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Classical review of *Haridra* (*Curcuma longa*)

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ABSTRACT

Haridra (*Curcuma Longa* Linn.) is one of the patent drug of India and the most valuable drug which is used by the Indians in all the ways for the rituals (in marriages & *poojas*); for preparing food preparation and as usual as home remedy medicine since ancient days. Till today *Haridra* is considered to be the most important drug. The aim of this study is to collect and evaluate the information on *Haridra* an important valuable medicinal plant and is mentioned in different *Ayurvedic* treatises like *Brihadtrayee*, *Lagutrayee*, and *Nigantus*. It is a drug which is having high therapeutic value as the root is available both in dried and wet form and this is used in so many preparations and used as *Ekamuliya Prayoga* (single drug therapy) also and is having highly antimicrobial and anti-fungal and anti-bacterial activity.

Key words: *Haridra, Brihadtrayee, Ekamuliya Prayoga.*

INTRODUCTION

Haridra is considered to be the one of the most important drugs which is easily available at home and can be used as a home remedies since ancient days to today when go through the history of *Haridra* from *Vedic* period to modern era - In Vedic period; *Rigveda*: in the treatment of *Harima, Haridrodana* is mentioned. Later in *Atharva Veda*: In *Switra* and *Palita Haridra* is used with *Indravaruni* and *Nili*. *Haridra* was also used externally for *Udvartana* in *Hridroga* and *Kamala*. *Kousika Sutra* delineated *Haridra* as an antidote of snake venom. *Sayana* claimed *Hridra* as *Medhya* when administered with honey and ghee. In *Brahma Vaivarta Purana* Goddess *Parwati* made a paste of Turmeric to cleanse her body, the same paste was used to make an idol of *Ganseha* and infused life into it, and thus *Ganesha* was born. Later in *Samhita* period *Charaka Samhita*[1] In *Sutrasthana* it was mentioned in, *Lekhaniya, Kustaghna, Kandughna, Krimighna Gana* in *Chikitsasthana* it is used in *Prameha Chikitsa, Arshas Chikitsa* etc.

In *Shushruta Samhita*[2] *Shushruta* mentioned *Haridra* in *Sutrasthana* in *Haridradi Gana*, *Mustadi Gana, Sleshma Samshamana Varga*. Its *Prayoga* in different *Rogas* have been mentioned in *Chikitsasthana* and *Uttaratantra*.

In *Astanga Sangraha*[3]: In *Haridraadi Gana, Mustadi Gana, Tikta Skandha, Lekhaneeya Dravya, Shirovirechanopaga Dravya, Kustaghna Dravya.*

In *Astanga Hridaya*[4]: In *Sutrasthana, Haridradi, Mustadi, Tiktha Skandha, Lekhaneeya Dravya, Shirovirechanopaga, Kustaghna Dravya* and *Chikitsasthana* of *Astanga Hridaya.*

In *Kashyapa Samhita*[5]: In *Kalpasthana* and in *Khilasthana Haridra* is mentioned as an ingredient of

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Dhupa & also in *Chikitsa* of *Kasa*, *Shwasa*, *Charmadala* etc. In *Sangraha Kala* Authors of *Chakradatta*, *Yoga Ratnakara*, *Rasa Ratna Samucchaya*, *Bhaishajya Ratnavali, Rasatarangini*[6], etc. have mentioned this drug in their literature.

When it comes to *Adhunika Kala*: Vaidya P.V. Sharma has explained about *Haridra* in detail. In *Nighantu Adarsha* the drug *Haridra* is mentioned with its properties & *Eka Moolika Prayoga*. Modern botanical books like Indian Materia Medica by Nadkarni (1908).

Indian Medicinal Plants by Kirtikar & Basu (1918), The Wealth of India, Indigenous Drugs of India by, R.N. have identified this drug as *Curcuma longa.* In Dravyaguna Hastamalaka, Vaidya Banwarilal Mishra has mentioned *Haridra* under *Ardraka Kula*. In Dravyaguna Vignana by Achrya Yadavaji Trikamji has mentioned *Haridra* in *Haridradi Varga.*

In Aurvedic Pharmacopia of India and Ayurvedic Formulary of India, Drug *Haridra* has been mentioned. Thus, *Haridra* is one of the best herbal drug and important drug from Vedic period to till today.

Historical background of *Haridra*[7]

Vedic period

By searching the Vedic literature, it was found out that the drug *Haridra* was mentioned extensively. Acarya Sayana claimed *Haridra* as *Medhya* when administered with *Madhu* and *Ghrita*.

Hindu mythology revealed that the herb *Haridra* is included in *Navapatrika* and *Devi Durga* presides over this plant.

