

# Turmeric as a Medicinal Herb

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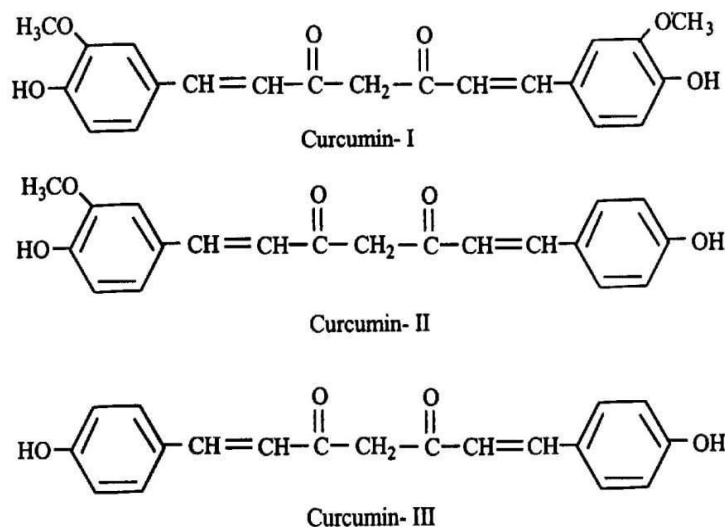
**Abstract:** *Turmeric is an ancient spice derived from the rhizomes of Curcuma longa, which is part of the ginger family (Zingiberaceae). Also known as the "Golden Spice of India", turmeric has been used in India for medicinal purposes for centuries. It is used in traditional medicine as a home remedy for many ailments, including biliary disorders, anorexia, cough, diabetic ulcers, peptic disorders, rheumatism and sinusitis. In addition to its use as a spice and pigment, turmeric and its components, mainly curcumin and essential oils, exhibit a wide range of biological activities. These include its anti-inflammatory, antioxidant, anticarcinogenic, antimutagenic, anticoagulant, antifertility, antidiabetic, antibacterial, antifungal, antiprotzoal, antiviral, antifibrotic, antivenom, antiulcer, hypotensive and hypocholesterolemic activities. Modern interest in turmeric began in the 1970s when researchers discovered that the herb may have anti-inflammatory and antioxidant properties. Safety evaluation studies show that turmeric and curcumin are well tolerated at very high doses without toxic effects. Thus, turmeric and its components have the potential to advance modern medicine for the treatment of various diseases. Keywords-Turkuma Curcuma longa sprain Haridra" or "Haldi, Curcumin*

**Keywords:** Turmeric

## I. INTRODUCTION

Turmeric has also been used for centuries in Ayurvedic medicine, which incorporates the medicinal properties of the plant into food. This remarkable plant has found its place in the spotlight in the West and the rest of the world, due to its wide range of medicinal benefits. The use of turmeric dates back almost 4000 years to the Vedic culture of India. It is widely used in Ayurvedic, Unani and Siddha medicine as a home remedy for many ailments (1, 2). Turmeric, derived from the rhizomes of *Curcuma longa* (family Zingiberaceae), is a short-lived perennial plant with large oblong to oval leaves. bears pear-shaped or elongated rhizomes, often branched and yellow-brown in color. Native to Southeast Asia, turmeric is used as a food additive (spice), preservative, and colorant in Asian countries, including China, Bangladesh, and Southeast Asia. It is primarily grown in China, Taiwan, Sri Lanka, Bangladesh, Burma (Myanmar), Nigeria, Australia, the West Indies, Peru, Jamaica, and several other countries in the Caribbean and Latin America. With about 78% of global turmeric production, India is the 3rd largest producer of turmeric. It is also the largest consumer and exporter of turmeric. Turmeric is considered auspicious and is part of religious rituals. In ancient Hindu medicine, it is widely used to treat sprains and inflammation caused by injuries. Today, traditional Indian medicine uses turmeric powder to treat biliary disorders, anorexia, cough, diabetes, wounds, liver disorders, rheumatism and sinusitis, etc.(3)

