

A review on Therapeutic properties of Golden spice Turmeric (*Curcuma longa* L.)

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Abstract

Our kitchen spices are full of miraculous medicinal properties. Golden spice turmeric is one of them. Golden spice *Curcuma longa* L. is a treasure of therapeutic properties. It is also known as Haridra, Indian Saffron, Manjal etc. Powder of its rhizome is mostly used for medicinal purpose. It is integral part of traditional herbal medicine systems like Ayurveda, Siddha, Unani. Turmeric contains bioactive compound curcumin. Curcumin is natural polyphenols and well known for antioxidant, antiviral, antibacterial, anti-inflammatory, analgesic properties and helpful in management of metabolic syndrome. Due to curcumin, turmeric as supplement plays significant role in combating various diseases. Its bioavailability can be increased with the help of piperine a component of black pepper. Turmeric helps in treatment of various diseases.

Keywords: Turmeric, *Curcuma Longa*, Curcumin, Antioxidant, Antiviral, Antibacterial, Anti-Inflammatory, Analgesic, Metabolic Syndrome

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Introduction

Golden spice turmeric is a treasure of therapeutic properties. It is known as Haridra in Sanskrit. Due to its bright yellow colour it is also known as "Indian Saffron", in southern India it is called "manjal" (Prasad and Aggarwal, 2011). Botanical name of turmeric is *Curcuma longa* L. It belongs to family Zingiberaceae. It is rhizomatous, perennial herb. The rhizomes of turmeric are either used fresh or boiled in water and then dried. After the processing they are ground in deep orange yellow powder (NCBI, 2021). Turmeric powder is warm in nature, bitter in taste, flavour like black pepper, belongs to earth element and aroma like mustard (Turmeric Wikipedia). Powder/paste of rhizome (underground stem) of plant is used for many purposes like worship of God, haldi ceremony during wedding of Hindu, as spices in cooking and for medicinal purposes. Turmeric is an integral part of traditional herbal medicine systems like Ayurveda, Siddha and Unani (Gupta et al, 2020). Turmeric is used to balance tridosha (vata, pitta and kapha) in Ayurvedic system of medicine. It is used in form of fresh juice, boiled extract, tincture and powder. It is component of creams, lotions, paste as well as ointment (Whole health MD.com). Indian turmeric is considered best in the world. In Indian state Tamilnadu, Erode city is popular for production and trading of turmeric, therefore, Erode is known as Yellow city, Turmeric city (Prasad and Aggarwal, 2011). Turmeric has a bioactive compound curcumin (diferuloylmethane). It is a symmetric molecule of two phenyl rings connected by α , β -unsaturated carbonyl groups (Milobedzka et al, 1910 and Praditya et al, 2019). Curcumin possesses many therapeutic activities (Karlłowicz, 2017), therefore, it is used for dye, preparation of food and traditional system of medicine. According to Paciello and his co-workers (2020) curcumin is a natural polyphenol and well known for antioxidant, antiviral, antibacterial and anti-inflammatory properties.

Antioxidant properties of Turmeric

Antioxidant properties of turmeric is reported from leaf extract of turmeric against hydrogen peroxide (Kim et al, 2021). Alisi and his coworkers (2018) evaluate the antioxidant properties of curcumin. Different species and varieties of *Curcuma longa* and they observed that RD variety is good natural source of antioxidants. Phenolic and flavonoids are higher in turmeric, hence it shows more antioxidant potential (Mushtaq et al, 2019). Tanvir and coworkers (2017) suggested that varieties of turmeric are natural sources of antioxidants. Due to its antioxidant property it protects lungs from pollutants and antioxidants. It helps to transfer oxygen from lungs to blood. Turmeric in combination with ghee is used to treat asthma (Nadkarni, 1976).

Antiviral activities of Curcumin

Curcumin has antiviral activities against DNA and RNA viruses. It inhibits binding of dengue virus to host (Balasubramanian et al, 2019). Curcumin shows antiviral activities against enveloped viruses including SARS-CoV-2 and it also protects from lethal pneumonia (Thimulappa et al, 2021). Curcumin inhibits influenza virus infection (Chen et al, 2010). It inhibits the replication of Hepatitis C virus (Chen et al, 2012). Yang and

his coworkers(2016) demonstrated that curcumin shows antiviral properties against Norovirus. Rattis and his coworkers (2021) reviewed the antiviral potential of curcumin. Curcumin is very effective against influenza virus, Hepatitis C virus and HIV(Praditya et al, 2019). Moghadamtousi and coworkers (2014) made a review on antiviral, antibacterial and antifungal activities of curcumin.

