



HALDI (*CURCUMA LONGA LINN.*) AN IMPORTANT AND EFFECTIVE HOME REMEDY: A REVIEW

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ABSTRACT

Haldi (*Curcuma longa*) is an important and famous home remedy which is available almost in every kitchen. Since long times it has been used by Unani and Ayurvedic Physicians due to its Mohallil-e-Warm (Anti-inflammatory), Musakkin-e-Auja (Analgesic), Muhsin-e-Laun (Cosmetic) and Jaali (Detergent) properties. Recent studies have shown that Curcuma has also many important pharmacological properties like Hepatoprotective, Renoprotective, Anti-cancerous, Anti-oxidant, Anti-bacterial, Anti-fungal etc. Keeping this view its use and importance is highlighted.

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INTRODUCTION

Haldi (*Curcuma Longa Linn.-Rhizome*) is well known drug described in Unani Pharmacopoeia¹. Its English name is Turmeric while in Arabic it is called Uruq al-Safar. It is a perennial herb and belongs to the family zingiberaceae. Its rhizomes (Underground stem) are used as medicine and as spices in our foods. These rhizomes are ovate, oblong, pyriform or cylindrical in shape, externally yellowish to yellowish brown in color. It is a native of Southern Asia and cultivated in India, China, Malaya and other tropical countries^{2, 3, 4}. It is cultivated in almost all the states in India particularly in Madras, Bengal and Bombay⁵.

It is cultivated throughout tropics, believed to be indigenous in Bihar and grown at the height of 4000-5000 ft⁶. It has

Mohallil-e-Warm (Anti-inflammatory), Musakkin-e-Auja (Analgesic)^{7,8}. Mufatteh- sudad Jigar (Deobstruent)^{7,9} properties. It also possesses Muhsin-e-Laun and Jaali actions¹⁰. From times immemorial turmeric has also been used by Unani and Ayurvedic practitioners in India for stomachic, tonic and blood purification. It is also used as an Antiperiodic. A decoction made from the rhizome is said to relieve pain of Purulent ophthalmia⁵. About 50 commercial varieties of turmeric are cultivated in India. These are mainly distinguished by the names of localities in which they are grown. Most of these are land races, chiefly from Andhra Pradesh and Orissa. The varieties of turmeric are classified as short duration, medium duration and long duration types². Turmeric crops generally ready for harvest in 8 months after planting but long duration varieties takes 8 ½-9 months. In Tamil Nadu the crop is harvested in Jan-Mar and in Andhra

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Pradesh in February- April. The maturity of turmeric crop is indicated by complete drying up of the plant including the base of stem. As it reaches maturity the dry leaves are cut close to the ground. The rhizomes are dug up with a crow bar or pick-axe². About 50 commercial varieties of turmeric are cultivated in India. India is the largest producer and exporter of turmeric in the world. It accounts for nearly 50% of the world trade in turmeric, although 95% of the produce is used within the country itself and only 5-6% is exported².

Vernacular Names

Arabic	- Uruq al-Safar
Persian	- Zardchobah, Zardchob
English	- Turmeric
Hindi	- Haldi, Hardi, Halada
Sanskrit	- Rajani, Haridra, Gauri
Urdu	- Haldi
Bengali	- Haldhi, Halod, Halodi

Botanical Description

It is dried rhizome of *Curcuma longa*, an erect perennial herb, 1 meter tall, grown as an annual plant, roots are fleshy, primary tubers ellipsoidal, 5 cm.*2.5 cm. rhizomes branched, brownish white, scaly, externally and bright yellow inside, leaves 6-10 cm., long petioled, lanceolate, acuminate, dark green above, dotted below, lamina 30 cm.*7-8 cm., spikes cylindrical, 10-15 cm. long, enclosed in the spathe, flowers are pale yellow and fruits are rare. Turmeric can be propagated through seeds and rhizomes but it generally done through rhizomes as using seeds is not economical in commercial cultivation. Mother rhizomes as well as fingers are used as planting material². Rhizomes are primary and secondary. Primary rhizomes are ovate or peer shaped and is known as bulb or round turmeric, while the more cylindrical secondary, lateral rhizomes are about 4-7 cm. long and 1-1.5 cm. wide. The latter are known as fingers and contain more yellow coloring matter than bulb variety. Turmeric has an aromatic odour and a warm somewhat bitter taste⁴. Plant is extensively cultivated all over India. In Bombay presidency there are two varieties (1) With hard rich-colored, oval rhizomes, chiefly used in dyeing known as Lokhandi Halad and (2) With softer, larger, lighter colored long rhizomes which are usually used for eating that is common Haldi. The crop is harvested after 9-10 months when lower leaves turn yellow. Rhizomes carefully dug up with hand picks between October-April and cured by boiling and dried^{1,12}.

Parts Used

Medicinal part of Haldi is Dried Rhizome^{7,12,13},

Taste

Bitter^{3,4},

Mizaj (Temperament)

Its temperament is Hot and Dry in third degree mainly but

some physicians like Ibn-e-Sina has described Hot and Dry in second degree also.