Turmeric contains 69.4% carbohydrates, 6.3% proteins, 5.1% fat, 3.5% minerals and 13.1% moisture. Essential oil (5.8%) obtained by steam distillation contains sesquiterpenes (53%), zingiberene (25%),  $\alpha$ -phellandrene (1%), sabinene (0.6%), cineole (1%), and Borneol (0.5%). Curcumin (3-4%) is responsible yellow color and includes curcumin I (94%), curcumin II (6%) and curcumin III (0.3%) (Figure 1) (4). Demethoxy and bisdemethoxy derivatives of curcumin have also been isolated from turmeric. Curcumin has a melting point of 176-177 °C; it forms a reddish brown salt with alkalis and is soluble in acetic acid, ethanol, alkalis, ketones and chloroform (5). the presence of tumerone a, tumerone b, curzerenone, curdione, mono- and di-demethoxycurcumin was reported in rhizomes. The essential oils from the leaves of *C. longa* were analyzed by gas-liquid chromatography and contained linalool, caryophyllene, geraniol,  $\alpha$ -pinene,  $\beta$ -pinene, sabinene, myrcene,  $\alpha$ -phellandrene, 1,8-cineole, p- cymene, C8 aldehyde and methylheptanone (6).



**Fig. 1: Various curcumins**

Table 1 represent the biochemical content in dried turmeric rhizomes and table 2 representing biological activity of turmeric. It has antifungal, anti-bacterial, anti- parasitic, antimutagen, antimicrobial and renal, allergies, arthritis, Alzheimer's disease and other chronic and hard curable diseases. Several studies have shown the antioxidant and antimicrobial properties of Turmeric essential oils (NEGI et al., 1999 and NAZ et al., 2010) (7,8)

curcumin	3.1-3.4%	Niranjan et al 2003.
Anthocyanins	18.9-37.0g/g	Niranjan et al 2003.
Phenols	0.15-0.62%	Niranjan et al 2003.
Tannins	0.32-0.76%	Niranjan et al 2003.
Protein content	3.6-6.8%	Niranjan et al 2003.
Sugar	20.5-43.4%	Niranjan et al 2003.
Oil	3.7-5.3%	Niranjan et al 2003.
Ash	6.9-9.8%	Niranjan et al 2003.
Moisture	90.2-91.3%	Niranjan et al 2003.

**Table 1: Biotechnical content in dried turmeric rhizomes.**

Sr.no	Compound / extract	Biological activity	reference
1.	Turmeric powder	Antitumor ant protozoan anti-inflammatory and wound healing	Gujral et al.(1953)
2.	Methylcurcumin	Anti protozoan	Gomes et al...(2002)
3.	Demethoxycurcumin and bidemethoxycurcumin	Antioxidant	Unnikrishnan et al..(1995)
4.	Volatile oil	Anti-inflammatory, anti bacterial ,antifungal	Chandra et al..(1972)
5.	Curcumin	Antiviral , antitumor and antioxidant	Lutomski et al..(1947)

**Table 2:biological activity of turmeric and its compound**

### HISTORICAL BACKGROUND OF TURMERIC

The exact origin of turmeric is unknown. Ayurveda is an Ancient Indian system of natural healing that is still practiced Today. Ayurveda translates as "science of life" - Ayur means "life" and veda means "science or knowledge". Since

