intybus Linn.) is a culinary as well as a medicinal herb highly praised in many traditional systems of medicine for medicinal properties of its leaves, seeds and roots. It is grown in Punjab, Kashmir, Andhra Pradesh, Karnataka and Maharashtra. It is also grown around roadsides, railroads and waste grounds, flowering period lasts from June to October. In the 1970s, it was discovered that the root of C. intybus contained up to 40% inulin.

2. Materials and Methods

The information on chicory was obtained from online databases, including PubMed, Google Scholar, Web of Science, Science Direct, and a library search was conducted from classical Unani textbooks. The keywords used for the search were as follows Kasni, chicory, Cichorium intybus, Tukhm kasni. This review mainly focuses on data collected from traditional uses in the Unani system, pharmacological activities, phytochemical constituents, toxicology, and beneficial information for future research perspectives.

3. Results and Discussion

3.1. Botanical classification

Kingdom: Plantae
Phylum: Spermatophyta
Subphylum: Angiospermae
Class: Dicotyledoneae
Order: Asterales

References


*Address for Correspondence:
Shamshiya Khatoon, Assistant Professor, Department of Ilmul Saidla, Hayat Unani Medical College and research center, Lucknow (UP) 226101, India

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Review Article
Family: Asteraceae
Genus: Cichorium
Species: Intybus

3.2. Botanical name: Cichorium intybus Linn

The botanical name of the plant is derived from Greek and Latin. *Cichorium* means field and *intybus* is partly derived from the Greek “to cut”, because of the leaves, and partly from the Latin tubus to indicate the hollow stem.7

3.3. Other botanical names:


3.4. Vernacular names:


3.5. Botanical description:

It is an erect, bushy perennial herb having rhizome which is light yellow from outside and white from within. Rhizome is about 8-10 cm long tapering fleshy somewhat branched and at the top about 1cm wide and densely covered by rootlets. It contains bitter milky juice which tastes sweetish and mucilaginous initially and then very bitter. Stems are 0.3-0.9 m in length, angled are grooved. The bark is rather thin, radially striate from the bark covered with vessels and separated by a brown cambium line from the finely porous wood. Branches are tough, rigid, and spreading. Radical and lower leaves are 7.5-15 cm. in length while upper leaves are alternate, small, entire, and their bases dasp the stem. Heads are ligulate 2.5-3.8 cm in diameter, terminal and solitary or axillary's and clustered, sessile or on short, thick stalks. Flowers are white to light blue and lavender, toothed at the ends. There are two rows of involucral bracts; the inner is longer and erect in comparison to the outer bracts which are shorter and spreading. Flowering occurs from July to October. Achenes are smooth, angled, crowned with the ring of pappus scales. Parts generally used are roots, seeds, and herb during blooming period.9

![Figure 1: Kasni (Cichorium intybus). (A) Whole plant of kasni, (B) Leaves, (C) Flower, (D) Seeds](image-url)
3.6. Unani description:
According to Unani physician Hakim Njamal Ghani, kasni is a common plant which grows wild and also cultivated. Its cultivated variety is known as bustani, hindbae shami or hashmi or balaqhi and wild variety is known as dashhi, hindba.
Bustani type is of two varieties: One variety where leaves are long and broad similar as kahu leaves and slightly bitter in taste; flowers are bigger and colour resembles with lajward. This variety is also known as hindbae shami o hashmi o balaqhi. Another variety has smaller leaves and flowers, flowers are bluish/purple and taste is very bitter. This variety is also known as hindbae baqhal. The medicinal properties of the plant are mainly found on the surface of leaves; therefore, it is advised not to wash the leaves.12

3.7. Mizaj (Temperament):
The mizaj of kasni is cold in the last phase of the first degree. Its dry part is dry in first degree and moist part is moist in the last phase of first degree. The cultivated variety is relatively colder and moister while the wild kasni which is also known as tarabhshaqaq is less moist.10

3.8. Parts used:
Root, leaves and seeds are commonly used for medicinal purposes.10

3.9. Afal (Action):
Mafatteh sudud (deobsturant), musaffi dam (blood purifier), muqawwi kabid (hepatic tonic), muqawwi meda (tonic for stomach), muskine atash (thirst reliever), mushil (laxative), qabiz (astringent), habise dam (stypetic), muddire baul (diuretic) and musakk (analgesic).10