- Hot 3° and Dry 3°^{7,9,14}
- Hot 2° and Dry 2°^{7,14,16}

Miqdar-e-Khurak (Therapeutic Dose)

Rhizome Powder : 1-3 gm / 1-3 Masha^{10,17}
 Powder : 3-7 gm / 3-7 Masha⁷
 Powder : 0.97-1.30 gm / 15-20 grains¹²
 Powder : 0.89-1.77 gm 1/2-1 dr.¹¹
 Syrup : 7 gm / 2 Dirham⁸
 Decoction : 22.5 gm / 5 Misqal¹³

Badal (Substitute)

Majeeth^{7,13}
 Mamiran^{7,14,15}
 Aqrarqa^{7,8}

Musleh (Corrective)

Lemu^{7,10}
 Turanj^{8,10}
 Halteet⁷
 Qurs-e-kafoor⁷

Muzir (Adverse Effects)

Heart^{7,8,10}
 Liver⁷

Af'al (Pharmacological Actions)

Mohallil-e-Awram (Anti-inflammatory)^{1,7}. Musakkin-e-Alam (Analgesic) 7,18. Mufatteh-Sudad (Deobstruent)^{7,8}. Jali (Detergent)^{7,18}. Muhsin-e-Laun (Cosmetic)^{10,17}. Daf-e-Tashannuj (Antispasmodic)¹. Mujaffif (Dessicant)^{1,7}. Quatile-Deedan (Anthelmintic)^{7,10}. Muqawwi-e-Chashm (Eye Tonic)^{7,8,18}. Kasir-e-Riyah (Carminative)^{5,6,12}. Muqawwi (Tonic)^{5,11}. Mulaiyen (Laxative)^{6,19}. Musaffi-e-Khoon (Blood Purifier)^{2,5}. Stomachic^{2,5}. Stimulant^{6,11}. Emollient^{6,19}. Antibacterial^{2,5}. Appetizer 5. Antioxidant²⁰. Antidiabetic². Sedative, Hypnotic & Narcotic²¹.

Ist'emalat (Therapeutic Uses)

Waj-ul-Mafasil (Rheumatoid Arthritis)^{1,2}. Yarqan (Jaundice)^{7,8,12}. Istisqa (Ascites)^{7,9}. Jigar ke Amraz (Affections of Liver)^{7,22}. Dropsy^{5,12}. Hikka (Irritation to Skin)^{1,7,10}. Intermittent Fever^{5,6,10}. Purulent Conjunctivitis^{2,6,22}. Common Cold^{1,2,5}. Bronchitis^{1,6}. Zeeq-un-Nafas^{1,10}. Troublesome Diarrhoea⁵. Snakebite 5. Zof-e-Basarat¹.

Phytochemical Studies

Turmeric contains about 1% of essential oil, resin, yellow coloring matter curcumin, turmeric oil or turmerol^{12,22}. It contains about 5% of diarylheptanoid coloring materials known as curcuminoids and the chief of which is curcumin. The volatile oil content of turmeric is 5 % which contains sesquiterpenes (ex. Zingiberine, 25%), sesquiterpene

alcohols and ketones⁴. The bulbs are richer in curcumin content than fingers. The rhizomes contain curcuminoids, curcumin (diferuloyl methane), demethoxycurcumin, bis-demethoxycurcumin, 5'-methoxy curcumin and dihydrocurcumin which are found to be natural anti-oxidants. Cyclocurcumin is also other curcuminoid which is identified and isolated from rhizome. Fresh rhizomes contain curcumin related phenolic compounds which possess anti-oxidant and anti-inflammatory activities. Rhizomes are also reported to contain four polysaccharides unknown A, B, C & D apart from stigmasterol, β -sitosterol, cholesterol and 2-hydroxymethyl anthraquinone². The rhizomes of turmeric also contain free arabinose (about 1%), fructose (12%) and glucose (2%). Abundant zingiberaceous starch grains about 30-60 μm long and often gelatinized are present⁴. The turmeric powder is deep yellow in colour and oil is thick yellow and viscid having a pleasant aromatic smell. The curry powder owes its aromatic taste and smell to this oil. The density of turmerol is 0.9016 at 17°. It is optically dextrogyrate, $[\alpha] = 33.52$, under ordinary pressure it boils at 285° to 290° but decomposes at the same time, yielding a substance of lower boiling point²². The anti-oxidant properties of curcuma powder are probably due to the phenolic character of curcumin. The choleric action of essential oil is attributed to tolylmethylcarbinol⁵. Cells of ground tissue of rhizome contain starch grains, oil cells with suberised walls containing either orange-yellow globules of volatile oil or amorphous resinous matter. On chemical analysis it shows that foreign matter, total ash, acid insoluble ash, alcohol soluble extractive, water soluble extractive & volatile oil should be not more than 2 %, not more than 9 %, not more than 1%, not less than 8%, not less than 12% and not less than 4% respectively 1. Analysis of Indian turmeric also gave the following values: Moisture content 13.1%, protein 6.3%, fat 5.1%, mineral matter 3.5%, fibre 2.6%, carbohydrates 69.4% and carotene calculated as Vit. A 50 I.U./100 g, the essential oil 5.8%⁵.