Ancient times, inhaling the fumes from burning turmeric has been used to reduce congestion. Turmeric juice is used for this healing wounds. Turmeric paste is also applied to all kinds of skin diseases, such as smallpox and chickenpox, spots and herpes. Ayurvedic literature contains over 100 different terms for turmeric, including jayanti, meaning "one who is victorious over disease", and matrimanika, meaning "beautiful as the moon". It has always been considered an auspicious substance in the subcontinent, both in Aryan and Dravidian cultures, and its value can be traced back far in history to the beliefs of ancient indigenous people. The common name for turmeric in the north is Haldi, which derives its name from the Sanskrit word haridra, and in the south it is called manjal, a word often used in ancient Tamil literature. Turmeric has a long history of medicinal use in South Asia and is mentioned in Sanskrit medical treatises and widely used in the Ayurvedic and Unani systems. Susruta's Ayurvedic Compendium, dating back to 250 BC, recommends an ointment containing turmeric to ease the effects of food poisoning. Turmeric also has a special place in Indian tradition and worship. It is used to worship the Sun God. It was used to worship the Sun during the solar period of India. It is mentioned in the Artharveda of India. It is also worn by people as part of the purification process. The use of turmeric in India has been documented in various forms. Turmeric was also used by Buddhists. Buddhist monks traveled to different parts of the world to dye their clothes. There is also evidence that turmeric was used in Chinese medicine about 1000 years ago. In China it was mentioned in Pent-Sao in the 7th century. Turmeric was not part of the Western world until recently. There was little evidence establishing its use and importance in Europe. Although turmeric has always been an important part of the Ayurvedic system, Western herbalists did not recognize its benefits until the late 20th century. But in the mid-20th century, turmeric began to gain popularity in the Western world as well. Today, many research studies and experiments have been conducted to identify its benefits. In 1280 AD, Marco Polo referred to turmeric as Indian saffron because it was then used to dye fabrics. He says he discovered a plant that has all the qualities of saffron, but is a root. Turmeric arrived in China around 700 AD, in East Africa around 800 AD, in West Africa around 1200 AD and began to become popular around the world. The Chinese use turmeric as medicine, especially for the spleen, stomach and liver. They use it to stimulate and purify, as well as as an antibiotic, antiviral and analgesic. Currently, India is the largest producer and consumer of turmeric. Other producers in Asia include Bangladesh, Pakistan, Sri Lanka, Taiwan, China, Burma, and Indonesia. Turmeric is also produced in the Caribbean and Latin America: Jamaica, Haiti, Costa Rica, Peru, and Brazil. It is found throughout South and Southeast Asia, with some species extending into China, Australia, and the South Pacific. In the 15th century, Vasco da Gama, a Portuguese sailor, introduced this spice to the West after his visit to India (9). Turmeric is considered an essential spice throughout the world, especially among Eastern peoples (10). In addition to being used as a spice, turmeric is also used as traditional medicine in Asian countries such as India, Bangladesh and Pakistan due to its medicinal properties (11). Turmeric is widely used in Ayurvedic, Unani and Siddha medicine as a home remedy for various ailments (12, 13)



#### **BOTANICAL INFORMATION OF TURMERIC**

Scientific name - *Curcuma Longa* Common name - turmeric Family - Zingiberaceae

Country of origin - Southeast Asia Economic part - Dried rhizome

Essential oil content - 2.5-7.2% *Curcuma longa* is a perennial plant

Curcumin (4-7%) is the main color pigment in turmeric.

Turmeric (*Curcuma longa*) is a flowering plant in the Zingiberaceae family. It is a rhizomatous, herbaceous, perennial plant. It grows up to 1 m tall. The leaves are arranged alternately and arranged in two rows. They consist of a leaf sheath, a petiole and a limb. A false stem is formed by leaf sheaths. Leaf blades are usually 76 to 115 cm long. They are 38 to 45 cm (15 to 18 in) wide and are oblong to elliptical in shape and narrowed at the tip. The flowers are bisexual and zygomorphic. The fruit capsule opens with three compartments. Of the approximately 110 species of the genus *Curcuma* L., nearly 20 species have been studied phytochemically (17). *Curcuma longa* is the most chemically studied turmeric species. To date, at least 235 compounds, mainly phenols and terpenoids, have been identified, including diarylheptanoids (commonly known as curcuminoids), diarylpentanoids, monoterpenes, sesquiterpenes, diterpenes, triterpenoids, alkaloids, and sterols(18).



