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Turmeric: A Herbal and Traditional Medicine

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Abstract

Turmeric is a mild digestive, being aromatic, a stimulant and a carminative. Turmeric is one of nature's most powerful healers. The active ingredient in turmeric is curcumin. Turmeric has been used for over 2500 years in India, where it was most likely first used as a dye. The medicinal properties of this spice have been slowly revealing themselves over the centuries. Long known for its anti-inflammatory properties, recent research has revealed that turmeric is a natural wonder, proving beneficial in the treatment of many different health conditions from cancer to Alzheimer's disease. An ointment based on the spice is used as an antiseptic in India. Turmeric water is an Asian cosmetic applied to impart a golden glow to the complexion. Curcumin has been shown to be active against *Staphylococcus aureus* (pus-producing infections). Anemia, cancer, diabetes, digestion, food poisoning, gallstones, indigestion, IBS, parasites, poor circulation, staph infections, and wounds. Turmeric decreases Kapha and so is used to remove mucus in the throat, watery discharges like leucorrhea, and any pus in the eyes, ears, or in wounds, etc. In Unani medicine, turmeric has been used for conditions such as liver obstruction and jaundice and has been applied externally for ulcers and inflammation. Roasted turmeric has been used as an ingredient of a preparation used for dysentery. Turmeric has also been used in tooth powder or paste. Turmeric has been used for many conditions in traditional medicine in India, Pakistan and Bangladesh. The rhizome is generally the part of the plant that is most widely used. It can be prepared in various ways and is reputed to alleviate asthma and coughs. Hot water extracts of the dried rhizome have been taken orally in Ayurvedic medicine to reduce inflammation. Turmeric is also regarded as a 'rasayana' herb, which is a branch of Ayurvedic medicine. Here turmeric is used to counteract ageing processes.

Key words: Ayurveda, Curcumin, Haldi, Rasayan, Traditional Medicine.

Introduction

Turmeric is an ancient spice, a native of South East Asia, used from antiquity as dye and a condiment. It is cultivated primarily in Bengal, China, Taiwan, Sri Lanka, Java, Peru, Australia

and the West Indies. It is still used in rituals of the Hindu religion, and as a dye for holy robes, being natural, unsynthesized and cheap. Turmeric is in fact one of the cheapest spices. Although as a dye it is used similarly to saffron, the culinary uses of the two spices should not be confused and should never replace saffron in food dishes. Its use dates back nearly 4000 years, to the Vedic culture in India where it was used as a culinary spice and had some religious significance. The name derives from the Latin *terra merita* “meritorious earth” referring to the colour of ground turmeric which resembles a mineral pigment. Turmeric (*Curcuma longa*) has been used for 4,000 years to treat a variety of ailments. Several research studies have found that turmeric may, in fact, help treat a number of illnesses. However, it is important to remember several facts when you hear news reports about turmeric's medicinal properties. First, many studies have taken place in test tubes and animals, and the herb may not work as well in humans. Second, some studies have used an injectable form of curcumin (the active substance in turmeric). Finally, some of the studies show conflicting evidence. Nevertheless, turmeric may have promise for fighting infections and some cancers, reducing inflammation, and treating digestive problems. Turmeric is widely used as a food coloring and gives Indian curry its distinctive flavor and yellow color. It is also used in mustard and to color butter and cheese. Turmeric has long been used in both Ayurvedic and Chinese medicine as an anti-inflammatory, to treat digestive and liver problems, skin diseases, and wounds. The curcumin in turmeric has been shown to stimulate the production of bile by the gallbladder. Curcumin is also a powerful antioxidant; antioxidants scavenge damaging particles in the body known as free radicals, which damage cell membranes, tamper with DNA, and even cause cell death. Antioxidants can neutralize free radicals and may reduce or even help prevent some of the damage they cause. In addition, curcumin reduces inflammation by lowering levels of two inflammatory enzymes (called COX-2 and LOX) in the body and stops platelets from clumping together to form blood clots. It is a valuable home remedy for bronchial asthma. A teaspoon of turmeric powder with a glass of milk twice or thrice daily is very effective. It acts best on an empty stomach. Turmeric is a valuable intestinal antiseptic. The rhizome, its juice or dry powder, mixed in buttermilk or plain water is highly beneficial in intestinal problems, especially chronic diarrhea. It also helps prevent flatulence. About 20 drops of the juice of raw turmeric, mixed with a pinch of salt, taken first thing in the morning daily is considered an effective remedy for expelling worms. Turmeric, being rich in iron is useful in anemia. A teaspoon of raw turmeric juice, mixed with honey is taken everyday in the treatment of this condition. Turmeric is useful in the treatment of measles. Turmeric roots are dried in the sun and ground to a fine powder. This mixed with a few drops of honey and the juice of few bitter gourd leaves can be taken by those suffering from measles. Turmeric with its antiseptic properties is a useful remedy for chronic cough and throat irritations. Half a teaspoon of fresh turmeric powder mixed in 30 ml of warm milk is very effective in these conditions. To prepare this milk is poured on a hot ladle with turmeric in it and boiled over a slow fire. In case of a running cold smoke from burning turmeric can be inhaled. This increases the discharge from the nose and brings quicker relief. Turmeric in combination with caraway seeds or ajwain is beneficial for cold in infants and children. A teaspoon of turmeric powder and quarter teaspoon of ajwain are added to boiling water which is then cooled. About 30 ml of this decoction sweetened with honey may be taken thrice a day in treating such conditions. For treating sprains or the swelling caused by sprains, turmeric paste mixed with lime and salt can be applied with beneficial results.

Turmeric powder is beneficial in soreness of the eyes. About 6 grams of this powder is boiled in about half a liter of water till it is reduced to half. A few drops of this water put in the affected eyes three or four times a day give relief. An application of turmeric powder to boils speeds up the healing process. In case of fresh boils a few dry roots of turmeric are roasted and the ashes dissolved in a cupful of water add applied over the affected portion. This solution enables the boils to ripen and burst. It is useful in the treatment of skin diseases like ringworm and scabies. In such cases, the juice of raw turmeric is externally applied to the affected parts. Simultaneously, turmeric juice, mixed with honey should be taken orally. India produces nearly the whole world's turmeric crop and consumes 80% of it. With its inherent qualities, Indian turmeric is considered to be the best in the world. The fresh spice is much preferred to the dried spice in South East Asia. The fresh rhizome is grated and added to curry dishes; it is also used as a yellow curry paste in Thailand. Due to Indian influence, turmeric has also made its way into Ethiopian cuisine. Besides flavoring food, the most common uses of turmeric are to purify the blood and remedy skin conditions. Many people are familiar with turmeric as a traditional Middle-Eastern spice, but few know of its medicinal virtues. Turmeric, otherwise known as *Circuma longa*, is a member of the ginger family, Zingaberaceae. The Latin name is derived from the Persian word, "kirkum," which means "saffron," in reference to the rhizome's vibrant yellow-orange color. It is indigenous to southeast Asia, but has long been used and cultivated throughout India. Turmeric is highly valuable for the influence it exerts on the digestive system and the liver. In both Ayurvedic and traditional Chinese medicine, it is considered to be a bitter digestive and a carminative. It is used by Unani practitioners to expel phlegm or kapha, opening out the blood vessels to improve blood circulation. It can be incorporated into foods, including rice and bean dishes, to improve digestion and reduce gas and bloating. It is a cholagogue, stimulating bile production in the liver and encouraging the excretion of bile via the gallbladder. This improves the body's ability to digest fats. Western cuisine does not use turmeric directly, but it forms part of several spice mixtures and sauces; it is also used to impart a bright yellow color to mustard paste. Preliminary studies on mice suggest curcumin may be effective in stopping the progression of Multiple Sclerosis. Researchers at Vanderbilt University have found that mice bred to develop a MS-like disease, experimental autoimmune encephalomyelitis (EAE), demonstrated little or no symptoms of the disease when given curcumin. Mice that were not given curcumin went on to develop severe paralysis.