According to *Sounakiya Atharva Veda Saṃhita*, *Haridra* is indicated *Svitra* and *Palitva* when used along with *Bhṛṇgaraja, Indravaruni* and *Nili*.

It was also used externally as *Udvartana* in *Hridroga* and *Kamala*. In *Kausika Dharmasutra*, it is delineated that *Haridra* is an antidote for snake venom.

Samhita Kala

Caraka Samhita: In this *Saṃhita*, comprehensive depiction of *Haridra* is found. There is talked about *Rasa, Guna, Virya, Vipaka, Prabhava, Doshika Karma* and therapeutic use of *Haridra*.

Haridra is described in several *Mahakaṣaya, Yavagu*, different *Yogas* like *Nisaamlaki*, *Vasantakusumakar Rasa, Haridrakhanda* etc. in various aspects.

Susruta Samhita: *Acarya Susruta* has mentioned *Haridra* in 3 *Vargas* - *Haridradi, Mustadi* and *Lakshadi Gana. Rasapancak*, therapeutic uses and *Doṣakarmata* are also described. It is used in various diseases like - *Vrana, Visa, Medoroga, Pratisyay* etc.

Ashtanga Hridayam: *Acarya Vagbhata* did not mention the *Haridra* in detail, but it can be incorporated in different *Ganas* and therapeutic uses. It is recommended for different diseases as different formulations. Others *Samgraha Grantha*

Sharngadhara Samhita: There is no description on botanical and *Rasapanchak* aspects here; but it has mentioned in different *Kalpana* to mitigate different diseases like - *Churna Kalpana, Kwath Kalpana, Sneha Kalpana, Lepa Kalpana* etc.

Nighantu Kala: Almost all *Nighantu* have mentioned about *Haridra* in various *Varga*. Synonyms, botanical descriptions, properties, therapeutic uses are also mentioned.

Plant profile of *Haridra*[8]

Local name: *Haridra*, halud

Botanical name: *Curcuma longa* Linn.

Family: Zingiberaceae/ Scitaminae

Implication of Botanical Name[9]

Curcuma: This word is derived from the Sanskrit *Kunkuma*, means referring to both turmeric and saffron.

Longa: Plant is long/tall.

Vernacular names of *Haridra*[10]

- Assamese : Halodhi, Haladhi
- Bengali : Halud, Haldi
- Gujarati : Haldar
- Hindi : Haldi, Hardi
- Kannada : Arishina
- Marathi : Halad

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- Malayalam : Manjal
- Oriya : Haladi
- Punjabi : Haldi, Haldar
- Sanskrit : *Haridra*, Kanchani, Pita, Nisha, Baravarnini, Yoshitpriya, Hattavilasini, Laksmi, Gauri
- Santhali : Sasang
- Telugu : Pasupu
- Tamil : Manjal, Manchal
- Kashmiri : Ladar, Ladhir

Other names[11]

- Arabic : Kurkum, Zarsud, Uruk-Es-Suff
- Burmese : Sanwin, Hsanwen, Sanae
- English : Turmeric
- Latin : Curcuma Longa
- Persi : Serd-Chubah
- Urdu : Haldi
- Nepali : Besar, Haldi
- Thai : Kha Min Chan, Khaminluang
- German : Curcuma, Indischer, Safran
- Sinhala : Kaha
- Indonesian: Kunyit, Kunir, Daunkunyit

Specific Characters[12]

Flowers: Yellow

Rhizome: The useful part is rhizome and it is golden-yellow within, used for dyeing.

Uses: It is effective drug for jaundice, worms, Prameha and poisoning.

Taxonomical position of *Haridra*[13]

Kingdom - Plantae

Subkingdom - Viridiplantae

Infrakingdom - Streptophyta

Super division - Embryophyta

Division - Tracheophyta

Subdivision - Spermatophytina

Class - Magnoliopsida

Super order - Lilianae

Order - Zingiberales

Family - Zingiberaceae / Scitaminae

Genus - Curcuma L.

Species - longa

Binomial name - *Curcuma longa.*

Pharmacognosy

Morphological descriptions[14]

Roots/tubers - Root stock large, ovoid; sessile tubers thick, cylindrical, bright yellow inside.

Leaves - Long petiole; oblong, narrow at the base.

Flower - Bracts pale green; flowers as long as bracts, pale green; flowers during rainy seasons.

Distribution and habitat[15]

Plant is a native of South Asia and is cultivated extensively throughout warmer parts of the world, including India.

Macroscopic and microscopic features of rhizome[16]

Macroscopic: Rhizomes ovate, oblong or pyriform (round turmeric) or cylindrical, often short branched (long turmeric), former about half as broad as long, latter 2-5cm long and about 1-1.8cm thick, externally yellowish to yellowish-brown with root scars and annulations of leaf bases, fracture horny, fractured surface orange to reddish brown, central cylinder twice as broad as cortex: odour and taste characteristic.

