Turmeric

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Turmeric is distinctive yellow-orange spice, ground from the rhizomes of *Curcuma longa*. It is commonly used in South-east Asian and Indian cuisine, and known for adding colour to some curries, cheeses, butter and mustards. Medicinally, turmeric has a long history, and has traditionally been used for the treatment of a range of ailments including dermatological diseases, infection, inflammatory conditions, depression and arthritis.

PREPARATIONS: Turmeric is available as a fresh root or ground root powder, and as a constituent in tablets, capsules, ointments, pastes, oil, teas, sunscreens and cosmetics.

COMMON NAMES: Indian saffron, yellow root, the golden spice.

ACTIVE CONSTITUENTS: Curcuminoids, described as natural antioxidants, are lipophilic polyphenolic compounds consisting of curcumin, demethoxycurcumin and bisdemethoxycurcumin. Of these, curcumin is the most widely studied compound. Due to its poor oral bioavailability, curcumin is combined with piperine (an active component in black pepper), which increases bioavailability by 2000%. Other methods employed to increase bioavailability include formulating curcumin into phospholipid complexes, liposomes and nanoparticles.

MEDICAL CLAIMS: Curcumin is claimed to be effective for a range of conditions including inflammatory diseases of the gut and skin, depression, heart disease, cancer, and Alzheimer's disease. It is also thought to assist wound healing; treat infections; reduce pain, stiffness and inflammation related to rheumatoid and osteoarthritis; improve liver function; aid digestion; lower cholesterol and blood pressure; and support immunity. Topically it has been used for sunburn, acne and other dermatological conditions.

EVIDENCE: Several high quality trials have shown that curcumin may exert anti-inflammatory and analgesic effects through multiple mechanisms, including down-regulation of proinflammatory interleukins, cytokines and enzymes (cyclooxygenase-2, lipoxygenase and xanthine oxidase), and blockade of NF-κB and TNFα.

Summary message

The clinical data overwhelmingly supports the antioxidant and anti-inflammatory effects of turmeric, and its major active constituent curcumin. Based on currently available data, clinical effectiveness has been demonstrated in several conditions including inflammatory diseases, metabolic syndromes, and dermatological disorders. However, more high quality research studies are needed to support the rational use of turmeric in human disease. To date, no studies have discovered toxic effects of turmeric, even in high doses, although adverse effects reported include nausea, diarrhoea, abdominal discomfort and yellow stools. Due to limited evidence, use is discouraged in pregnancy and lactation. Interactions may occur with iron, anticoagulants and antiplatelet agents, and turmeric should be used with caution in bleeding disorders and with oral hypoglycaemic agents.

Herbal medicines are a popular health care choice, but few have been tested to contemporary standards. POTION OR POISON? summarises the evidence for the potential benefits and possible harms of well-known herbal medicines.

Several studies have shown that curcumin exhibits anti-arthritic effects with improvement in pain and physical function scores. At a dose of 1 g/day for 8–12 weeks, the improvement in osteoarthritic pain and inflammation was comparable with that of ibuprofen and diclofenac. In another study using a lecithinised formulation to increase bioavailability, 400 mg curcumin was associated with greater analgesic activity than 500 mg paracetamol, while 300 mg provided suboptimal pain relief. Overall, there is some evidence to support the anti-inflammatory and analgesic effects of curcumin in inflammatory diseases such as arthritis and inflammatory bowel disease. Likewise, some evidence exists for the use of curcumin in metabolic disorders due to its effects in lowering lipids, C-reactive protein and leptin, and in skin diseases due to its antioxidant, anti-inflammatory activity, and possible antimicrobial activity. Although curcumin shows promising results in multiple conditions, caution is advised in interpreting study results, as evidence is largely limited by small cohort sample sizes, and poor methodological quality of primary trials.

ADVERSE EFFECTS: Turmeric has good safety and tolerability profile even at high doses (1.5 g/day curcumin for up to 6 months). The Allowable Daily Intake (ADI) of curcumin according to The Joint United Nations and World Health Organisation Expert Committee on Food Additives is 0–3 mg/kg. Adverse effects reported include rash, nausea, diarrhoea, abdominal pain/discomfort, and yellow stools. Curcumin may also increase serum alkaline phosphatase and lactate dehydrogenase. Due to limited available evidence, and some reports suggesting that turmeric may stimulate the uterus, medicinal quantities of turmeric should be avoided during pregnancy and lactation.

DRUG INTERACTIONS: In high doses, turmeric may interfere with the absorption of iron. Caution with anticoagulants and/or antiplatelet agents as curcumin may increase bleeding time. For this reason, medicinal doses of turmeric should be avoided in patients with bleeding disorders and/or two weeks before surgery. Due to a possible effect on glucose levels, caution is advised with hypoglycaemic agents.

Key references

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