**Anti-inflammatory
Analgesic Properties
of Turmeric**

Turmeric is well known for relief in joint pain and inflammation (Daily et al, 2016). According to Volpe (2018), use of turmeric for osteoarthritis gives better results in reduction of inflammation. Bioavailable turmeric extract effective like the paracetamol (Singhal et al, 2021).It's analgesic property was discussed by Cathers(2020). According to Jamali and his co-workers(2020) curcumin ointment is a better alternative option in knee pain induced by osteoarthritis of older adults due to its analgesic properties.It's anti- inflammatory potential is give analgesic effect in treating the rheumatoid arthritis(Fadus et al, 2017). Shimizu et al(2019) on the basis of clinical trials concluded that curcumin is efficient in anti-inflammatory actions. Paste of turmeric, lime and salt was applied to inflamed joints and sprains(Nadkarni, 1976).Low dose of curcumoids are more effective as analgesic than low dose of metformin (Verma et al, 2016). Curcuminoids are natural products and they are effective in relieving the pain (Sahebkar and Henrotin, 2016).

**Anti-bacterial &
Anti-fungal Activities**

Broad spectrum antibacterial activities of extract of *Curcuma longa* were reported by Kumar and coworkers (2020).Curcumin shows strong activity against Gram positive bacteria than Gram negative bacteria (Adamczak et al, 2020).Teow and his coworkers(2016) in their article reviewed on the antibacterial action of curcumin against the *Staphylococcus aureus*.Praditya and coworkers (2019) reviewed on antiviral and antibacterial properties. It is very effective against the various strains of bacteria *Staphylococcus*, *Streptococcus* and *Pseudomonas*. Curcumin shows beneficial results in supplementing with antibiotics, bothin combination show antibiotic activity against biofilm producing bacteria (Kali et al, 2016).

Metabolic Syndrome

Metabolic syndrome conditions include insulin resistance,hyperglycemia, hypertension, decrease in high density lipoprotein cholesterol, increase in low density lipoprotein cholesterol,increase triglycerides and obesity, especially visceral fat (Hewlings and Kalman, 2017). Curcumin attenuate many aspects of metabolic syndrome like improve the insulin sensitivity (Cheungsamarn et al, 2012 & Na et al,2013), suppressing adipogenesis (Bradford,2013), reducing hypertension (Hlavackova, 2011), inflammation and oxidative state(Hewlings and Kalman, 2017). Curcumin is effective in management of Type 2 Diabetes Mellitus (Pivari et al, 2019).Karlłowicz and his co-workers (2017) reported that it is beneficial in complications of diabetes. When metformin in combination with curcumin, it decreases dyslipidemia and glyoxidative stress, metformin decreases the glycemia while curcumin increases paraoxonase 1 activity in diabetic rats(Roxo et al., 2019).Turmeric as supplement play an important role in diabetic patients(Selvi, 2015). Curcumin can be used as a hypolipidemic agent, due to its property of reducing blood lipid level (Saeediet al,2020; Qin et al,2017).

Curcumin has poor bioavailability,due to poor absorption, fast metabolism and rapid elimination. Piperin is a main component of black pepper, it forms a complex with curcumin and increases the bioavailability of curcumin upto 2000% (Hewlings and Kalman,2017).

Objective of the Study

Turmeric is an important golden spice of our kitchen. It is the treasure of therapeutic properties, which prevent us from major illness.Therefore,author is decided to make a review on turmeric

Conclusion

A review of literature reveals that turmeric (*Curcuma longa* L.) contain natural polyphenol Curcumin, which shows various therapeutic properties like antioxidant, antiviral, antibacterial, anti-inflammatory, analgesic.Turmeric is also helpful in management of metabolic syndrome. Turmeric shows good results as supplementary treatment. Bioavailability of curcumin is poor and can be improved with the help of piperine, a component found in the black pepper. Thus our golden spice turmeric is very effective in management of various diseases.

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