



Literature Review Of Indravaruni (*Citrullus colocynthis* Schard)

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INTRODUCTION

Citrullus colocynthis (L.) Schrad, is a members from 123 genera and over 800 species of Cucurbitaceae family. This family of plants is generally frost-sensitive, intolerant to wet and poorly drained soils, and drought-tolerant(1) other members are bitter apples, cucumbers, gourds, pumpkins, and melons. *C. colocynthis* (L.) Schrad, is distributed in the desert areas of the world, including Sudan, Morocco, Jordan, Tunisia, and Pakistan, and Maharashtra: Ahemadnagar, Pune, Satara Karnataka: N. Kanara, Shimoga Kerala: Idukki Tamil Nadu: North west Punjab, Sind and Central and Southern India.(2).

This plant is a traditional medicine, and a well-known remedy for the treatment of diabetes, jaundice and asthma (*Baquar and Tasnif, 1984, Kirtikar et al., 1984, Qureshi et al., 2010*). Recently, a number of studies have been conducted on the phytochemistry, toxicology and pharmacology (*Salama, 2012, Ali et al., 2013*). The Ayurvedic pharmacopoeia of India indicated the use of the fruit in jaundice, the root in disease of the liver and spleen and leaf in cutaneous affections & alopecia.(3).

DESCRIPTION OF HERB

C. colocynthis is perennial trailing herbs with somewhat woody tuberous root; stems shortly hairy when young becoming scabrid. Tendrils simple, rarely bifid, slender, glabrous. Leaf alternate, elongate-ovate in outline, 10-60 (-110) mm long, 8-55 (-66) mm broad, distinctly scabrid-hairy beneath, smooth except on the nerves above, palmately deeply 3-5-lobed, ultimate lobes pinnately lobulate with central lobe longest, long-ovate in outline; petiole rather densely rough-hairy; probracts lanceolate-elliptic, 4-5 mm long and 1.5 mm broad, caducous. Male flowers on long pedicels; calyx campanulate, 9 (4-8) mm long, lobes 5 mm broad; corolla pale yellow, ovate-acute 8 mm long and 5 mm broad. Female flower on longer pedicels than male, receptacle-tubes are short, lobes lanceolate, 5 mm long; ovary hairy, subglobose or obovate. Fruits 5 cm in diameter, globose, smooth, longitudinally green striped, 5-7 cm in diameter, epicarp thin, filled with a dry spongy very bitter pulp; seeds numerous, ovate-oblong, yellowish brown, not margined, 6 mm long and 3 mm broad.(4,5,6).

Table 1: Botanical description of *Indravaruni*.

Kingdom	Plantae
Subkingdom	Tracheabionta
Division	Magnoliophyta
Class	Magnoliopsida
Subclass	Dilleniidae
Order	Cucurbitales
Family	Cucurbitaceae
Genus	Citrullus
Species	C.Colocynthis

Table 2: Synonyms and vernacular name of *Indravaruni*

English	Bitter apple Citron Colocynth Colocynth bitter apple Fancy gourd Vine of Sodom
Gujarati	Indrayana इंद्रायणा
Hindi	Indrayan इंद्रायण
Panjabi	Kaudatumma, Ghurumba
Malayalam	Kattuvellari Pekumatti
Tamil	Petikari

CHEMICAL CONSTITUTIONS

The compounds of *C. colocynthis* include alkaloids, coumarins, steroids, phenolic acids and higher percentage of Tannins and Flavanoids. Alkaloid I, II & III choline, α -elaterin-2D-glucoside and its aglycone (in all parts); cucurbitacin β and its glycoside, cucurbitacin I & L and their 2-O- β -D glucopyranosides (fruit, leaf, stem); arachidic, linoleic, oleic, myristic, palmitic and stearic acids (also in peels) Saponin and traces of Alkaloids.(7,8,). Cucurbitacins are the main constituents of this species. The serial compounds are bitter-tasting, mainly tetracyclic, highly oxygenated, derived from skeletons [19-(10 \rightarrow 9 β)-abeo-10 α -lanost-5-en]. There are total 12 class of cucurbitacin according to their structure, but not all of them are present in. Among these cucurbitacins, cucurbitacin E is the main component in *C. colocynthis* fruit pulp.(9).

CATEGORIZATION FROM ANCIENT TEXT

According to Acharya Charaka -it is classified in Mulinidravyas, Virechanadravyas.(10).

According to Sushruta - Shyamadivarga, Adhobhaghara.(11).

According to Ashtang – Shyamadivarga.(12).

Table 3: Classical categorization table of *Indravaruni*

Bhavprakash nighantu	Guduchyadi varga
Nighantu Adarsh	Kushmandaadi varga
Kaiyadeva Nighantu	Aushadhi varga
Madanapal Nighantu	Abhyadi varga
Raj Nighantu	Guduchyadi varga
Shodhal nighantu	Guduchyadi varga

Table 4: Properties according to Ayurveda Raspanchaka

Rasa (Taste)	Tikata (Bitter)
Guna	Laghu, Rooksha, Teekshna
Virya	Ushana
Vipaka	Katu
Karma	Kapha-pittahara, Rechaka

Acharaya Bhavmishra mention two varieties of *Indravaruni* i.e *Mahendravaruni* (*T.bracteata*) and *Indravaruni* (*C. colocynthis*) where as in Dhanvantari nighantu mention three types viz, *Indravarni*, *Visala*, and *Svetapuspi*, *C.colocynthis*, *Trichosanthes palmate Roxb.* And *Cucumis trigonus Roxb* respectively.

