



CURCUMIN - HEALTH PROMISE FOR THE FUTURE

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ABSTRACT

Curcumin is a phytochemical which is extracted from Turmeric root. It is used as Ayurvedic Medicine. Curcumin (diferuloylmethane) is a yellow pigment present in the turmeric (*Curcuma longa*) which gives the yellow color to turmeric that has been associated with antioxidant, anti-inflammatory, anticancer, antiviral, and antibacterial activities. Curcumin, these effects are mediated through the regulation of various transcription factors, growth factors, inflammatory cytokines, protein kinases, and other enzymes. Most westerners know turmeric as gold colored Indian spice. Turmeric and curcumin are not the same thing. The antioxidant and anti-inflammatory property of curcumin is much more potent in an extracted form. In the recent research findings of curcumin that it can also eliminate 3% of cancer stem cells present inside the malignant tumor and remaining 97% of cancer cells undergo gradual cell shrinkage which ultimately leads to cell death. Pharmacologically, curcumin has been found to be safe. Human clinical trials indicated no dose-limiting toxicity when administered at doses up to 10 g/day. All of these studies suggest that curcumin has enormous potential in the prevention and therapy of various diseases.

KEYWORDS: Curcumin, phytochemical, *Curcuma longa*, Ayurvedic Medicine.

INTRODUCTION

To most people in India, from housewives to Himalayan hermits, turmeric affectionately called the 'KITCHEN QUEEN', the main spice of kitchen^[1]. Turmeric is the rhizome or underground stem of ginger like plant. The plant is an herbaceous perennial, 60-90 cm high with a short stem tufted leaf. Its flowers are yellow, between 10-15 cm in length and they group together in dense spikes, which appear from the end of spring until the middle session. No fruits are known for this plant. The whole turmeric rhizome, with a rough, segmented skin. The rhizome is yellowish-brown with a dull orange interior that looks bright yellow when powdered. Rhizome measures 2.5-7.0 cm (in length), and 2.5 cm (in diameter) with small tuber branching off. Plants are gathered annually for their rhizomes, and propagated from some of those rhizomes in the following season. When not used fresh, the rhizomes are boiled for several minutes (about 30-45 minutes) and then dried in hot ovens, after which they are ground into a deep orange-yellow crystalline

powder commonly used as a spice in curries and other South Asian and Middle Eastern cuisine, for dyeing, and to impart color to mustard condiments. Its active ingredient is curcumin and it has a distinctly earthy, slightly bitter, slightly hot peppery flavor and a mustard smell. Curcumin has been a center of attraction for potential treatment of an array of diseases, including cancer Alzheimer's disease^[2], diabetes allergies, arthritis and other chronic illnesses. Turmeric held a place of honor in Indian traditional Ayurvedic medicine. In Ayurveda it was prescribed for the treatment of many medical problems ranging from constipation to skin diseases. It was used as digestive aid and treatment for fever, inflammation, wounds, infections, dysentery, arthritis, injuries, trauma, jaundice and other liver problems. In Unani turmeric is considered to be safest herb of choice for all blood disorders since it purifies, stimulates and builds blood. In this review article health promises which curcumin does is being discussed in detail.

Curcumin: Reduce Obesity and Food Sensitivities

Now a days the uptake of junk food and ready to eat foods is rapidly increasing and that affect the human body and their digestion and immune system so, weight gain is the common cause that is happening. Fortunately, curcumin can help offset this problem. In todays busy lifestyle where people are always in a hurry and have no time to spare, fast food become very popular. That raise the rate of negative food reaction. Regular consumption of fast food can cause Obesity^[3], Diabetes and heart problems. The other main problem is food sensitivities. Food Sensitivities include many different types of sensitivities to food which may arise the wide varieties of reasons making it complex. As we all know body contain the maximum amount of water that flush out the reactive food so blood vessel are expanding and resulting in Swelling and Inflammation. Over time, Such Unpleasant Conserence can also leads the weight gain. At this time, curcumin is beneficial in Defense against Allergens By increasing antibody response and protecting the immune system. Anti-inflammatory properties can also help relieve Allergic symptoms, which are more serious than sensitivity. The other uses of curcumin benefits have been used as an allergy cure in alternative medical systems like Ayurveda, Unani, and Naturopathy for ages.

Curcumin: Stops Allergy and Asthma

Asthma is a chronic diseases involving the airways in the lungs. These bronchial tubes allow air to come in and out of the lung. Many people have Allergies that called Allergic Asthma. Curcumin can stop allergy and asthma before they starts. In recent Decades, Asthma and Allergies have on the rise in many industrialized nations^[4]. There are many reasons behind this. For Prevention of Asthma As well as Allergies Curcumin is an excellent choice^[5]. The Human Body produces the compound and attached themselves with the immune system cells. They are called as mast cells. Mast cell play important role in wound healing including angiogenesis and defense against pathogen. The mast cell release large amount of histamine. Mast cell plays a key role in inflammatory process. The histamine reaction creates more inflammation, redness and itching. When the allergens interact with the body, the immune system responds

by releasing a flood inflammatory cytokines^[6]. During Asthma attack, for instance, these inflammatory causes the bronchial airways to narrow and tighten. This inflammation also produce mucous, which gave “out of breath” feeling. These can also bring the side effects like aggression and depression^[7, 8]. Severe attack can be very and unfortunately, the anxiety over possible attack can make even mild symptoms much worse.