History of turmeric

Turmeric (*Curcuma longa*) and several other species of the curcuma genus grow wild in the forests of Southern Asia including India, Indonesia, Indochina, nearby Asian countries, and some Pacific Islands including Hawaii. All of these areas have traditional culinary and medicinal uses going back to pre-history. In the Indian Ayurveda system of herbal medicine, turmeric is known as strengthening and warming to the whole body. Traditional uses in India include to improve digestion, to improve intestinal flora, to eliminate worms, to relieve gas, to cleanse and strengthen the liver and gallbladder, to normalize menstruation, for relief of arthritis and swelling, as a blood purifier, to warm and promote proper metabolism correcting both excesses and deficiencies, for local application on sprains, burns, cuts, bruises, insect bites and itches, for soothing action in cough and asthma, as antibacterial and anti-fungus, and in any condition of weakness or debility. According to Michael Moriarty, "The ancient Hawaiians used this herb for many things, including the prevention and treatment of sinus infections (it is very astringent and appears to pull mucus out), ear infections (swimmers ear) and gastrointestinal ulcers." Turmeric is eaten as a food both raw and cooked throughout Asia. While turmeric root looks

much like ginger root, it is less fibrous and is more chewable, crunchy, and succulent. The fresh root (not the powder) has a somewhat sweet and nutty favor mixed with its bitter flavor. As a result, it is not unpleasant to eat and not difficult to chew. It is sometimes chewed plain or chopped up and put in salads raw. Traditional use includes mashing/grinding it in a mortar to make a paste to mix with other spices for flavoring in curries. In modern times, the most common use is of the dried root powder as the base of most curries in India and other nearby countries. (personal observation)

Another traditional use of turmeric is as a food colorant and dye for cloth – in both cases a cheaper alternative to saffron. It was and is used in religious ceremonies and offerings – often representing life, purity, and prosperity. The old herbals of Europe make little if any mention of turmeric. Marco Polo refers to turmeric as Indian saffron used for dyeing cloth. Michael Castleman writing in 1991 says: “The ancient Greeks were well aware of turmeric, but unlike its close botanical relative, ginger, it never caught on in the West as either a culinary or medicinal herb. It was, however, used to make orange-yellow dyes. In the 1870’s, chemists discovered turmeric’s orange-yellow root powder turned reddish brown when exposed to alkaline chemicals. This discovery led to the development of turmeric paper ... to test for alkalinity.” European and American herbalists up until the late 20th century had little interest in turmeric. For example, in all of Dr. Christopher’s writings the only mention of turmeric I can find is that it is listed as an alternative tonic. In Jethro Klauss’s book *Back to Eden*, I can find no mention of turmeric at all. This indicates to me that the herbal schools Dr. Christopher and Jethro Klauss went to were not aware of the potential of turmeric which was well known to Asian herbalists. I also suspect that there was a disconnect between Asian and western herbalists. Michael Castleman comments: “American chemists used turmeric paper, but not even the botanically oriented 19th century Eclectic physicians had much use for turmeric itself, except to add color to medicinal ointments.” In one western herbal from the early 20th Century, I do find a discussion of turmeric. This is in Maude Grieve’s book *A Modern Herbal*. She gives a botanical description and the constituents of the herb as if the herb was of some importance, but then under *Medicinal Actions and Uses* she says: “Turmeric is a mild aromatic stimulant seldom used in medicine except as a coloring. It was once a cure for jaundice. Its chief use is in the manufacture of curry powders. It is also used as an adulterant of mustard and a substitute for it and forms one of the ingredients of cattle condiments. ... Turmeric paper is ... used as a test for alkaloids and boric acid.” This disregard of turmeric as an important nutritional and medicinal herb continued in western herbalism up until the late 20th Century. However, even as Maude Grieve was writing, the roots of turmeric’s emergence as a prominent healing herb were starting to grow. Daniel B. Mowrey tells the story: “Serious research on turmeric began in Germany, in the early 1920’s. Sesquiterpenes in the essential oil of turmeric were isolated in 1926 and to them was ascribed the therapeutic activity. Later, a team of scientists compared the effects of whole extract, the essential oil, and the water-soluble extract. In 1936, curcumin was compared to whole extract and several isolated constituents. ... The results of the experiment show that turmeric acts in the following ways: Turmeric stimulates the flow of bile; several constituents have this property. The increased flow of bile depend in part on the contraction of the gallbladder and in part on the increase in bile secretion;

The stimulation of bile depends mostly on the presence of essential oil; The flavonoids cause the contraction of the gallbladder and thereby increase the effective emptying of this organ.” “While studies were being pursued in European, primarily German laboratories, Asian

researchers were independently validating the same properties of turmeric. But their interest extended to the liver protective and curative principles of turmeric and in a series of brilliant papers they reported important findings in that area. So far what has clearly been demonstrated is that turmeric possesses anti-hepatotoxic activity on the order possessed by other liver-protective herbs such as milk thistle and licorice. Other research has helped establish the effects of turmeric on the blood. For example, as many of the common curry herbs do, curcumin prevents large fluctuations in blood cholesterol after meals. The potent anti-inflammatory activity (in the essential oil and in curcumin) of turmeric has been substantiated in other research. Like other non-steroidal anti-inflammatory agents (such as licorice root), curcumin appears to act through some sort of adrenal mechanism (when the adrenals are removed, turmeric has no effect).” In the mid-20th century, western herbalists began taking note and considering turmeric for herbal use – initially in Germany. In Rudolph Weiss’s book, *Herbal Medicine*, first published in 1961, discusses the potential use of turmeric for the digestive system: “Its usefulness as a gallbladder remedy in the narrower sense has been demonstrated. The cholagogue and choleretic action is quite powerful. The people of Java call this plant temoe lavak. In India and other Asian countries it has a long tradition as a popular remedy for jaundice and liver disease. There is no doubt that it can be effective, particularly where bile flow needs to be thoroughly stimulated” However, Dr. Weiss then discourages the use of turmeric and makes comments which appear to me to reflect hearsay and not personal use: “but it is doubtful if it achieves more than our native drugs The yellow pigment has marked irritant effect on the gastric mucosa, so that caution is indicated where there is a tendency to hyper acidity or where there is simple irritable stomach Observations made in India have shown the powerful and lasting irritant effect of curry on the stomach.” This discussion obviously ignores the potential other causes of gastric irritation such as excessive use of oils (which are often rancid) and overcooking literally for hours at very high temperatures – typical of Indian curries. Few contemporary herbalists recommended turmeric through the 1980’s and when they did it was for limited or special uses such as liver tonic or menstrual regularity. However, by the early 1990’s a chorus of prominent western herbalists (including Murray, Hobbs, Castleman, Mowrey, Duke, Clark, Tierra, and Pederson), began promoting the use of turmeric for several major health problems. As Michael Castleman put it: “Western herbalists, wake up. Turmeric is a healer.”