#### **GEOGRAPHICAL INFORMATION OF TURMERIC**

The plant is native to South Asia and is cultivated extensively in temperate regions. It is grown to a greater extent in India, China, East India, Pakistan and Malaysia India is one of the major producers and exporters of turmeric in the world Andhra Pradesh alone accounts for 35.0% of the area and 47.0% of the production. It grows in a variety of tropical conditions, from sea level to 1500 mm or higher, under rainfed or irrigated conditions. It grows in a variety of soil types, thriving best in well-drained sandy or loamy soil with a pH between 4.5 and 7.5 with good organic status. A number of cultivars are available locally and are known mainly by the name of the locality where they are grown(19).



There are various species of Turmeric specifically belonging to different areas within the India and they are as follows.

Name of turmeric species	Approx. curcumin percentage	State
Lakadong	7-12%	Meghalaya
Alleppey	5%	Kerala
Madras	3%	Tamil nadu
Rajapore	n/a	Maharashtra
Sangali	2-4%	Maharashtra
Erode	2-4%	Tamil nadu
Nizamabad bulb	n/a	telengana

### CHEMICAL COPOSITION OF TURMERIC –

Also known as "Haridra" or "Haldi", turmeric contains proteins (6.3%), lipids (5.1%), minerals (3.5%), carbohydrates (69.4%), and moisture (23.1%). The essential oil (5-8%) obtained by steam distillation of the rhizomes contains a-phellanderene (1%), sabiene (0.6%), creole (1%), borneol (0.5%), zingiberene (25%), and sesquiterpenes (53%). 5) Curcumin is the main curcuminoid in turmeric. The other two are desmethoxycurcumin and bis-desmethoxycurcumin. Curcumin gives turmeric its yellow color and is now known to be responsible for most of its therapeutic effects. It is estimated that 2 to 5% of turmeric is curcumin. Curcumin was first isolated from turmeric in 1815, and its structure was determined in 1910 as diferuloylmethane (20). The most widely used preparation of curcumin contains approximately 77% diferuloylmethane, 18% desmethoxycurcumin, and 5% bis-desmethoxycurcumin. Curcumin is hydrophobic in nature and is often soluble in dimethyl sulfoxide, acetone, ethanol, and oils. It has a maximum absorption of about 425 nm. When exposed to acidic conditions, the color of the saffron/curcumin form changes to is used different yellow 10 dark red. religious ceremonies (21) A world of turmeric Turmeric, a golden spice, has been used by the people of the Indian subcontinent for centuries, without side effects known not only as an integral part of the diet but also for the treatment of a number of diseases. According to documented evidence, it has been used daily in India for at least 6,000 years as a medicine, beauty product, cooking spice, dye and much more. Turmeric was mentioned in the writings of Marco Polo on his journey to China and India in 1280 and was first introduced to Europe in the 13th century by Arab traders Vasco da Gama, a Portuguese sailor in the 15th, after his visit to India. indeed

he introduced spice to the West (22). For at least 1,000 years, Chinese medicine has used turmeric specifically for the spleen, stomach, and liver meridians. They use it to stimulate and strengthen the blood, purify, lower blood pressure, reduce colic, antibiotic, antiviral and analgesic. Because of its color and taste, turmeric was called "Indian turmeric" in Europe. Today, India is the largest exporter of turmeric (known as "haldi" in India). Although its ability to preserve food through its antioxidant mechanism, to add color and flavor to food is well known, its beneficial effects for health are less recognized or appreciated. It was once considered a remedy for jaundice, an appetite suppressant and a laxative (23). In Indian and Chinese medicine, turmeric has been used as an anti-inflammatory agent to treat gas, colic, toothache, chest pain and menstrual difficulties. This spice was also used to help with stomach and liver problems, to heal wounds and soothe wounds, and as a cosmetic. Of the 110 species of the genus *Curcuma* L., only about 20 species have been studied phytochemically (24). *Curcuma Longa* is the most chemically studied turmeric species. To date, at least 235 compounds, mainly phenolic compounds and terpenoids, have been identified, including diaryleptanoids (especially those better known as curcuminoids), diarylpentanoids, monoterpenes, sesquiterpenes, diterpenes, triterpenoids, alkaloids and sterols, etc

### PHARMACOLOGICAL OF TURMERIC

Turmeric has many therapeutic and pharmacological activities. Here are The most important phytopharmacological and therapeutic properties of turmeric.