Pharmacological Studies

Anti-inflammatory Activity-

Turmeric possesses anti-inflammatory property comparable to Aspirin, Ibuprofen etc. A vanishing cream base prepared with turmeric and red sandal wood showed anti-inflammatory activity by inhibiting carrageenin induced hind paw oedema in rats. Curcumin in, invitro animal models acts as an anti-inflammatory by inhibiting 5-lipoxygenase activity in rat peritoneal neutrophils as well as the 12-lipoxygenase and cyclo-oxygenase activities in human platelets. It is found effective in both acute and chronic models of inflammation and its potency is approximately equal to phenylbutazone. Aqueous extract (80 mg/kg) completely suppressed carrageenin induced oedema, at 40 mg/kg activity was comparable to that of indomethacin (5

mg/kg). It also showed very potent activity in granulomatous pouch test. A formulation containing turmeric is found effective in treating rheumatism. Essential oil (0.1 mg/kg) in rats showed significantly more marked anti-inflammatory effect than cortisone acetate (10 mg/kg)²³. It is safe from any side effects on blood pressure or in ulceration.

Renoprotective Activity

Besides having anti-oxidant activity curcumin has also renoprotective property. Curcumin is able to prevent several mechanism leading to renal injury. The study identifies curcumin as a promising renoprotective molecule against renal injury²⁴.

Hepatoprotective Activity

Turmeric has been very effective in treating jaundice and should be included in diet of patients suffering from jaundice or even infective hepatitis² (Anonymous, 2001). Clinical trials conducted with turmeric and phyllanthus fraternus Webster for treating infective hepatitis have proved very effective and without any side effects. Ethanolic extract of turmeric showed significant hepatoprotective effect (84.1%) against CCL4 induced hepatotoxicity^{2,25}.

Anti-cancerous Activity

Recent researches show that curcumin, an essential component of curcuma has ability to treat malignancies either through its own inherent mechanisms or by augmenting other cancer treatments. For ex. In-vivo animal studies examining curcumin's chemo sensitizing and radio sensitizing properties have favourably demonstrated the effect of curcumin on Gemcitabine for pancreatic cancer²⁶.

Anti-bacterial Activity

Turmeric extracts in different solvents show anti-bacterial effect^{2,25}.

Bactericidal Activity

Turmeric oil exhibited marked bactericidal activity against both gram-positive and gram-negative bacteria particularly against the species of *Salmonella*, *Staphylo-coccus* and *Klebsiella*².

Anti-fungal Activity

Turmeric oil also showed anti-fungal activity against some important plant and human pathogens including species of *Aspergillus*, *Penicillium*, *Curvularia*, *Microsporum*, *Trichophyton* etc².

Hypoglycemic Activity

The ethanolic extract of rhizome exhibited blood sugar lowering effect in alloxan-induced diabetic rats^{2,25}.

Anti-oxidant activity

Turmeric also shows potent anti-oxidant activity^{2,25}.

Hypocholesterolemic Activity

Turmeric is reported to produce hypocholesterolemic effect on cholesterol-fed rats but its effect on human system is yet to be confirmed. It is reported that turmeric or curcumin reduces the uptake of cholesterol from gut, increases the HDL cholesterol and decreases LDL cholesterol. It can also inhibit the peroxidation of serum LDL that can lead to atherosclerotic lesions. Thus it can prevent coronary problems and heart diseases²⁵.

Anti-ulcer Activity

95% Ethanolic extract of curcuma rhizome also shows anti-ulcer activity²⁵.

Antifertility Activity

Curcuma longa (50% EtoH) extract showed its antifertility effects via affecting Leydig cell function²⁷.

Other Pharmacological Activities

Many other pharmacological activities of turmeric were also determined by animal studies and clinical trials like anti-abortifacient effect, anti-asthmatic activity, anti-amoebic activity, antispasmodic activity, anti-tumor activity, anti-viral activity, insect repellent activity, insecticide activity²⁵. A decoction of turmeric is said to relieve the pain of purulent ophthalmia. An Ayurvedic eye drop, Haridra containing turmeric was subjected to clinical trials with patients suffering from conjunctivitis and proved very effective in controlling infection².

Conclusion

Today herbal drugs are the preferred choice in public due to safety in comparison to synthetic ones, which show various unwanted effects on health. Curcuma has Anti-inflammatory and Analgesic properties so it is included as ingredient in many polyherbal formulations which are useful in joint disorders and other related ailments. It has also Cosmetic and Detergent activities. It cleanses the face and increase the glow. In the cosmetic industry more and more researches are going on curcuma. These therapeutic properties of curcuma can be used by making specific dosage forms like tablets, capsules, ointment and gels etc. in different compositions with other drugs to benefit the masses. Recently many research studies and clinical trials have shown that it has also Hepatoprotective, Renoprotective, Anti-cancerous and many other properties. Our aim to write this review paper is to remember the potency of this important and easily available medicine in different disorders and also to explore the possibility of more researches on it.

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