Health benefits of turmeric in our daily life

1. It is a natural antiseptic and antibacterial agent, useful in disinfecting cuts and burns.
2. When combined with cauliflower, it has shown to prevent prostate cancer and stop the growth of existing prostate cancer.
3. Prevented breast cancer from spreading to the lungs in mice.
4. May prevent melanoma and cause existing melanoma cells to commit suicide.
5. Reduces the risk of childhood leukemia.
6. Is a natural liver detoxifier.
7. May prevent and slow the progression of Alzheimer's disease by removing amyloid plaque buildup in the brain.
8. May prevent metastases from occurring in many different forms of cancer.
9. It is a potent natural anti-inflammatory that works as well as many anti-inflammatory drugs but without the side effects.
10. Has shown promise in slowing the progression of multiple sclerosis in mice.
11. Is a natural painkiller and cox-2 inhibitor.

12. May aid in fat metabolism and help in weight management.
13. Has long been used in Chinese medicine as a treatment for depression.
14. Because of its anti-inflammatory properties, it is a natural treatment for arthritis and rheumatoid arthritis.
15. Boosts the effects of chemo drug paclitaxel and reduces its side effects.
16. Promising studies are underway on the effects of turmeric on pancreatic cancer.
17. Studies are ongoing in the positive effects of turmeric on multiple myeloma.
18. Has been shown to stop the growth of new blood vessels in tumors.
19. Speeds up wound healing and assists in remodeling of damaged skin.
20. May help in the treatment of psoriasis and other inflammatory skin conditions.

Turmeric medicinal uses

From many years awareness of turmeric and its use as medicine is continuously increasing. A flowering plant, Turmeric, in the ginger family, is commonly used as a food coloring and is one of the basic ingredients in curry powder. To heal many health disorders like liver problems, digestive disorders, treatment for skin diseases and wound healing turmeric has long been used in Medicinal as an anti-inflammatory. **Curcumin** is the active ingredient in turmeric which has been shown to have a wide range of therapeutic effects.

Digestive Disorders

Turmeric is considered as a digestive bitter and a carminative. It can be added into foods including rice and bean dishes to improve digestion, reduce gas and bloating. It is a cholagogue, stimulating bile production in the liver and encouraging excretion of bile via the gallbladder. This improves the body's ability to digest fats. For chronic digestive weakness and/or congestion turmeric is recommended. It can be taken as a single extract or in the form of digestive bitters, which combine turmeric with other bitter and carminative herbs. Turmeric is beneficial for people who feel tired after consuming meals or who experience gas and bloating. Whatever way turmeric is consumed it is beneficial to both the digestive system and the liver.

Liver Diseases

Turmeric is beneficial for its influence on the liver. In spring more consumption of herbs and foods can strengthen the liver. Turmeric shares similar liver protectant compounds that milk thistle and artichoke leaves contain. It is said to shrink engorged hepatic ducts, so it can be useful to treat liver conditions such as hepatitis, cirrhosis, and jaundice.

Cancer

Recent scientific research confirm that turmeric can cure host of diseases, also they found that turmeric restrain the growth of various types of cancer. Turmeric is used for the treatment of skin cancer or pre cancerous skin conditions. Both topical and internal uses are beneficial.

Atherosclerosis

Turmeric may helpful in preventing the blockage of arteries that can gradually cause a heart attack or stroke in one of two ways. Turmeric makes cholesterol levels low and inhibited the oxidation of LDL (bad cholesterol). Oxidized LDL deposits in the walls of blood vessels and contributes to the formation of atherosclerotic plaque. Turmeric may also prevent platelet build

up along the walls of an injured blood vessel. Platelets collecting at the site of a damaged blood vessel cause blood clots to form and blockage of the artery as well.

Osteoarthritis

Turmeric may help relieve the symptoms of osteoarthritis because of its ability to reduce pain and disability.

Menstrual problems of Woman

For women who experience monthly menstrual cramps, try using turmeric extract or bitters twice daily for two weeks prior to expected menstruation. Turmeric is an antispasmodic to smooth muscles so it reduces digestive and menstrual cramping. It should reduce the severity of pain, if not ease them completely. Certainly, diet and standard of living have a reflective influence on the menstrual cycle, but turmeric is a great addition.

Bacterial Infection / Wounds

Turmeric is useful as an external antibiotic in preventing bacterial infection in wounds.

Eye Disorder

Curcumin may prove to be as effective as corticosteroids in the uveitis (inflammation of the uvea, the middle layer of the eye between the sclera - white outer coat of the eye and the retina - the back of the eye) the type of eye disorder.

Other Health Disorders

Turmeric decreases congestion and inflammation from stagnant mucous membranes. Turmeric is anti-inflammatory to the mucous membranes, which coat the throat, lungs, stomach and intestines. Regular use of turmeric can benefit from Colitis, Crohn's disease, diarrhea, and post-giardia or post salmonella conditions. The itching and inflammation that accompanies hemorrhoids and anal fissures can reduce by use of turmeric. Turmeric can also benefit skin conditions including: eczema, psoriasis and acne, for those it is potent detoxifier.

"Turmeric gives the energy of the Divine Mother and grants prosperity of health. Turmeric is effectual for purification the chakras, as well as purifying the path of the subtle body."

Turmeric as healing properties

Besides flavoring food, to purify the blood and skin conditions remedy is probably the most common use of Turmeric in Ayurveda.

- ❖ The main organs that turmeric treats are the skin, heart, liver and lungs.
- ❖ Turmeric is used for epilepsy and bleeding disorders, skin diseases, to purify the body-mind, and to help the lungs expel Kapha.
- ❖ **Activities of Turmeric include:** Alterative, analgesic, antibacterial, anti-inflammatory, anti-tumor, anti-allergic, antioxidant, antiseptic, antispasmodic, appetizer, astringent, cardiovascular, carminative, cholagogue, digestive, diuretic, stimulant, and vulnerary.
- ❖ **Therapeutic uses of Turmeric:** Anemia, cancer, diabetes, digestion, food poisoning, gallstones, indigestion, IBS, parasites, poor circulation, staph infections, and wounds.

- ❖ Turmeric helps to regulate the female reproductive system and purifies the uterus and breast milk, and in men it purifies and builds semen, which is counterintuitive for a pungent bitter.
- ❖ Turmeric reduces fevers, diarrhea, urinary disorders, insanity, poisoning, cough, and lactation problems in general.
- ❖ Turmeric is used to treat external ulcers that respond to nothing else. Turmeric decreases Kapha and so is used to remove mucus in the throat, watery discharges like leucorrhea, and any pus in the eyes, ears, or in wounds, etc.
- ❖ In Ayurvedic cooking, turmeric is everywhere, this multifaceted wonder spice helps
 - Detoxify the liver
 - Balance cholesterol levels
 - Fight allergies
 - Stimulate digestion
 - Boost immunity
 - Enhance the complexion

It is also an antioxidant Ayurveda recognizes turmeric as a heating spice, contributing bitter, pungent and astringent tastes.

Remedies of turmeric

Anemia

Everyday take a dose of 1 tsp of turmeric juice mixed with honey.

Asthma

Boil 1 cup of milk with 1 tsp of turmeric powder. Drink warm.

Burns

Mix 1 tsp of turmeric with 1 tsp of aloe gel and apply to burnt area.

Conjunctivitis

Mix 1 tbsp of crushed, raw turmeric in 1/3 cup of water. Boil and sieve. 2–3 drops of this mixture may be used in each eye up to 3 times per day.