### 1.1 Antioxidant activity-

Curcumin has been shown to be a potent scavenger of free oxygen radicals. Its antioxidant activity is comparable to that of vitamins C and E (25). It can protect lipids or hemoglobin from oxidation. It can significantly inhibit the generation of reactive oxygen species (ROS) such as H<sub>2</sub>O<sub>2</sub>, superoxide anions, and the generation of nitrite radicals by activated macrophages. Its derivatives, bis-demethoxycurcumin and demethoxycurcumin, also have antioxidant activities (25). Curcumin pretreatment has been shown to reduce ischemia-induced oxidative stress and cardiac changes (26). An in vitro study measuring the effect of curcumin on an inducible stress protein resulted in increased cellular resistance to oxidative damage (27).

### 1.2 Cardiovascular and antidiabetic effects

Cardiovascular and antidiabetic effects Turmeric exerts cardioprotective effects mainly through its antioxidant activity, reducing lipid peroxidation, its antidiabetic activity, and its inhibition of platelet aggregation. A study of 18 atherosclerotic rabbits given 1.6 to 3.2 mg/kg/day of turmeric extract showed reduced susceptibility of LDL to lipid peroxidation in addition to plasma cholesterol and triglyceride levels. The effect of turmeric on cholesterol levels may be due to decreased intestinal cholesterol absorption and increased conversion of cholesterol to bile acids in the liver. The inhibition of platelet aggregation by turmeric components is thought to be mediated by potentiation of prostacyclin synthesis and inhibition of thromboxane synthesis. Turmeric reduces blood glucose levels in diabetic rats. Turmeric also reduces complications of diabetes mellitus. Further clinical studies need to be conducted in this area to discover optimal doses for cardiovascular protection and lipid- or blood sugar-lowering activity(28)

### 1.3 Inflammatory and edemetic disorder

Curcumin is a potent anti-inflammatory with specific lipoxygenase and COX-2 inhibitory properties. In vitro and in vivo studies have shown its effects in reducing acute and chronic inflammation. Curcumin inhibits edema at doses between 50 and 200 mg/kg in rats. A 50% reduction in edema was achieved at a dose of 48 mg/kg body weight, where curcumin was almost as effective as cortisone and phenylbutazone at similar doses. In rats, a lower dose of 20 to 80 mg/kg reduced inflammation and edema. Curcumin also inhibited formaldehyde-induced arthritis in rats at a dose of 40 mg/kg and showed no acute toxicity at doses up to 2 g/kg/day (29). In an animal study of streptococcal cell wall-induced rheumatoid arthritis, intraperitoneal injection of turmeric extract containing 4 mg total curcuminoids/kg/day for four days before arthritis induction inhibited acute (75%) and chronic (68%) joint inflammation. To test the efficacy of an oral preparation, a 30 fold higher dose of curcuminoid preparation, administered to mice four days before arthritis induction, reduced joint inflammation by 48% (30).

### 2.1 Gastrointestinal effect

Gastrointestinal effects Curcumin exerts some protective effects on the gastrointestinal tract. Turmeric also inhibits stress-induced ulcer formation, alcohol, indomethacin, reserpine, pyloric junction, gastric wall mucus growth in rats subjected to these gastrointestinal injuries. It also inhibits intestinal spasms and increases the secretion of bicarbonate, gastrin, secretin and pancreatic enzymes. An open-label phase II trial of 25 patients with endoscopically diagnosed gastric ulcers who received 600 mg of turmeric powder five times daily demonstrated complete healing in 48% of patients. No adverse reactions or blood abnormalities were recorded (28). Curcumin reduced mucosal damage in rats with experimentally induced colitis. Ten days before induction of colitis with 1,4,6- trinitrobenzene sulfonic acid, administration of 50 mg/kg curcumin resulted in a significant reduction in diarrhea, neutrophil infiltration, and lipid peroxidation in colonic tissue. In addition, all markers of inflammation were reduced and symptoms improved (31). In mouse models of experimentally induced pancreatitis, curcumin was able to reduce inflammation. In cerulean- or ethanol-induced pancreatitis, curcumin was also able to inhibit inflammatory mediators, which led to improvements in disease severity as measured by histology, pancreatic trypsin, serum amylase, and neutrophil infiltration (32).

