



Turmeric: An Immunity Booster

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Turmeric is a medicinal plant that botanically belongs to Zingiberacea family (Chattopadhyay *et al.*, 2004). In India, it is known as “golden spice” because of its yellow attractive color. Among other countries, India is the largest producer and exporter of turmeric. It is widely used as a spice and colouring agent (Luthra *et al.*, 2001). The name derives from the Latin terra merita “meritorious earth” referring to the colour of ground turmeric which resembles a mineral pigment. For 4,000 years, people have employed turmeric, or *Curcuma longa*, to treat a wide range of illnesses. Its rhizomes, as well as leaves, have long been used in traditional Indian and Chinese medicines for their demonstrated anti-inflammatory (painkiller), antioxidant, and anti-cancer properties. Components of turmeric are named curcuminoids which include mainly curcumin (diferuloylmethane, demethoxycurcumin, and bismethoxycurcumin) (Chainani - Wu, 2003). The demand of turmeric increased all over the world as new ingredients of therapeutic and life saving properties were discovered. The postharvest processing of turmeric involves many units operations such as washing, cleaning, curing or blanching, drying, polishing, size reduction and packaging. The harvested turmeric rhizomes before entering into the market are converted into a stable commodity through a number of post harvest processing operations like boiling, drying and polishing (8). Turmeric possesses both primary and secondary rhizomes that are available in various forms such as globular, slightly, conical, hemispherical, and its observable characteristic (Thejaswini and Pattan, 2022).

Curcumin is the important fraction which is responsible for the biological activities of turmeric. It is also a good source of ω -3 fatty acid and α -linolenic acid. Moreover, it has various essential vitamins and minerals like beta carotene, ascorbic acid (Vitamin C), pyridoxine (Vitamin B6), niacin (Vitamin B3), calcium, flavonoids, fibre, iron, potassium and zinc. FDA classifies turmeric as GRAS (General Recognition of Safety).

Proximate composition (g/100g) mineral (mg/100g) and vitamin (mg/g) contents of turmeric

Parameter	Turmeric	Parameter	Turmeric
Moisture	8.68	Vitamin A	3.44
Ash	5.72	Vitamin B1	0.89
Protein	7.23	Vitamin B2	1.20
Fat	7.27	Vitamin B3	0.32
Fiber	4.80	Vitamin C	0.84
Carbohydrate	66.55	Vitamin D	0.64
Sodium	24.38	Vitamin E	0.39
Potassium	466.20		
Calcium	19.92		
Iron	0.27		

Moulick *et al.*, 2023 & Imoru *et al.*, 2018

Health benefits of turmeric

1. It is a natural antibacterial and antiseptic agent, useful in disinfecting cuts and burns.
2. Herb does not contain any cholesterol; however, it is rich in antioxidants and dietary fiber, which helps to control blood LDL or "bad cholesterol" levels.
3. The fresh root contains good levels of vitamin C (23.9 mg/100 g). Vitamin C is a water-soluble vitamin and a powerful natural antioxidant, which helps the body develop immunity against infectious agents, and remove harmful free oxygen radicals.
4. Curcumin present in turmeric may have anti-tumor, antioxidant, anti-arthritis, anti-amyloid, anti-inflammatory and anti-ischemic properties.
5. Good concentrations of minerals, including calcium, iron, potassium, manganese, copper, zinc, and magnesium, are found in turmeric. Potassium is a crucial component of bodily fluids and cells that aids in blood pressure and heart rate regulation. Manganese is used by the human body to co-factor the antioxidant enzyme superoxide dismutase. Red blood cell (RBC) synthesis and cytochrome oxidase enzyme activity at the cellular level depend on iron as a co-factor.
6. Helps in treatment of ulcers and improve respiratory health.
7. Helps in build up of ligaments and prevention of cancer.
8. Helps in reducing bloating of stomach.
9. Experts convey that turmeric can be used as an immunity booster and recommend having it regularly.
10. Contains health benefiting essential oils such as turmerone, curcumene, cineole, and p-cymene. These compounds have applications in the cosmetic industry.

Value addition of turmeric

- a) Turmeric Oleoresin is a resin-like viscous material obtained when a spice is extracted with a hydrocarbon solvent. It is widely accepted by consumers and frequently used as colouring and flavouring in a variety of drinks and food products.
- b) Turmeric drops are the water-soluble extracts of turmeric that contain Curcumin as an active ingredient. Haldi drops help treat colds and coughs because of its antioxidant qualities.
- c) Turmeric powder can be used as a food additive for orange-yellow colouring in prepared foods, its E number is E 100 in the European Union. It is also approved by the U.S. FDA to be used as a food colouring in the USA.
- d) Golden milk, also known as turmeric milk/*Haldi doodh*, is an Indian drink that is also gaining popularity in Western cultures. Many prominent food FMCG's such as Amul, Mother Dairy, Dabur are commercially selling Turmeric milk.
- e) In India, pickled turmeric is highly favoured. Pickles have the advantage of having a long shelf life while maintaining the flavour of fresh turmeric.
- f) Other value added products that can be prepared from turmeric are *chutney*, *halwa*, *panjiri*, turmeric latte, turmeric root chips, *laddoo*, tonic, cake, turmeric tea etc.
- g) Turmeric powder is added to popcorn, chips, and crackers to give them a unique flavour profile and extra health benefits.
- h) Turmeric powder is mixed into the pasta dough to give it a distinct yellow colour and a mild, earthy flavour.
- i) Turmeric can also be found in recipes for bread, muffins, and cookies, both for its colour and potential health benefits.

Conclusion

Turmeric has been recognized as colourful, flavourful condiment and used for cooking to enrich the colour, flavour and taste of the food. Turmeric and its major compound like curcumin proved that it will prevent various diseases like liver diseases, cancer, diabetics,

irritable bowel diseases and heart diseases. As consumers' desire for natural and health-improving products increases, the market for goods containing turmeric is expected to develop, offering new opportunities for businesses and customers alike.

References

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