Complexion

Apply a paste of turmeric on the skin before bed, and wash off after a few minutes. In the morning, remove any remaining yellow tinge with a paste of chickpea flour (besan) and oil.

Dental problems

Mix 1 tsp of turmeric with ½ tsp of salt. Add mustard oil to make a paste. Rub the teeth and gums with this paste twice daily.

Diabetes

½–1 tsp of turmeric should be taken 3 times a day.

Diarrhea

Take ½ tsp of turmeric powder or juice in water, 3 times per day.

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Pain

Mix 1 tsp of turmeric and 2 tsp of ginger with water to make a paste. Spread over a cloth, place on the affected area and bandage.

Add 1 tsp of turmeric to 1 cup of warm milk and drink before bed.

Other uses

In cooking, turmeric acts as a yellow coloring agent. It is an important herb in Hindu rituals. It is also a ingredient in cosmetics as it is beneficial for the skin. Burning turmeric can repel insects. Inhaling the smoke can assist in coughs, asthma and congested nasal passages.

Ears, Eyes, Nose and Mouth

Turmeric dust, with alum 1:20, is blown into the ear to treat chronic otorrhea.

Mix a pinch of Turmeric with organic ghee and apply it to the mucus lining of nose to stop the sniffles. It also stops nosebleeds, helps to clear the sinuses, restore a more acute sense of smell, and helps to purify the mind and brain.

Turmeric helps to maintain the shape and integrity of our eyes.

A Turmeric/water decoction, 1:20, is used to treat conjunctivitis and eye disease in general. Soak a cloth in the decoction and then cover the eye with it. This helps to relieve the pain as well.

Turmeric for Stomach and Intestines

Turmeric treats the whole Gastro - Intestinal system.

In general turmeric is used for

- Weak stomachs
- Poor digestion
- Dyspepsia
- To normalize metabolism
- To help digest protein
- To increase the bio-availability of food and the ability of the stomach to withstand digestive acids.

Turmeric is a great carminative, able to calm an upset digestive system by getting rid of gas and distention. Carminatives also tend to increase absorption and nurture the intestinal flora. Taking Turmeric will work fine to balance an upset digestion. Just take a small spoonful of Turmeric and stir it in a cup of yogurt right after lunch. Remedy for 'piles' is to directly apply a mixture of mustard oil, turmeric, and onion juice. To stop rectal bleeding take a 2 or 3 tablespoons of Turmeric every half hour until the bleeding stops, usually in an hour.

Therapeutic uses of turmeric

Turmeric is a wide, foot-long, lily-like leaves and yellow to yellowish white flowers that is native to India, Bangladesh and China. It has a strong taste and its yellow color is almost impossible to remove once it stained your clothes. The culinary and medicinal value of turmeric is in the root or rhizome; it is dried and ground into the spice.

Turmeric is beneficial in the treatment of Gallbladder problems, hepatitis, indigestion, infections, lack of appetite, scabies, Alzheimer's disease, arthritis, asthma, athlete's foot, boils, bursitis,

breast cancer, colon cancer, cataracts, colic, dermatitis, diarrhea, eczema, fibrosis, gallstones, gas, hardening of the arteries, heart disease, high cholesterol, high triglycerides, inflammation, intestinal pain, irritable bowel syndrome, jaundice, lack of menstruation, lymph gland problems, menstrual pain, morning sickness, pain, psoriasis, sprains, ulcers, wounds, yeast infections. It is also being use for the treatment of bruises, for childbirth, eye inflammation, epilepsy, fever, hemorrhage, hemorrhoids, itching, ringworm.

Therapeutic Properties:

Turmeric contains curcumin and curcuminoids it is a first rate natural remedy for arthritis, it has an anti-inflammatory ingredient that can help alleviate pain. It can also help protect the gallbladder and liver and provide a defense against cancer. Curcumin can also help inhibit the formation of cancer in breast tissue. Experiment on animal shows that curcumin slashed the risk of colon cancer by almost 60%, this phytochemical seems to neutralize cancer-causing compounds, stop cancerous changes in the cells and directly fight substances that enable carcinogens to spread and wreak havoc. Turmeric also triggers better bile flow, which helps digest fats and reduces the risk of gallstones. It also helps generates the secretion of several enzymes that assist the liver in breaking down and metabolizing certain toxic substances. Some of these same phytochemicals inhibit the oxidative damage that allows cholesterol to coagulate and cling to the inside of arteries. Turmeric /curcumin is about half as effective as corticosteroids, but it doesn't have bad side effect as corticosteroids, this drug is use for the treatment of arthritis, but they can cause fluid retention and bloating, elevate blood pressure, encourage intestinal bleeding, ulcer formation and increase the risk of osteoporosis.

Direction for use / Dosage:

400 milligrams of a curcumin extract three times a day, 445 milligrams of a standardized supplement 2 to 3 times a day, 1tsp of the dried herb in a cup of warm milk daily, 1tsp to 1 tbsp of a liquid extract divided into several dosages over the course of a day, or 1/8 to ¼ tsp of turmeric tincture 3x a day. Your body will absorbed more curcumin if you take it with lots of black pepper. The pipeline in pepper improves the body's ability to use turmeric perhaps as much as twentyfold, according to studies. Ginger is also a good companion for turmeric.

Caution:

Don't take turmeric if you have bile duct obstruction, people with gallstones should consult a herb physician before taking this. Excessive dosage of curcuminoids could cause ulcers or cancer and reduce the number of red and white blood cells in the body. Too much intake can also cause hair fall. When buying turmeric, always buy from reputable seller since some species are toxic.

Turmeric use as traditional medicine

India, China, and Southeast Asia have valued turmeric as a medicine for hundreds of years. In Ayurvedic medicine, the 5,000-year-old natural healing system of India, turmeric is used as a cleansing herb for the whole body and as a remedy for minor wounds, poor digestion, arthritis, jaundice, inflammation, and pain. If you were told that taking as little as one teaspoon per day of a simple spice could possibly treat the pain of arthritis, ward off ulcers, fight heart disease, prevent some cancers, treat dysentery, and protect your liver. Well, this is turmeric. Turmeric has been the subject of a great deal of research and all of it has been very promising. Turmeric exhibits very strong anti-inflammatory and antioxidant properties. This would be exciting enough, but turmeric offers so much more. It would probably be easier to say what it couldn't