Curcumin: Can be cure cancer

The number of studies shown that Curcumin can prevent and inhibit the cancer development and also fulfill the four key pathways requires for cancer fighting^[9,10]. Because Curcumin can:

- It helps to stop the cancer cells from dividing and spreading called cellular proliferation^[11].
- It acts as anti-angiogenesis means curcumin can cut off the blood supply to cancer cells^[12].
- Help your body destroyed mutated cannot spread throughout your body.
- Encourage the apoptosis.

Curcumin has been shown to influence all four pathways by positively impacting these three key bodily systems:^[13, 14]

- It improves the detoxification so the body can eliminate the cancer cell^[15, 16].
- It increases the immunity so the body can kill cancer cell and stop them from multiplying^[17, 18].

Cancer is one of the leading causes of death. Curcumin has been shown in studies to be effective in all forms of human cancer while common chemotherapeutic drug cause serious side effects But Curcumin cannot produce any side effect so, curcumin is an immune restorer^[19, 20].

Curcumin has also been shown to increase the activity of cancer drug and to decrease drug resistance in cancer cell means it helps to kill the tumors of cancer more effectively^[21-23]. It also protects the normal cell from toxic effects. For reducing the side effect of toxic drugs can be reduced by taking with curcumin. It will give better result and reduce the side effects.

Curcumin: Stops Fat cell growth

Fat cell expansion and differentiation are as same as the tumor cell growth through Angiogenesis. The formation of new blood vessels that “feed” the fat cell. It is important to stop the expansion of fat cells so that they cannot propel further blood sugar imbalance and also weight gain. At this time, Curcumin can help. By the studies also showed lower concentrations of serum cholesterol and triglycerides than the high fat diet group without curcumin^[24]. The serum glucose level is low in Curcumin^[25]. Additionally, Curcumin did not interfere with the normal development of Healthy Cells^[26,27].

Curcumin: Protect Brain cells

- Flushes Away Harmful Metals from the Brain

Curcumin plays an important role to flush away the harmful metals like copper and iron, which cause amyloid-beta aggregation. curcumin also protects against lead and cadmium induced damage as well. Curcumin stop potential harm especially their ability to induce NF-KAPPA-B inflammatory action^[28, 29].

- Sweep Away Plaques

Curcumin binds to amyloid beta plaques and prevent them from enlarging further. It also blocks the formation of new plaques. Other Researches show that curcumin protect brain cell damaging inflammation, reduced beta amyloid levels and also the activation of microglial cells. Microglial cell reacts with inflammation and shuttle waste material out of the central nervous system and have the protective effect. Curcumin also stops the oxidative damage. This also shows that curcumin prevent the spatial memory loss and reduced amyloid beta deposits.

- Hope for Alzheimer's diseases

Alzheimer diseases is a neurological disease in which the death of Brain cell causes memory loss and cognitive decline^[30]. The major cause is memory loss. Due to less side effects and properties of curcumin is beneficial for treatment of Alzheimer diseases. Alzheimer's research foundation is supporting researcher at Edith Lowan University in Perth, Australia to learn

as much as possible how curcumin can be used as an effective treatment of Alzheimer's diseases.

Curcumin: Control blood sugar level and Diabetes

Curcumin may be the best possibility to stop the cycle of Diabetes. Researches show that curcumin have ability to burn the sugar and also stops the fat production and Metabolize food. The key causal factor for obesity and diabetes are inflammation^[31]. Curcumin decrease the glucose level in two weeks of treatment by lowering the HbA1c levels of blood sugar. It is essentially an endocrine organ in its own right. It releases cytokines in response to stress, including immune throat and inflammation.

Curcumin: Reduces insulin Resistances

Curcumin reduces the level of these inflammatory markers. It stops them from causing insulin resistance and makes it less likely that circulating blood sugar will be the stored as fat. Curcumin was compared to the drug rosiglitazone and found to be equally as effective in reducing insulin resistance^[32, 33]. Additional researches shows that improved insulin response and reduced blood glucose levels^[34].

A research carried out by Colombia University Medical Centre found that Curcumin's anti Inflammatory and antioxidant quality that may be responsible for improving insulin resistance and that may be helping to reduce Type 2 diabetes^[35, 36].

CONCLUSION

Curcumin is known for its multiple health Restoring properties and has been used in treating several diseases, including Several Respiratory disorders. Current research shows much promise for curcumin. Deals with above mentioned health problems. People are still not aware of health benefits which curcumin provides. Curcumin provide a natural solution to one of the most destructive health issues over time.

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