



## TURMERIC FROM HOME TOWARDS HEALTH: A REVIEW

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### Abstract:

Ancient scriptures, Ayurveda, Unani medicine documented the use of turmeric in peptic ulcer treatment, wound treatment and its active principles as an anti-inflammatory agent. In the last two decades modern scientists endeavored to study systematically its numerous pharmacological properties as therapeutically potential candidate to be used in the prevention and treatment of chronic diseases such as cancer and HIV. The present article highlights the medicinal properties of turmeric studied previously towards its application as a promising multi targeted future herbal drug.

**Key Words:** Turmeric, pharmacology, herbal drug.

### INTRODUCTION:

Turmeric, the rhizome of *Curcuma longa* L. is widely used as dietary spice and colouring agent belonging to ginger family Zingiberaceae. *C. longa* is also known as Indian saffron, Indian gold due to its colour. It is widely distributed, a native of tropical South Asia and requires an average rainfall of 1000 and 2000mm a year. The plant grows to a height of 0.9 meters and has long stemmed leaves with pale yellow flowers and requires loamy soil. *C. longa* is known by different names in various Indian languages namely, Haldi (Hindi), Halad (Marathi), Harita and Haridra (Sanskrit), Manjal (Tamil), Pasupu (Telugu), Lidar (Kashmiri), Holud (Bengali) [1].

Turmeric constitutes 5% essential oils and up to 5% curcumin, a polyphenol. The phytochemicals of turmeric is of main interest to researchers which could serve as newer leads for modern drug design. The present review aims to signify the therapeutic properties of *C. longa* and its future prospects for further scientific investigation to develop novel drugs with improved efficacy [2].

### MEDICINAL PROPERTIES OF CURCUMA LONGA:

*Curcuma longa* is an important medicinal plant and in recent studies it is reported for array of biological activities.

#### ANTI-INFLAMMATORY ACTIVITY

The crude methanol extracts of *C. longa* administered on mice showed a potential anti-inflammatory activity with a significance value 0.0001 at a dose of 500 mg/kg of body weight and in 250 mg/kg of the P value 0.0003 [3].

With specific lipoxygenase and cyclooxygenase-2 inhibiting properties it is highly anti-inflammatory. *In vitro* and *in vivo* studies suggest that it decreases both acute and chronic inflammation [4, 5].

Its anti-inflammatory properties are due to its ability to inhibit both biosynthesis of inflammatory prostaglandins, arachidonic acid and neutrophil function during inflammatory states [6].

#### ANTIOXIDANT ACTIVITY

Antioxidant activity of turmeric is shown by water and fat soluble extracts. *In vitro* analyses on endothelial heme oxygenase-1, an inducible stress protein was conducted utilizing endothelial cells. Cellular resistance was observed to oxidative damage on incubation with curcumin [7, 8].

#### ANTIFUNGAL ACTIVITY

Ar-turmerone, a major component in turmeric oil has effective antifungal activity against dermatophytes [9].

Fresh juice of rhizome of *C. longa* is anti-parasitic in many skin infections [10]. Turmeric mixed with cow's urine is taken internally in itching and dermatitis [11].

#### ANTIFERTILITY ACTIVITY

Aqueous extracts of rhizome of *C. longa* on the seminal parameters of Swiss Albino male mice causes infertility [12].

Alcoholic and aqueous extracts of turmeric is antispermatogenic and is confirmed by reduction in spermatogonia, spermatocytes and spermatids [13].

Antioestrogenic property of curcumin blocks the oestrogen metabolism receptors or diminishes oestrogen synthesis due to reduced metabolism or both [14].

#### ANTIPYRETIC EFFECTS

Methanolic extract of *C. longa* showed significant antipyretic activity when compared to reference paracetamol. In mice, yeast was administered which increased the rectal temperature 18 hours after yeast injection. The extract showed better pyrexia inhibition than the reference drug at 6<sup>th</sup> hour [15].

#### ANTIDIABETIC EFFECTS

Study of the effect of *C. longa* freeze dried rhizome powder with milk in streptozotocin induced mice revealed that the hypolipidemic and hepatoprotective effects of turmeric could be used as an effective and safe antidiabetic dietary supplement [16].

The isopropanol and acetone extract of *C. longa* is responsible for maximal inhibition of the enzyme Human Pancreatic Amylase which causes reduction in starch hydrolysis that leads to lowered glucose levels [17].

#### **CARDIOVASCULAR EFFECTS**

Prevention of coronary and heart problems is possible with turmeric as it reduces the uptake of cholesterol from the gut thus increases high-density lipids (HDL) and decreases low-density lipids (LDL). It also inhibits the peroxidation of serum LDL which leads to atherosclerotic lesions [19].

The ingestion of curcumin-containing spices in diet rich in fat could have a lipid-lowering effect [18].

#### **ANTI-CARCINOGENIC EFFECTS**

An extract of *C. longa* and ointment containing curcumin produces marked symptomatic relief in patients with external cancerous lesions [19].

Turmeric and curcumin can inhibit cancer at the initiation, promotion and propagation stages of TPA (12-O-tetradecanoylphorbol-13-acetate)-induced tumor promotion in mouse skin [20].

Curcuminoids have the anti-cancerous property due to their radical-scavenging property [21].

#### **ANTI-HIV EFFECTS**

Curcumin was found to inhibit HIV-1 and HIV-2 protease with IC<sub>50</sub> of 100  $\mu$ M and 250  $\mu$ M respectively [22].

The clinical trial of clear liquid soap containing 0.5% w/v ethanol extract of *C. longa* rhizome on HIV patients reduced the wound infections and 100% decrease in itching symptom and it also affected the abscess to convert to dryness scabs (78.6%) within 2 weeks [23].

#### **ALZHEIMER'S DISEASE**

A neurodegenerative condition in which insoluble plaques, death of brain cells in patient's brain was observed and its fibrils was thought to compose of beta-amyloid (A $\beta$ ) peptide which clump together to form plaques that disturb normal brain cells. Curcumin is found to possess an ability to destabilize A $\beta$  plaque formation with phagocytosis of A $\beta$  [24]. Curcumin reduced the amount of plaque deposition when administered to aged mice

with advanced plaque deposits as in the case of Alzheimer's disease [25].

Regular use of turmeric in diet increases the Quality of Life (QOL) and Activities of daily living (ADL) of patients suffering from Alzheimer's disease. It impairs cognitive function and safe to use for the treatment of the behavioral and psychological symptoms of the dementia (BPSD) [26].

#### **CONCLUSION:**

Turmeric is used as folk medicine in many parts of the world and considered as spice of life for old age diseases with age old solution. Diet rich in turmeric keeps the disease away. It is traditional anti-inflammatory, antiseptic and herbal skin tonic. Also a home based remedy for gastrointestinal upset and arthritis. Its phytochemicals have a profound effect on many dreadful diseases. Preliminary studies are not sufficient for the development of the bioactive components of turmeric as pharmaceutical drug. Due to low bioavailability and low solubility of its main component curcumin, limits its use to be administered clinically. Exploratory researches with deep insight only can assure enhancement in its activity along with safety with multi target and multi spectrum of uses. Hence further scientific investigations, intensive preclinical trials and extensive clinical studies are needed to evaluate the efficacy and toxicity of these naturally inspired products so as to reach from kitchen shelf to clinic cupboard.

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