Therapeutic importance and pharmacological activity

A colossal role of plant in man's life has been reported from ancient to present world. Nearly around 80% of word population is relying on natural medicinal system for basic medical issues.(13). Diverse environmental conditions, physical factors and interesting geographic regions construct remarkable eco-systems, supporting appropriate habitats to a large number of species. That is the only reason; India is additionally called as the hub of medicinal plants.(14). In India, there are plants which are being used for medicine for thousands of years. These plants not only cure physical diseases but also provide essential components for living. Ayurveda, is considered as the most established medicinal system mentioned in the four Vedas written in 500-1000 BC old Indian literature.(15).

1. Alopecia: The root of *Indravaruni* is kept keep soaked in cow's urine for 3 days, then applied after mixing with cow – dung and ghee. The study suggested that the ethanol and petroleum extract of *C. colocynthis* roots when smeared on albino rats to observed the growth of hairs, The growth cycle was observed with the use of 2% of Minoxidil solution which was served as standard. Better quantity of hair follicles was observed successfully using extracts as compare to the standards.(16).
2. Premature graying of hairs: Mature "Colocynth" seeds were compressed to extract the oil. When Regular application of this oil is applied its shows natural black color to the grey hair.
3. Jaundice: In jaundice, when *Indravaruni* mixed with jaggery and given orally is useful.
4. Scrotal swelling: The root of *Indravaruni* is powdered finely and allowed to take with milk after mixing it with castor oil it shows the disappearance of scrotal swelling after three days of regular used.
5. Warts: The root of *Indravaruni* powder is mixed with bulls urine and then pasted on the affected part. It eradicates warts grown on male organ.
6. Arthritis: The root of *Indravaruni* when mixed with Pippali and Jaggery and taken in the dose of 10-15gm. It alleviates arthritis.
7. Rheumatitis: Fresh root of "Colocynth" and "Ashwagandha" (*Withania somnifera* (L.) from Family-Solanaceae) is taken in equal quantities and ground to a fine paste. 2 gm of paste mixed with 5 gm honey and is administered orally twice a day till complete cure is achieved. This therapy is considered to be the very effective.
8. Constipation: Decoction of fresh fruits of "Colocynth" is prepared with water in ratio of 1: 6. The 5 ml decoction is administered orally at bed time for three days. Will help to solve the problem of constipations.
9. Flatulence: Ripe fruits of colocynth are stuffed with black-pepper (*Piper nigrum*) through a hole made in pericarp. Each fruit is covered with mud and baked in cow-dung fire till it becomes red. The ash of Colocynth fruit and black-pepper are collected and stored. 1-0.5 gm ash is given after each meal for 15 days.
10. Leucoderma: Fresh extract of leaf, obtained by squeezing pounded leaves in a muslin cloth, is applied to affected areas of skin twice or thrice a day. Seed oil is applied to de-pigmented areas every third day. The therapy is continued till the pigments reappear and become stable. This is a popular therapy for leucoderma in the study area.
11. The fruit extracts possess insulin-enhancing activity, *C. colocynthis* could directly reduce the formation of glycated hemoglobin (HbA1c), Benariba et al. [72, 73] reported that a concentration–response

correlation was observed with fruit extracts in the modulation of the insulin secretory response to D-glucose. *C. colocynthis* seeds display a direct effect on endocrine pancreatic B cells also.(17).

12. In Chronic open wounds, Fresh root paste of Colocynth, obtained by grinding fresh roots with minimum water, and is applied to wounds thrice a day till it heals up completely.
13. Anti-microbial activity: Anti-microbial activity of the leaf extract was studied against sixteen bacteria and six fungal strains were correlated with standards (Gentamicin 10µg/disc and piperacillin 100µg/disc). The extracts of water have excessive action against bacterial strain of Staphylococcus aureus and E. coli on the other hand strains like Klebsiella pneumoniae and Bacillus subtilis shows a smaller amount of antibacterial action. Best antibacterial actions were found on the extracts of methanol against bacterial strains of Bacillus subtilis, Streptococcus pyogenes, Salmonella typhi.(18).
14. Hypolipidemic: The examination on the hypolipidemic effect of *C. colocynthis* on human was considered. It was reported that intake of powdered form of seeds (300 mg per day) by non-diabetic hyperlipidemia patients is very beneficial in reducing triglyceride and cholesterol level.(19).
15. Antioxidant, anti-inflammatory, analgesic or antiproliferative study was conducted by Saba AB and et al they isolated Cucurbitacins those are triterpenoid steroids which is efficient antioxidant and this property lies in their ability to scavenge free-radicals such as hydroxyl radical, superoxide anions and singlet oxygen. This broad spectrum radical scavenging capacity surpasses what had been reported for other natural antioxidants such as grapeseed extract, wheat, alfalfa and ginkgo biloba extracts. Reports also show that cucurbitacins adequately inhibit lipid peroxidation and oxidation.(20).

CONCLUSION

C. colocynthis is a valuable cucurbit plant and is widely distributed in desert regions around the world. Despite its high dietary value, *C. colocynthis* is not widely known. In our review, we systematically reviewed the research on this traditional medicine and summarized the related data on the photochemical structure, therapeutic uses, importance and toxicity effects, Distribution, Ayurvedic Properties, Chemical composition, Therapeutic Uses, Ethno Medicinal Uses and Pharmacological activities. Also this review clearly shows the importance of *Indravaruni* as useful medicinal plants. This article is an attempt to promote and educate the people to conserve and increased the used of this important medicinal herb which grows wildly in the sandy lands of North West Punjab, Sind and Central and Southern India.

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