3.10. Istemaal (Use):
Warame meda (gastritis), sual (cough), khafqan (palpitaion), sukda ha (headache), khaunoq (diptheria), amraze kabid (liver disorders), istisaq (ascites), ghishyan (nausea and vomiting), amraze kuliya (kidney diseases), ishal (diarrhoea) and muzim umma (chronic fevers).12,10,11

3.11. Nafa khas: Musakkine hararat wa tashangi, dafe hiddate khoon wa safra 10

3.12. Muzir: Muzir for sual (cough) 11

3.13. Musleh: Shakkar safaid and sharbat banafsha 11,10,12


3.15. Migdare khoorak (Dose): 7-9 gm 11; Seeds: 3-6gm, leaves juice:10-20ml, root juice: 50-100ml13

3.16. Murakkabat: Murawwaqain, arq kasni, Arqe biranjfis, ifrifie sana, sharbat kasni, majoone dabeedul ward.1,14,15,16

4. Chemical constituents:
It contains glycosides, flavonoids, saponins, gums, caffeic acid derivatives, esculatin, fructooligosaccharides, inulin, lactucin, sonchuside A, cichioriolide, chlorogenic acid, 3,5-Dicaffeoylquinic acid, 4,5-dicaffeoylquinic acid, crepilidas A, cichoralexin, malic acid, caffeic acid, 3-caffeoylquinic acid, 5-caffeoylquinic acid, 4-cafeoylquinic acid, dicaffeoyltartaric acid, (chicoric acid), cyanidin, glucoside.13,17,18 A recent study has shown that root of chicory consists of high alkaloids, and the root extract of this plant revealed anticancer, antitumor and immunomodulator properties.19 Chicory is used as an adulterant in coffee so as to reduce gastrointestinal problems like gastritis. The sesquiterpene lactones like lactucin and lactucopicrin were used for antibacterial and antimalarial activity, antifungal activity.20 Chicory also has antibacterial and nematocidal effect. Even though it has antibacterial effect but still little is known on human pathogenic bacteria. Inulin is a dietary fiber which is a starch which is not digestible by the humans but can be used as an artificial sweetener. Dried root is used as a diuretic, jaundice tonic, stomachic, liver enlargement, gout, used as a tonic in fevers, rheumatic complaints vomiting, diarrhea, and enlargement of the spleen.21

5. Pharmacological activities

5.1. Hepatoprotective activity:
The aqueous-methanolic extract of the seeds of C. intybus has been investigated for the hepatoprotective activity against acetaminophen and CCl4-induced liver damage in mice, and it was found to decrease both the death rate and the serum levels of alkaline phosphatase, glutamyl oxalacetate transaminase, and glutamyl pyruvate transaminase.22

5.2. Antimicrobial Effect:
The leaf extract of C. intybus also showed moderate activity against multi drug resistant S. typhi. Guaianolides-rich root extracts of C. intybus have shown antifungal properties against anthropophilic fungi Trichophytton tonsurans, T. rubrum, and T. violaceum.20

5.3. Antioxidant Effect:
The flavonoids and phenolic acids present in leaves of C. intybus are known to possess antioxidant activities due to the presence of hydroxyl groups in their structures and their contribution to defense system against the oxidative damage due to endogenous free radicals are extremely important.23

6. Conclusion
Kasni has a long record of its traditional use globally. Historically, Kasni was grown by the ancient Egyptians as a medicinal plant, coffee substitute, and vegetable crop. Inulin from chicyro roots is considered a functional food ingredient as it affects physiological and biochemical processes resulting in better health and decreasing the risk of many diseases. Till date, chicory remains an extremely versatile plant, open to genetic management, and there is interest shown in genetically engineered chicory to obtain higher yields and create new potentials. The documented indigenous knowledge relating to the various medicinal uses of chicory has been supported by phytochemical isolation and investigations into biological activity. Nonetheless, many of its constituents have not been explored for their pharmacological potential, and further research is necessary to gain a better understanding of the phytochemicals against various diseases. Studies about the toxic effect of C. intybus are limited; however, considering that the Asteraceae family is a known source of allergic problems, a contraindication for hypersensitivity should be included in the safety data. Therefore, it’s alleged that Kasni is a propitious traditional medicinal herb which could be of a great benefit to mankind if investigated properly.

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Conflict of Interest
The authors declare no conflict of interests
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