Turmeric

Curcuma longa

"The Golden Spice"

Turmeric is a flowering plant in the ginger family, Zingiberaceae. A native of India and South-East Asia, it is now cultivated in many countries but India still accounts for a large percentage of current world production. Turmeric is an ancient spice and its use dates back nearly 4,000 years to the Vedic culture in India, where it also had some religious significance.

Identification & Cultivation: Turmeric is a perennial herb growing up to 1 metre high with large, tufted leaves. Pale yellow flowers containing three petals grow on a spike-like stalk and have small, brown seeds. The rhizome is oblong or cylindrical and often short-branched. The external colour of the rhizome is brown and internally ranges from yellow-to-yellow orange. It is propagated through division of the rhizomes which are collected during the autumn/winter. It requires a soil with excellent drainage and moist conditions and thrives in the tropics and sub-tropics.

Parts used: Turmeric plants are primarily known for their edible roots/rhizomes, but all parts of the plant can be consumed including flowers and leaves. The rhizome has a distinctly earthy, slightly bitter, slightly hot peppery flavour and a mustardy smell. Although mainly used in its dried powdered form, turmeric can also be used fresh, much like ginger. Fresh leaves of turmeric can be used to wrap and cook food.

Energetics: Warm, pungent, drying

Constituents: The active constituents of turmeric are essential oils (3-7%), principally turmerone oil, and water-soluble curcuminoids (1-6%), among which curcumin has been the focus of research the past few years. The golden yellow colour of turmeric is due to curcumin. Other constituents include 60-70% carbohydrates, 6-13% water, 3-7% minerals (potassium, sodium, calcium, iron, and phosphorus), and 2-7% dietary fibre.

Therapeutic Actions: Modern in-vitro studies reveal that turmeric is a potent antioxidant, anti-inflammatory, anti-mutagenic, and anti-microbial. As an antioxidant, turmeric extracts can scavenge free radicals, increase antioxidant enzymes, and inhibit lipid peroxidation. Studies have shown that it can prevent the spread of some cancers.[1]

Medicinal uses: Turmeric stimulates digestion and aids assimilation. Its potent ability to reduce inflammation makes it useful for treating arthritis and other chronic inflammatory disorders. It's one of the few anti-inflammatories that cross the blood-brain barrier, and studies show its effectiveness for inflammation-induced depression. Recent research supports the use of curcumin (and turmeric) for CNS protection and symptomatic reduction in cases of Alzheimer's disease and Parkinson's disease. Traditionally used as an anti-inflammatory and antioxidant, C. longa displays preventative actions against lipopolysaccharide damage, neuroinflammation, and tumour development.[2]

Contraindications: Although Turmeric is believed to be safe for most individuals it should be avoided in conditions such as pregnancy/breastfeeding, gallbladder disease, kidney stones, bleeding disorders, diabetes, and iron deficiency. In addition, turmeric supplements can interact with certain medications, such as anti-coagulant drugs and diabetes medications.

Turmeric and its extract curcumin are generally safe but have recently been linked, especially in high bioavailability forms, to rare cases of immune-mediated acute liver injury that typically resolve after stopping use.[3]

Dosage: Turmeric should be taken as the powdered rhizome (1,000-3,000 mg, 3x daily) or the 1:1 liquid extract (45% ethanol) (5-14 ml/day divided into 4-5 doses). A heaped tsp (4 g) can be mixed with water to a slurry and drunk 1-2 times daily. A teaspoon of lecithin can be added to improve absorption, or alternatively drunk with coconut milk.

Curcumin is poorly absorbed and rapidly metabolised and eliminated when eaten, so little reaches the body's blood circulation. However, this is improved by combining it with black pepper. In one study, the piperine in black pepper increased bioavailability of curcumin by 154%.[4] You can increase turmeric's absorbability by eating it with fat, such as coconut oil. Fermentation also increases the bioavailability.

Other Uses: Ground turmeric comprises 25% of curry powder imparting to it its yellow colour. The harvested rhizomes are boiled and sun-dried for 7-8 days but can be used fresh. It is also used as a yellow food dye replacing tetrazine. The extract and leaf oil can be used as sunscreens,[5] and bio-pesticides.[6] Turmeric makes a poor fabric dye as it is not very lightfast, however, it is commonly used in Indian clothing, such as saris. Turmeric dye is traditionally used by Buddhist monks (and Hindu priests) to achieve the sacred yellow-orange or saffron colour of their robes, a practice stemming from its natural availability, low cost compared to saffron, and auspicious significance in Hinduism.

Turmeric is being investigated in laboratory and pilot studies as a promising, environmentally friendly agent for the mitigation of harmful algal blooms. Pilot studies show curcumin (from turmeric) significantly reduces harmful algal cells (like *Karenia brevis*) and toxins in mesocosms within 24 hours.[7] **Current Status:** Still experimental. This is not widely deployed for large-scale lake treatments in NZ yet.

Interesting Chemical Facts:

- The key chemical component of turmeric, curcumin can make it fluoresce in the right conditions. If turmeric is dissolved in alcohol or oil, and then illuminated by UV light, a bright green-yellow fluorescence glow can be seen.
- Turmeric can be used as a pH indicator, changing from yellow in acid to red when in an alkaline solution.

References:

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