do...but that wouldn't be half as enlightening. Turmeric is a member of the ginger family and like ginger it is the rhizome that is used. It is cured in a special process...boil, clean, sun dry, and polish. Not surprisingly, India is the world's major producer of turmeric today, responsible for around 94 percent of the world's supply. Curcuminoids are what give turmeric its characteristic (and beautiful) yellow coloring. Curcumin is one of the curcuminoids, and has been the focus of much research. Curcumin is similar to the compound capsaicin (found in cayenne), curcumin lowers something called "substance P" so pain signals are not transmitted through nerve fibers. Turmeric has shown strong liver protective properties. In this age of giving a "pill for every ill", this kind of liver support can be potentially crucial. Our livers have to process every drug that we take in. This can take its toll. Acetaminophen (brand name Tylenol) can be especially hard on one's liver especially if we are taking it regularly or in large amounts. So can alcohol. Using turmeric may be a great insurance policy towards protecting that liver. Arthritis can be a misery, but many of the medications to treat the pain and inflammation of the arthritis can be a misery in themselves. Taking turmeric (curcumin 1,200 mg to be exact) every day significantly improved the swelling and stiffness of the joints and improved the ability to walk in a study of rheumatoid arthritis sufferers. The best news here is that curcumin does not have the toxicity potential of other anti-inflammatory drug therapies. Turmeric, like many culinary herbs, helps to slow food spoilage. This is due to the fact that it has an antibiotic action. Laboratory tests have shown that turmeric also fights protozoa. These are a group of nasties that, among other things, can be responsible for dysentery. Traditionally, turmeric has been used to treat this type of dysentery, and anecdotal reports show that it has been quite successful. Turmeric may also prevent heart disease and stroke by preventing the blood clots that are the causes of many. Also, it has been shown to lower cholesterol. Be mindful, that these studies are preliminary, but very promising. Also, in the realm of heart disease, turmeric is strongly anti-inflammatory and inflammation is the enemy of our arteries. A human trial was done involving only smokers. Participants were given 1.5 grams of turmeric (approximately 1 teaspoon) per day for one month. Findings were promising. Smoker's urine normally contains substances called mutagens. These mutagens are agents capable of causing mutations in genes. The mutagens are potentially carcinogenic. At the end of the study, the smoker's urine had a significant reduction of these mutagens excreted in their urine. Good for your arteries, potential cancer and heart disease prevention, and so much more. It is usually very well tolerated also. In unusually large amounts, it can cause some stomach upset. If this should occur, either discontinue use or cut back on the dosage. Pregnant women should not use turmeric in its supplement form. In addition those with gallstones or other bile duct blockages should not take it, as it is a bile production stimulant. Also, those people taking blood thinners (example: Coumadin) should check with their physician before using turmeric as a supplement. This is always a good idea with any herbal supplement, especially if you are taking medications or if you have preexisting conditions. Turmeric is a perennial plant belonging to the ginger family which can be found in several countries of South East Asia as well as all of the Caribbean islands. The root of the plant has a bulb like appearance which is usually dried and ground before use although there are some applications where it can be used while freshly dug from the ground. It is the root or bulb that is used for cooking as well as for medicinal applications. Indians, Chinese and West Indians have used this herb as much as for medicinal uses as they have for cooking. Turmeric is called *Curcuma Longa* in Latin, Haridra or the Yellow one in the Sanskrit language and Haldee in the Hindi language. It is also associated with Ayurvedic medicines in the Vedas or ancient lore of the Hindus and is an integral part of what is referred to as Aushadhi or herbal medicines. Traditional Chinese practitioners have used

turmeric medicinally for liver and gallbladder disorders, respiratory congestion, promotion of digestion and assimilation, improving blood circulation, regulating menses, and helping heal bruises and sprains. Based on these and many other traditional uses, researchers are now beginning to realize the importance of turmeric's anti-inflammatory, anti-oxidant, and anticarcinogenic actions and its liver-protective properties.

Characteristics

Turmeric is a member of the ginger family, grown and commercially harvested in India, Asia, and other tropical countries. The thick, cured rhizomes contain protein, vitamins, minerals, carbohydrates, and yellowish orange volatile oils called curcuminoids that are responsible for the biological activity of turmeric.

A Beneficial Derivative

Curcumin is the principal curcuminoid derived from turmeric and is best known as an anti-inflammatory. It is sometimes formulated with bromelain, a protein-digesting enzyme found in pineapple, to increase absorption and enhance its anti-inflammatory action. This combination should be taken on an empty stomach 20 minutes before meals or between meals.

In rheumatoid arthritis and osteoarthritis, animal and human studies have shown that curcumin is as effective in reducing inflammation and swelling, with fewer side effects, as hydrocortisone or phenylbutazone, a non-steroidal anti-inflammatory (NSAID) medication. The recommended dosage of curcumin for inflammatory conditions is 400 mg to 600 mg three times a day.

Digging Deeper

Curcumin is being studied in patients with mild to moderate Alzheimer's disease. An ongoing study is examining the safety, tolerability, and absorption of curcumin to determine its potential effect on cognition, behaviour, and daily function of Alzheimer's patients.

Researchers are also evaluating curcumin for its antiviral and antibacterial actions and as a preventive agent and treatment option for stomach ulcers, multiple sclerosis, atherosclerosis, and HIV/AIDS.

Anticancer Agent

Turmeric shows real promise as an anticancer agent due in part to its antioxidant activity. Several recent studies demonstrate that the frequent use of turmeric has been linked to lower rates of breast, colon, lung, and prostate cancer.

Laboratory tests conclude that curcumin may prevent the development of tumours and slow the spread of cancer cells. Currently, clinical trials are under way to assess the efficacy of curcumin in patients with advanced pancreatic cancer.

In addition, curcumin is often recommended to protect healthy cells from the harmful effects of radiation and chemotherapy, without reducing the effectiveness of these treatments.

Spice Up Your Veggies

Prostate cancer is a leading cause of cancer in men with new cases being diagnosed every year. The good news is scientists at the State University of New Jersey recently tested curcumin and phenethyl isothiocyanate, a naturally occurring substance abundant in cruciferous vegetables, and found that this combination significantly reduced tumour growth and the cancer's ability to

metastasize in mice implanted with human prostate cancer cells. Best of all, cauliflower, broccoli, kale, turnips, and cabbage taste delicious when spiced with turmeric.

Further Dietary Assets

Some of our best cholesterol fighters can be found right in our own kitchens, and turmeric is no exception. Studies show that curcumin can lower LDL levels of cholesterol, increase the beneficial HDL levels, and reduce the production of cholesterol gallstones.

Turmeric is also a potent liver herb. Many herbal practitioners believe that turmeric is comparable to milk thistle for treating hepatitis and improving liver function. Turmeric stimulates the liver's production of bile to help break down fats. It improves peristalsis, the rhythmic contractions that move food through the intestinal tract, and increases glutathione, a powerful substance present in the liver that helps detoxify and eliminate pesticides, heavy metals, and harmful chemicals.

Turmeric can be consumed often and generously in the diet, although prolonged use may cause stomach upset for some. It adds a mild, slightly bitter, peppery flavour and a golden yellow colour to curry dishes, rice, chicken, fish, vegetables, and lentils. Turmeric can also be taken as a tincture, in capsules, and as a powder blended in water or juice. The next time you are preparing your favorite meal, consider spicing it up with a healthy dose of turmeric.

In Unani medicine, turmeric has been used for conditions such as liver obstruction and jaundice and has been applied externally for ulcers and inflammation. Roasted turmeric has been used as an ingredient of a preparation used for dysentery. Turmeric has also been used in tooth powder or paste.

A hot water extract of the dried rhizome has been taken orally to slow lactation, to regulate fat metabolism, for diabetes, diarrhoea, liver diseases and has been taken as a tonic and to calm the stomach. The fresh juice taken regularly on an empty stomach has been used to prevent stomach disorders. A hot water extract of the dried rhizome is regarded as having an abortion promoting effect when taken orally or in the form of a pessary.

External applications

Externally the dried rhizome has been applied to fresh wounds and to insect stings and to help the healing process in chickenpox and smallpox. Turmeric is also reported to give a good complexion to the skin and has been applied externally to remove hair and to act as a tonic, and to alleviate itching. Inhalation of turmeric smoke is reputed to relieve hiccups. In Ayurvedic medicine, turmeric is regarded as a readily available antiseptic for cuts, burns and bruises and as a remedy for stomach problems. In India, turmeric is being added to every vegetable and pulses dish cooked in kitchen. It is a blood purifier. It heals the body from within when you have bruises or met with an accident. Turmeric is a good dermatologic antibiotic used in India. Bacterial, fungal infections are prevented by the application of turmeric powder.