Microscopic: Transverse section of rhizome shows epidermis with thick-walled, cubical cells of various dimensions, cortex characterized by the presence of mostly thin-walled rounded parenchyma cells scattered collateral vascular bundles, a few layers of cork developed under epidermis and scattered oleo-resin cells with brownish contents; cork generally composed of 4-6 layers of thin-walled, brick-shaped parenchyma, cells of ground tissue contain starch

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grains of 4-15µ in diameter, oil cell with suberised walls containing either orange-yellow globules of volatile oil or amorphous resinous matter, vessels mainly spirally thickened, a few reticulate and annular.

Useful Part[17]: *Kanda* (Rhizome)

Dose[18]: 1-3gm of the drug in powder form.

***Anupana*[19]:** *Dhatri Rasa* and *Madhu* or *Guḍuchi Swarasa* or *Amlaki Swarasa* or *Kashaya* of *Citraka*, *Triphala, Darvi* and *Kalinga*.

Traditional use: Traditionally it is used as spices, holy events like marriage, sacred thread ceremony etc.

Phyto-chemistry[20]

The major chemical constituents are curcuminoids (approx.6%), the yellow colouring principles of which curcumin constitutes 50-60%; essential oil (2-7%) with high content of bisabolane derivatives.

Major chemical constituents: Curcumin, demethoxycurcumin and bisdemethoxy curcumin collectively known as curcuminoids (3-6%) are major polyphenolic compounds in turmericrhizomes. The main colouring principle of turmericrhizome was isolated in 19th century and named as Curcumin. Its chemical structure was determined by Roughley and Whiting (1973).

Mechanisms of Action

Antioxidant Effects[21]

Water and fat soluble extracts of turmeric and its curcumin component exhibit strong antioxidant activity, comparable to vitamins C and E. A study of ischemia in the feline heart demonstrated that curcumin pretreatment decreased ischemia-induced changes in the heart. An in-vitro study measuring the effect of curcumin on endothelial heme oxygenase-1, an inducible stress protein, was conducted utilizing bovine aortic endothelial cells. Incubation (18 hours) with curcumin resulted in enhanced cellular resistance to oxidative damage.

Hepatoprotective Effects[22]

Turmeric has been found to have a hepatoprotective characteristic similar to silymarin. Animal studies have demonstrated turmeric's hepatoprotective effects from a variety of hepatotoxic insults, including carbon tetrachloride (CCl4), galactosamine, acetaminophen (paracetamol), and Aspergillus aflatoxin. Turmeric's hepatoprotective effect is mainly a result of its antioxidant properties, as well as its ability to decrease the formation of pro-inflammatory cytokines. In rats with CCl4-induced acute and subacute liver injury, curcumin administration significantly decreased liver injury in test animals compared to controls. Turmeric extract inhibited fungal aflatoxin production by 90 percent when given to ducklings infected with Aspergillus parasiticus. Turmeric and curcumin also reversed biliary hyperplasia, fatty changes, and necrosis induced by aflatoxin production. Sodium curcuminate, a salt of curcumin, also exerts choleretic effects by increasing biliary excretion of bile salts, cholesterol, and bilirubin, as well as increasing bile solubility, therefore possibly preventing and treating cholelithiasis.

Anti-inflammatory Effects[23,24]

The volatile oils and curcumin of *Curcuma longa* exhibit potent anti-inflammatory effects. Oral administration of curcumin in instances of acute inflammation was found to be as effective as cortisone or phenylbutazone, and one-half as effective in cases of chronic inflammation. In rats with Freund's adjuvant-induced arthritis, oral administration of *Curcuma longa* significantly reduced inflammatory swelling compared to controls. In monkeys, curcumin inhibited neutrophil aggregation associated with inflammation. C. *longa's* anti-inflammatory properties may be attributed to its ability to inhibit both biosynthesis of inflammatory prostaglandins from arachidonic acid, and neutrophil function during inflammatory states. Curcumin may also be applied topically to counteract inflammation and irritation associated with inflammatory skin conditions and allergies, although care must be used to prevent staining of clothing from the yellow pigment.

Anticarcinogenic Effects[25,26]

Animal studies involving rats and mice, as well as in vitro studies utilizing human cell lines, have demonstrated curcumin's ability to inhibit

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carcinogenesis at three stages: tumor promotion, angiogenesis, and tumor growth. In two studies of colon and prostate cancer, curcumin inhibited cell proliferation and tumor growth. Turmeric and curcumin are also capable of suppressing the activity of several common mutagens and carcinogens in a variety of cell types in both in vitro and in vivo studies.

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