### 2.2 Anti-cancer effect

Numerous animal studies have investigated the impact of turmeric on carcinogenesis. Several studies have shown that curcumin is able to inhibit carcinogenesis at three stages: angiogenesis, tumor promotion, and tumor growth. In two

studies on colon and prostate cancer, curcumin was shown to inhibit cell proliferation and tumor growth. Turmeric and curcumin are also able to suppress the activity of some common mutagens and carcinogens. The anticancer effects of turmeric and curcumin are related to direct antioxidant and free radical scavenging effects, as well as their ability to indirectly increase glutathione levels, thereby contributing to the hepatic detoxification of mutagens and carcinogens, as well as inhibiting the formation of nitrosamines. Curcumin has also been shown to inhibit the mutagenic inducing effect of UV radiation (29,33).

### 2.3 antimicrobial activity

Turmeric has been shown to inhibit the growth of a variety of bacteria, pathogenic fungi, and parasites. A study in chickens infected with *Eimeria maxima* showed that diets supplemented with 1% turmeric resulted in reduced intestinal damage and improved weight gain (32). In another animal study, topical application of turmeric oil inhibited dermatophytes and pathogenic fungi in guinea pigs 7 days after turmeric application (34). Curcumin also showed moderate activity against the major organisms *Plasmodium falciparum* and *Leishmania*(35)

### Hepato protective and renoprotective effects of turmeric –

Turmeric has been shown to have reprotective and hepatoprotective properties similar to silymarin. Animal studies have demonstrated the reprotective and hepatoprotective effects of turmeric against a variety of hepatotoxic insults. The hepatoprotective and reprotective effects of turmeric are primarily due to its antioxidant properties, as well as its ability to reduce the formation of proinflammatory cytokines (36-26). Turmeric and curcumin have also been shown to reverse fatty changes, biliary hyperplasia, and necrosis induced by aflatoxin production (36). Sodium curcumin, a salt of curcumin, also exerts choleric effects by increasing the biliary secretion of bile salts, cholesterol, and bilirubin, as well as increasing bile solubility, preventing and possibly treating cholelithiasis (25)

### 2.4 Alzheimer and turmeric

Epidemiological studies have suggested a reduced risk of Alzheimer's disease (AD) in patients with long-term use of non-steroidal anti-inflammatory drugs (NSAIDs), which may indicate the role of brain inflammation in Alzheimer's disease. It has also been shown to increase cytokines and activate microglia. Curcumin has been shown to have NSAID-like activity and reduce oxidative damage. To assess whether it could influence Alzheimer-type pathology, the effect of doses of 160 ppm and 5000 ppm of dietary curcumin on inflammation, oxidative damage and plaque pathology was tested. Both doses significantly reduced oxidized proteins and IL-1, a proinflammatory cytokine normally elevated in the brains of these mice. Considering its efficacy and apparently low toxicity, this species holds promise for the prevention of Alzheimer's disease (37-38).

### 2.5 Photo-protector activity

This action is due to its antioxidant activity. A large part of the lipids on the surface of the skin are unsaturated. Therefore, they are easily attacked by free radicals. The ultraviolet rays from the sun penetrate the skin and accelerate the damage caused by these radicals. Prolonged exposure to this radiation can degrade the lipids, causing deterioration of the skin structure. In laboratory studies, turmeric extract has been shown to be effective in suppressing inflammation and protecting epidermal cells from damage caused by ultraviolet B rays (28). Curcumin, in small doses, has been shown to protect against chromosome damage caused by gamma rays (28).