Uses of Turmeric

Since ancient times, turmeric has been used as a traditional medicine and for beauty care. In Ayurvedic system of Indian medicine, turmeric is an important herbal medicine prescribed for various diseases. In fact, turmeric is even used in modern times to plug radiator leaks in water-cooled radiators.

The various uses of turmeric are as follows :

Food Additive

- Turmeric is a mild aromatic stimulant used in the manufacture of curry powders.
- Turmeric is used in products that are packaged to protect them from sunlight.
- The oleoresin component of turmeric is used for oil-containing products.
- The curcumin solution or curcumin powder dissolved in alcohol is used for water containing products.
- Sometimes in pickles and mustard, turmeric is used to compensate for fading.
- Turmeric is also used for coloring cheeses, salad dressings, margarine, yoghurts, cakes, biscuits, popcorn, cereals, sauces, etc.
- Turmeric also forms a substitute for mustard in the cattle feed.

Medicinal

- Turmeric is used for treating digestive disorders.
- Raw Turmeric juice is used to treat hyper acidity and indigestion.
- The juice of raw turmeric also acts as a blood purifier.
- Curcumin - an active component of turmeric, has anti-oxidant properties and so turmeric is used in alternative medicine.
- Turmeric is used for cuts and burns as it is believed to have antiseptic effects and promotes healing.
- Curcumin also has an anti-inflammatory effect by reducing histamine(hormone) levels.
- The flouride present in turmeric is essential for teeth.
- Turmeric also has a protective effect on the liver and also in atherosclerosis.

Cosmetics

- The juice of raw turmeric is applied to the skin as a paste, kept for around thirty minutes and then washed off. It adds glow to the skin.
- It is an essential ingredient of the traditional bathing ritual of Indian marriages where it is applied along with sandal wood paste before the bath.
- It is believed that regular bathing in water containing turmeric reduces growth of body hair.
- Regular turmeric use is said to make the skin fair, soft and smooth.
- Turmeric is used for spots caused due to pigmentation or blotches and also for diseases like eczema.

As a tester for Acids and Alkalies

Unglazed white paper is saturated with an alcoholic solution of curcumin. When dried, this paper is used for testing of alkalies, acids and boric acid.

- **Alkali and Acid Test :** The paper turns red-brown with alkalies. This color becomes violet upon drying and the original yellow color is restored with acids.
- **Boric Acid Test :** When the paper is dipped into a solution of boric acid, it turns orange-red. The color remains so even when it is moistened with free mineral acid. Paper that has been turned to orange by boric acid will assume a blue color when it is moistened with diluted alkali.

Miscellaneous Uses

- Ayurveda states that turmeric is poisonous for crocodiles. So anyone swimming in crocodile infested waters should apply turmeric paste to protect himself.
- Turmeric is also believed to ward off snakes and the presence of turmeric plants around the house acts as a barrier for them.
- The turmeric paste is used in Indian medicine for snakebites.
- The leaves of turmeric are said to act as mosquito repellents.
- Turmeric is used as a coloring agent for filter paper used in scientific tests.
- It has been recently discovered that in water cooled type of radiators, a spoonful of turmeric added to the water, plugs any leaks.

Use of Turmeric for Medicinal Purposes

Even though the turmeric herb has been around for thousands of years, in recent years attention has been brought to this herb for its medicinal properties. Many state that it has antiseptic qualities and has been taken orally or applied to a wound when it's raw. Traditionally turmeric was used quite often to help prevent infection. When taken orally, it has been used to treat numerous infections, such as various stomach ailments. All of these traditional methods of treatment have been proven to be helpful in most cases. The healing properties are said to come from the rhizomes found in the herb, which is called curcumin.

Turmeric to Help with Pain and Reduce Inflammation

Some of us are interested in how to use turmeric to reduce inflammation and help with pain. There are many popular options in order to increase the amount of turmeric that your body gets. This should be done slowly over time. Some studies show how to use turmeric is to begin with ¼ teaspoon and working up to 1 teaspoon over the period of a month. This can be done by sprinkling the powder in soups, adding it to your food while cooking dinner, or adding it to scrambled eggs, or sprinkled over salads. Studies also show that adding a dash of cayenne pepper along with the turmeric can possibly make it even more effective. Turmeric is believed to also serve as an anti-inflammatory within the digestive tract. Some people have reported that their food digests better, plus some reports have shown that adding a little extra turmeric to your diet after over indulging can help with digestion and the bloated feeling.

How to Take Turmeric

While there are many methods on how to use turmeric, one thing is clear, it appears to have many health benefits, including its antioxidant and anti-inflammatory properties. Many find that rather than trying to add turmeric to their diet by various methods, that it's much easier to take a multi-vitamin supplement. Taking a multi-vitamin supplement that includes not only turmeric, but also other herbal extracts, which provide for overall optimum health.

Plant Description:

A relative of ginger, turmeric is a perennial plant that grows 5 - 6 feet high in the tropical regions of Southern Asia, with trumpet-shaped, dull yellow flowers. Its roots are bulbs that also produce rhizomes, which then produce stems and roots for new plants. Turmeric is fragrant and has a bitter, somewhat sharp taste. Although it grows in many tropical locations, the majority of turmeric is grown in India, where it is used as a main ingredient in curry.

Parts Used:

The roots, or rhizomes and bulbs, are used in medicinal and food preparations. They are generally boiled and then dried, turning into the familiar yellow powder. Curcumin, the active ingredient, has antioxidant properties, which some claim may be as strong as vitamins C and E. Other substances in this herb have antioxidant properties as well.

Available Forms:

Turmeric is available in the following forms:

- Capsules containing powder
- Fluid extract
- Tincture

Because bromelain increases the absorption and anti-inflammatory effects of curcumin, it is often combined with turmeric products.

How to Take It:***Pediatric***

There is no recommended dosage for children. Consider adjusting the recommended adult dose to account for the child's weight. Most herbal dosages for adults are calculated on the basis of a 150 lb (70 kg) adult. Therefore, if the child weighs 50 lb (20 - 25 kg), the appropriate dose of turmeric for this child would be 1/3 of the adult dosage.

Adult

The following are doses recommended for adults:

- Cut root: 1.5 - 3 g per day
- Dried, powdered root: 1 - 3 g per day
- Standardized powder (curcumin): 400 - 600 mg, 3 times per day
- Fluid extract (1:1) 30 - 90 drops a day
- Tincture (1:2): 15 - 30 drops, 4 times per day

Precautions:

The use of herbs is a time-honored approach to strengthening the body and treating disease. Herbs, however, can trigger side effects and may interact with other herbs, supplements, or medications. For these reasons, herbs should be taken with care, under the supervision of a health care provider. The amounts of turmeric found in foods are considered safe. Turmeric and curcumin are considered safe when taken at the recommended doses. However, taking large amounts of turmeric for long periods of time may produce stomach upset and, in extreme cases, ulcers. People who have gallstones or obstruction of the bile passages should talk to their doctor before taking turmeric. If you have diabetes, talk to your doctor before taking turmeric supplements. Turmeric may lower blood sugar levels, and when combined with medications for

diabetes could cause hypoglycemia (low blood sugar). Although it is safe to eat foods containing turmeric, pregnant and breastfeeding women should not take turmeric supplements.