## III. HEALTH BENEFITS AND USES OF TURMERIC

- Turmeric contains curcumin, a substance with powerful anti-inflammatory and antioxidant properties. It contains a bioactive compound with medicinal properties
- It is used in the treatment of various diseases such as heart disease, cancer, metabolic syndrome, Alzheimer's disease and various degenerative diseases.
- Turmeric can increase the antioxidant capacity of the body by neutralizing the free radicals present in our body.

- Curcumin can stimulate brain-derived neurotrophic factor (BDNF) This is a gene involved in the production of a protein responsible for promoting the life of neurons and helps fight against various degenerative processes in our brain.
- Turmeric is an essential component used in the treatment of cancer, which can help prevent and even treat it.
- Arthritis patients with cancer respond well when offered curcumin supplements
- Turmeric also has many antidepressant benefit
- Curcumin can help delay aging and chronic age-related diseases
- It is a natural antiseptic and antibacterial agent, useful for disinfecting cuts and burns.
- Combined with cauliflower, it has been shown to prevent prostate cancer and inhibit the growth of existing prostate cancer.
- It prevents the spread of breast cancer to the lungs in mice.
- It can prevent melanoma and cause existing melanoma cells to commit suicide.
- It reduces the risk of childhood leukemia. 6. It is a natural liver detoxifier.
- It can prevent and slow the progression of Alzheimer's disease by eliminating the accumulation of amyloid plaques in the brain.
- It can prevent the formation of metastases in many forms of cancer.
- It is a powerful natural anti-inflammatory that acts like many anti-inflammatory medications but without the side effects.
- It has shown promise in slowing the progression of multiple sclerosis in mice.
- It is a natural analgesic and COX-2 inhibitor.(39)



**PRODUCTS OF TURMERIC AVAILABLE IN MARKET –**

**TURMERIC SKIN CREAM** -Turmeric skin cream, used as an antiseptic, treats acne, delays signs of aging. It is enriched with sandalwood oil: 3 in 1 cream with turmeric for a bright, even and clean skin



**TURMERIC BODY LOCTION**-Turmeric Body Lotion Contains Turmeric with Ubtan Kokam Butter for a bright skin. It is deeply moisturizing, non-greasy and makes the skin bright





**TURMERIC FACEWASH** -The turmeric face cleanser contains wild and white turmeric. It fights 90-9% of acne-causing bacteria and produces clear and toned skin. It is applied dry to normal skin



**Turmeric zandu tablets**-Zandu Turmeric Tablets It is an allergy promoter, complexion and is used for healthy skin



**Turmeric mouth wash** - Turmeric mouthwash Contains turmeric along with peppermint, tea tree oil, clove oil and eucalyptus oil. It is anti-plaque, 100% natural and vegetable, alcohol-free, antibacterial and prevents bad breath



**Turmeric juice** - Treats ulcerative colitis, is anti-inflammatory, blood purifier and antioxidant



**Turmeric Essential Oil**- Turmeric Essential Oil Repairs skin damage. Tightens rough skin and gives a bright glow. Directions for use are as follows: Mix 2 drops of turmeric with 2 drops of avocado oil. Apply the mixture at night.



**Turmeric Acne Shield** - Nourishes the skin for clear, glowing skin. It is vegan, 100% plant-based, non-GMO, soy-free and gluten-free.



**Turmeric Blood Detox Tablet** - Helps purify and cleanse the blood, blood circulation, helps eliminate toxins, has natural antioxidant and antiviral properties



**Turmeric facial kit** - Turmeric Face Kit Helps hydrate and hydrate the skin, brightens the skin and treats acne and pimples. Helps reduce skin redness, known to reduce blemishes, brings out a natural glow.