Possible Interactions:

If you are currently being treated with any of the following medications, you should not use turmeric or curcumin in medicinal forms without first talking to your health care provider.

Antiplatelet and anticoagulant drugs (blood-thinners) -- Turmeric may affect the blood's ability to clot, and could interfere with any blood-thinning drugs you are taking, including:

- Warfarin (Coumadin)
- Clopidogrel (Plavix)
- Aspirin

Drugs that reduce stomach acid -- Turmeric may interfere with the action of these drugs, increasing the production of stomach acid:

- Cimetidine (Tagamet)
- Famotidine (Pepcid)
- Ranitidine (Zantac)
- Esomeprazole (Nexium)
- Omeprazole
- Lansoprazole (Prevacid)

Drugs for diabetes (that lower blood sugar) -- Turmeric may increase the effects of these drugs, increasing the risk of hypoglycemia (low blood sugar).

Cosmetic use of Turmeric

Turmeric is widely used in cosmetics. In India brides (and even grooms) are smeared with turmeric at the wedding eve. It not only brings a golden glow to the skin but also keeps skin healthy and beautiful by reducing inflammation, smoothening and treating and preventing skin ailments like pimples rashes, acne, blackheads and blemishes. A whole range of creams, lotions, face packs etc. are also including turmeric as an ingredient.

The Wonderful Medicinal Properties of Turmeric

Modern research on turmeric has revealed many of its wonderful healing properties. Its efficacy in fighting cancer, arthritis, diabetes, heart disease, osteoporosis, Alzheimer's disease, dementia, chronic inflammation has made drug companies try and come up with compounds that could mimic the actions of turmeric. No wonder along with neem, turmeric was involved in a patent dispute for its medicinal properties. The University of Mississippi Medical Center 1995 was awarded U.S. patent on turmeric, specifically for "use of turmeric in wound healing", which was later revoked after a complaint filed by Indian Council for Science and Industrial Research.

Turmeric is used in Siddha and Ayurveda herbal preparations to cure various inflammations, fevers, arthritis etc. In India turmeric is considered a symbol of prosperity, fertility and purity. It is a cleansing herb.

Turmeric Tit Bits

Turmeric has been regarded as a purifier by ayurvedic healers. Well known for its healing properties, remedies made of turmeric are used in treating digestive disorders, strengthening of

liver, enhancing complexion, and nourishing body tissues. The main phytochemical compound of turmeric is curcumin which is a powerful antioxidant useful in fighting cancer. Curcumin is found to prevent formation of plaque, reduce inflammation and thereby used in treating Alzheimer's disease, dementia etc. Turmeric is found to be very effective in treating allergies. Sneezing, runny nose, sinus congestion are some of the symptoms of allergies. For this take a spoonful of turmeric in a glass of water. The symptoms are found to vanish within a couple of days. Turmeric is found to thin blood, and so people who take blood thinners should exercise caution when taking turmeric. External application of turmeric paste is effective in reducing swelling and inflammation, rapid healing of wounds, and treating acne. A paste made of turmeric and neem leaves is applied in affected areas to treat ringworm, itching, and eczema. It can be used after surgery to reduce pain, inflammation and accelerate healing. Research is still underway to prove scientifically what the Indians knew for centuries, that turmeric is one of the most powerful herb on this planet.

Pharmacology:

Turmeric is known to have many medicinal properties. It has been seen that throughout the centuries, turmeric has been used in various beauty treatments. Turmeric is said to contain certain components that help in accentuating one's skin color. No wonder – all the innumerable fairness cream advertisements that we get to see boast of containing turmeric. The best part about turmeric is that it is inexpensive effective. As per Indian rituals, the bride is smeared with turmeric paste on the day of the marriage as it is believed that turmeric is good for skin. It even enhances skin tone and gets rid of blemishes as well as acne. Experts claim that you should have chopped turmeric in empty stomach. This is said to cleanse the blood and purify you from within. As a result, you get blessed with a glowing fair skin. Most fairness and beauty creams claim of being made with turmeric paste. Turmeric paste is supposed to have certain antiseptic features. For ages, it is believed that turmeric paste helps for healing wounds and scratches. In fact, there are many band-aids that have turmeric paste on them now a days. Applying turmeric paste on burns or wounds soothes the skin and helps it to heal faster. Turmeric paste when mixed with neem and applied on the face is an excellent facemask. To get the best results, you will need to keep this mask for a span of 30 minutes and then rinse off with rose water. One needs to be extra careful while taking off turmeric mask. Turmeric is known to leave a yellow stain on the skin very easily. Ensure that you wash your face a number of times after applying this facemask. Try using turmeric in your daily beauty regime and notice a glowing and brighter skin.

Application of turmeric in dental problem

Dental problems

Turmeric can be used in following ways offer relief from dental problems:

- Rinsing the mouth with turmeric water (boil 5 g of turmeric powder, two cloves, and two dried leaves of guava in 200 g water) gives instant relief.
- Massaging the aching teeth with roasted, ground turmeric eliminates pain and swelling.
- Applying the powder of burnt turmeric pieces and bishop's weed seed on teeth and cleaning them makes the gums and teeth strong.
- Applying a paste made from 1 tsp of turmeric with ½ tsp of salt and ½ tsp of mustard oil provides relief from gingivitis and periodontitis. Rub the teeth and gums with this paste twice daily.

Pit and fissure sealant

It has been found that tinted pit and fissure sealant is useful for applying to tooth surfaces for the prevention or reduction of dental caries. This sealant can be produced from a composition comprising a polymerizable resin system containing acrylic monomer and at least one colorant selected from the group consisting of Annatto extract, turmeric extract, and β -Apo-8'-Carotenal.

Dental-plaque detection system

Caries or periodontal diseases are thought to be infectious diseases caused by bacteria present in dental plaques and it is known that the removal of dental plaques is highly important for the health of oral cavities. However, dental plaques are not easy to identify by the naked eye and it is difficult to confirm their attachment site and extent precisely. Accordingly, dental plaques are generally stained with dental-plaque staining agents, which contain dyes, to reveal their locations in order to uncover the attached dental plaques. The dental-plaque detection system includes a dental-plaque staining agent, which contains at least one selected from the yellow pigment of beni-koji, turmeric extracts, and curcumin; and a light-emitting apparatus, which outputs light having a wavelength within a range of 250 to 500 nm to an object in the oral cavity where the dental-plaque staining agent is attached. A yellow pigment of beni-koji and turmeric are known as staining agents also used for other purposes.

Side Effects of Turmeric

The use of herbs is a time-honored approach to strengthening the body and treating disease. Herbs, however, contain active substances that can trigger side effects and interact with other herbs, supplements, or medications. For these reasons, herbs should be taken with care, under the supervision of a practitioner knowledgeable in the field of botanical medicine. While pregnant women needn't avoid foods containing turmeric, its use as a medicinal herb is not recommended during pregnancy because the effects are not fully known.

Dosage

Turmeric extracts standardized at 90 to 95% curcumin can be taken in the amount of 250 to 500 mg three times per day. Tincture, 0.5-1.5 ml three times per day, is sometimes recommended.

Toxicology

No reports of toxicity have been reported following the ingestion of turmeric. No change in weight was observed following chronic treatment, although changes in heart and lung weights were observed; a decrease in white and red blood cell levels were observed. Although a gain in weight of sexual organs and an increase in sperm motility was observed, no spermatotoxic effects were found.

Turmeric and Modern Research

Continuing research on the health and medical benefits of turmeric show its healing properties are more far-reaching than researchers first thought. Scientists discovered that turmeric has natural phenolic compounds which provide a multitude of antioxidant properties. These antioxidant properties are called curcuminoids. Beginning in the mid 1970s and continuing to this day, the medical use of curcuminoid compounds is being studied in clinical and laboratory research. The results of these studies show the importance of the rhizome, or fleshy rootstock, of the turmeric plant and its current and possible future effect on modern medicine. Turmeric is the

root (or rhizome) of the Asian plant, *Curcuma longa* or *C. domestica* (red valerian, haldi, jiang huang). When the roots are ground up, they yield a yellowish powder that resembles saffron; it is sometimes referred to as Indian saffron. Turmeric is used as a curry component and as a spice in Indian cooking, and can be used as a dye. Turmeric and its major component, curcumin, are both used as phytomedicines.

Potential Uses of Turmeric

There are many other uses of turmeric. Turmeric:

1. Improves the ability of the liver to remove toxic chemicals taken into the body.
2. Stops the oxidation of the body's cholesterol which is the leading cause of diabetic heart disease and atherosclerosis
3. Provides a natural source of vitamin B6 which keeps homocysteine levels low protecting the walls of the blood vessels
4. Lowers cholesterol
5. Provides protection from neurodegenerative diseases including Alzheimer's
6. Aids in the treatment of cystic fibrosis
7. Treats digestive Disorders
8. Reduces inflammation of the middle layer of the eye
9. Treats liver disease including cirrhosis, hepatitis, jaundice and enlarged hepatic ducts
10. Relieves the pain of osteoarthritis
11. Relieves menstrual cramp pain
12. Heals bacterial infections
13. Improves skin conditions and diseases including psoriasis
14. Defends or potentially defends against HIV

Clinical trials in turmeric

Clinical trials have been primarily published in local journals from Asian countries. There have been no clinical studies on turmeric or curcumin from Europe or North America. Inflammation and Arthritis-In a randomized, double-blind, crossover trial from India, of 6-month duration and conducted on 42 patients with osteoarthritis, Articulin-F, an herbal mixture containing turmeric (plus ashwagandha, frankincense, and zinc) improved pain and disability scores compared to placebo. Although the results were statistically significant, the individual effect of turmeric was not evaluated and the dose of turmeric (300 mg/day) was relatively small. A "preliminary" double-blind RCT on 18 patients with rheumatoid arthritis suggested curcumin 400 mg t.i.d. was as effective as phenylbutazone 100 mg t.i.d.; however, upon analyses of the results, phenylbutazone appeared more effective, and there was no adequate placebo control. Other Indications-An open study on patients with chronic anterior uveitis evaluated 53 patients, with 21 lost to follow-up. Eighteen patients with a weak reaction to purified protein derivative (PPD) received 375 mg t.i.d. of turmeric alone for 12 weeks, versus 12 patients with a strong PPD reaction who received turmeric combined with antitubercular drugs for 1 year. The 18 patients receiving turmeric alone all improved within the initial 12 weeks, compared to 86% of the combined treatment group. After 3 years of follow-up, there was a higher recurrence rate in the turmeric group (55%) than the combination treatment group (36%), with similar rates of vision loss. The authors suggest that turmeric may be beneficial in treating chronic anterior uveitis, but the results of this non-blinded and poorly controlled study are difficult to interpret. Small uncontrolled studies in India and China have reported potential effects of turmeric or curcumin in

lowering serum cholesterol In an open study of 45 patients that assessed cholesterol as a secondary endpoint over 4 weeks, triglycerides were reduced, but total cholesterol was unaffected. An uncontrolled pilot study in India involving 814 patients reported that a paste of turmeric combined with neem was beneficial to treat scabies.

Adverse Effects

Encapsulated turmeric or curcumin administered in the clinical trials was well tolerated; side effects were generally similar to placebo. In one trial of patients with duodenal ulcers, a burning sensation was reported twice as often in the turmeric group than in the placebo group (13% and 7%, respectively). There are rare cases of allergic contact dermatitis reported.

Side Effects and Interactions:

Turmeric has anti platelet effects *in vitro*, which could have an additive effect with anticoagulants or antiplatelet drugs. However, antiplatelet effects have not been demonstrated *in vivo*, and no adverse effects or interactions have been reported in the clinical trials or from individual cases.

Cautions:

The safety of the herb (especially the turmeric extract, curcumin) in pregnancy and during breast feeding has not been determined. Its choleric effect may, in theory, cause an increase in symptoms in patients with gallbladder or biliary disease, but this has not been reported in humans, and the effect is unlikely.

Preparations & Doses:

Turmeric is used in foods, and is readily available as powders or capsules. Various extracts containing curcumin are available in liquid form or in proprietary mixtures. In the clinical trials, turmeric root or powder preparations were administered in a dose of 1-6 g/day, typically divided three times daily, whereas doses of about 400 mg t.i.d. of curcumin were used. Quality turmeric products are allegedly standardized to contain not less than 3% curcumin, and not less than 3% volatile oils. Much larger amounts of curcumin can be administered than turmeric; the usual dose of 1200 mg/day of curcumin is equal to about 40 g/day of turmeric (containing 3% curcumin). A heaping teaspoon of powdered turmeric is about 4 g.

Nutrient Values of Turmeric

Nutrient Values of Turmeric per 100g				
Calories 354kcal	Energy Value 1481kj	Total Fat 9.88mg	Carbohydrates 65g	Protein 8g
Dietary Fiber 21g	Sugars 3g	Sodium 38mg	Zinc 4.35mg	Potassium 2525mg
Vitamin C 25.9mg	Magnesium 193mg	Copper 0.603mg	Calcium 183mg	Iron 41.42mg
Vitamin E 3.1mg	Vit. B3 (Niacin) 5.14mg	Vitamin B6 1.8mg	Vit. B1 (Thiamine) 0.152mg	Vit. B2 (Riboflavin) 0.233mg

Conclusion

Turmeric has been traditionally recognized in India as a flavorful, colorful condiment, and as an Ayurvedic medicine to improve appetite, act as a carminative, and treat gallstones and other biliary problems, as well as dyspepsia. It is a traditional remedy in India, China, and other Southeast Asian countries to treat asthma and colds, and is applied as an ointment, paste, or poultice for scabies, boils, bruises, insect bites, and other skin lesions. Turmeric is given orally for many other conditions, including menstrual problems, pain, epilepsy, respiratory tract infections, bleeding, diarrhea, jaundice, and rheumatic disorders. More recently, it has gained a reputation as an anti-inflammatory agent, a treatment for hypercholesterolemia, an antioxidant, and a cancer preventative, and is claimed to prevent cardiovascular and other degenerative changes of aging. Claims also are made for its value in allergy, AIDS, cataracts, and other diseases. Curcumin is added to foods such as butter and margarine to prevent oxidation and to improve the color. Turmeric is a valued spicy condiment that has been traditionally used to improve digestion and to treat dyspepsia and inflammatory disorders. Turmeric and its major component, curcumin, are also promoted as antioxidants; cancer, HIV, and hypercholesterolemia treatments; and cardiovascular disease preventatives. However, controlled clinical trials are either lacking for these indications or have not shown convincingly positive results. A clinical benefit has not been demonstrated for peptic ulcer disease, and one study was inconclusive for dyspepsia. Controlled trials for arthritis and inflammation also do not adequately demonstrate beneficial effects. Other uses have not been evaluated in controlled clinical trials.

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