**Turmeric Toothpaste** - Helps prevent bleeding gums, swollen gums, bad breath. It offers an anti-plaque and gum formula and is used by 90% of people suffering from these conditions



**Turmeric Face Wax** - It is a painless 5 minute herbal wax, instant hair removal. removes dead cells and gives smoother results. Dermatologically tested



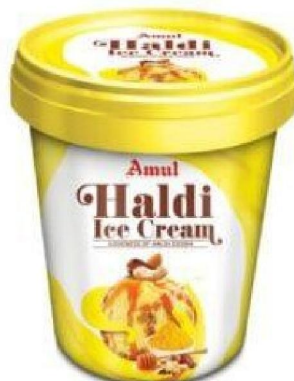
**Vicco Turmeric Cream** - Disappears into the skin and its active ingredients illuminate the face. Its regular use will give you soft, smooth and flawless skin. Protects the skin from acne, pimples and other skin problems



**Turmeric Soap** - Helps brighten the skin for a visibly brighter and more even complexion. Revitalizes and strengthens the skin to create a healthy glow. Gently cleanses dead cells, eliminates imperfections and is suitable for all skin types



**Turmeric Ice Cream** - Contains the goodness of real milk, turmeric, honey, dates, almonds, cashews and black pepper



### MEDICINAL AND COSMATIC USES

The use of turmeric as a major source of yellow pigment in rock art in the past and later in the preparation of costumes and masks of some folk and temple art forms was the main reason for its domestication rather than its use as a food, spice or medicine.(40) Its wide distribution and diverse uses in India, mainly as a spice and as an integral part of Hindu religious worship, rituals, ceremonies and social functions, in black magic and as medicine, paved the way for its rapid spread and diffusion in India and neighboring countries. Like many other tropical tubers, its domestication in Asia occurred during the transition of primitive people from hunter-gatherers to farmers. Turmeric dye is used in combination with some alkalis to dye silk and cotton. Turmeric being a natural color, is used in the pharmaceutical, confectionery and food industries. People use it to color Biryani, a rice preparation with meat. Being an important spice, its rhizome produces curcumin, an important yellow pigment, and oleoresin. It has been used since historical times as a dye, medicine, ceremonial color, and as a magical symbol (41). The cultivation or collection of turmeric began much earlier in India. During the Vedic period, perhaps 4000 years ago, there was cultural integration and disintegration between the Indus people and the newly arrived Aryans, which led to the emergence of a common system of religious and social practices with regional variations. It is an essential product from birth to death for Hindus. Recently, turmeric has gained some importance as a pesticide. Turmeric extracts controlled storage insects in green gram(42). In the past, rice farmers in Kerala preserved rice seeds with turmeric and neem leaves. placed in a bamboo container called Kuruma to resist insect attacks. Antifungal activity of turmeric (43) has been reported. Turmeric powder and mustard oil, either alone or in various combinations, have been shown to protect stored milled rice from damage caused by the corulinoid *Sitophilus oryzae*(45).

### IV. CONCLUSION

It is surprising that a natural yellow pigment, turmeric, consumed in India since the 5th millennium BC in medicine and food, has become one of the most cited natural molecules in terms of its ability to provide a variety of health-protective effects, as has been studied and proven. by modern medical communities around the world. In recent decades, extensive work has been done to determine the biological activity and pharmacological actions of turmeric and its extracts. It has been used in traditional medicine since ancient times, with various biological applications. Several studies are underway on the use of turmeric in drug development. Although the crude extract has many medicinal applications, clinical applications can only be made after extensive research into its beneficial activity, mechanism of action, pharmacotherapeutic studies and toxicity studies. However, since turmeric and its components exhibit a wide spectrum of biological activities, it would be easier to develop new drugs from turmeric after in-depth studies on its mechanism of action and pharmacological effects. In recent years, there has been increasing enthusiasm for the treatment of various diseases with natural products. Curcumin Curcumin is a non-toxic and very promising natural antioxidant, a spice with a wide range of biological functions. It is expected that turmeric and its components, especially curcumin and essential oils, may find application as a new drug in the near future to combat various diseases, including inflammatory disorders, carcinogenesis, HIV/AIDS, diabetes, pathogenesis caused by oxidative stress and many others. . All these studies will further strengthen the benefits of turmeric and its components,

especially curcumin and essential oil. In general, due to its use, biological safety, combined with its cost and effectiveness and thousands of years of experimentation, turmeric is called "The golden spice of life"

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