

Curcumin a known anti inflammatory and antioxidant agent

Abstract

Curcumin is a yellow color naturally occurring plant pigment that is mostly found in turmeric and provides numerous health benefits. Therapeutic potentials of curcumin includes better skin health, reduced inflammation, low blood sugar levels, lower cholesterol, enhance detoxification and relief from joint pain. Curcumin also exhibits anti-cancerous property making it suitable for the treatment of cancerous cells.

Keywords: curcuminoid, psoriasis, dermatitis, omega 3 fatty acid, rheumatoid arthritis, pulmonary embolism

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Introduction

Curcumin is an active yellow color curcuminoid compound which is a naturally occurring plant pigment that is mostly found in turmeric and is native to Southeast Asia and India.¹ It has an earthy odor and somewhat bitter taste and is mostly used in culinary.² It is reported that pure turmeric residues contains about 3 percent of curcumin by weight.³ However curcumin is also available in the form of turmeric extract supplements which contains higher concentration of curcumin.⁴ It exhibits strong anti-inflammatory and antioxidant properties.⁵ In addition to that it is an excellent healing agent.⁶

Health benefits of curcumin

Some health benefits of curcumin are as follows:

Relieves inflammation

Curcumin is well known for its anti-inflammatory property that reduces chronic inflammation occurring in a number of medical conditions such as arthritis, bowel disease, heart disease, cancer, and diabetes etc.⁷ It has the ability to effectively block the function of those enzymes that contributes in inflammatory pathway.⁸

Supports skin health

Antioxidant property of curcumin helps in neutralizing free radicals that causes cell damage.⁹ In addition to that it accelerates healing of the wounds and collagen deposition in the skin.¹⁰ Curcumin is found to effective in treating psoriasis, dermatitis and scabies.¹¹

Lowers high blood sugar

Diabetes associated symptoms such as impaired wound healing, increased thirst, vision loss, nerve damage, weight loss etc could be overcome by the use of curcumin which increases insulin secretion to reduce high glucose level in the blood.^{12,13}

Treatment of cancers

Curcumin has an anti-cancerous effect on the growth of cancerous and tumour cells.¹⁴ It inhibits the function of cancer inducing growth

factors and enzymes and blocks the signaling pathway that is involved in the development of cancer in organs like breast, colon, pancreas and lungs.^{15,16}

Treatment of mental illnesses

Curcumin aids in the treatment of depression and anxiety by reducing its associated symptoms.¹⁷ It increase the levels of omega-3 fatty acid that promotes the development of brain.¹⁸

Prevents blood clotting

Curcumin reduces platelet aggregation in the blood by inhibiting the formation of thromboxanes that causes clot formation in conditions like pulmonary embolism, stroke and deep vein thrombosis.¹⁹

Reduces joint pain

Relieve rheumatoid arthritis related symptoms like stiffness, pain, swelling etc.²⁰

Regulates high cholesterol level

Curcumin boost cardiac health by lowering high cholesterol levels in blood.²¹

Improves detoxification

Curcumin stimulates detoxification in order to protect the liver from diseases, allowing removal of toxins and cancer causing substances from the body.²²

Enhance brain function

Curcumin maintains cognitive function and prevent the risks of neurodegenerative diseases such as Parkinson's and Alzheimer's.²³ It elevates the amount of brain derived neuro tropic factors which is involved in enhancing brain function, improving memory and reduces oxidative damage.^{24,25}

Side effects of curcumin

Some of the side effects of curcumin if consumed in excess are as follows:

Consuming curcumin in excess causes low glucose level, bleeding disorders, increased menses, diarrhea, nausea and low fertility.²⁶ Besides it may also cause anemia due to decreased iron absorption.²⁷ Excessive uterine contraction is another side effect of over dose of curcumin in pregnant woman leading to abortion.²⁸

Conclusion

Thus curcumin provides a number of health benefits such as better skin health, reduced inflammation, low blood sugar levels etc

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Conflicts of interest

The author declares no conflicts of interest.

References

- Maheshwari RK, Singh AK, Gaddipati J, et al. Multiple biological activities of curcumin: a short review. *Life sci*. 2006;78(18):2081–2087.
- Goel A, Kunnumakkara AB, Aggarwal BB. Curcumin as “Curecumin”: from kitchen to clinic. *Biochem Pharmacol*. 2008;75(4):787–809.
- Aggarwal BB, Sundaram C, Malani N, et al. Curcumin: the Indian solid gold. *Adv Exp Med Biol*. 2007;595:1–75.
- Sharma RA, Gescher AJ, Steward WP. Curcumin: the story so far. *Eur J Cancer*. 2005;41(13):1955–1968.
- Hatcher H, Planalp R, Cho J, et al. Curcumin: from ancient medicine to current clinical trials. *Cell Mol Life Sci*. 2008;65(11):1631–1652.
- Duvoix A, Blasius R, Delhalle S, et al. Chemopreventive and therapeutic effects of curcumin. *Cancer Lett*. 2005;223(2):181–190.
- He Y, Yue Y, Zheng X, et al. Curcumin, inflammation, and chronic diseases: how are they linked? *Molecules*. 2015;20(5):9183–9213.
- White B, Judkins DZ. Clinical Inquiry. Does turmeric relieve inflammatory conditions? *J Fam Pract*. 2011;60(3):155–116.
- Thangapazham RL, Sharad S, Maheshwari RK. Skin regenerative potentials of curcumin. *Biofactors*. 2013;39(1):141–149.
- Thangapazham RL, Sharad S, Maheshwari RK. Beneficial role of curcumin in skin diseases. *Adv Exp Med Biol*. 2007;595:343–357.
- Pari L, Tewas D, Eckel J. Role of curcumin in health and disease. *Arch Physiol Biochem*. 2008;114(2):127–149.
- Arun N, Nalini N. Efficacy of turmeric on blood sugar and polyol pathway in diabetic albino rats. *Plant Foods Hum Nutr*. 2002;57(1):41–52.
- Prasad S, Gupta SC, Tyagi AK, et al. Curcumin, a component of golden spice: from bedside to bench and back. *Biotechnol Adv*. 2014;32(6):1053–1064.
- Basnet P, Skalko Basnet N. Curcumin: an anti-inflammatory molecule from a curry spice on the path to cancer treatment. *Molecules*. 2011;16(6):4567–4598.
- Kunnumakkara AB, Anand P, Aggarwal BB. Curcumin inhibits proliferation, invasion, angiogenesis and metastasis of different cancers through interaction with multiple cell signaling proteins. *Cancer Lett*. 2008;269(2):199–225.
- Shishodia S, Sethi G, Aggarwal BB. Curcumin: getting back to the roots. *Ann N Y Acad Sci*. 2005;1056:206–217.
- Lopresti AL, Maes M, Maker GL, et al. Curcumin for the treatment of major depression: a randomised, double-blind, placebo controlled study. *J Affect Disord*. 2014;167:368–375.
- Brietzke E, Mansur RB, Zugman A, et al. Is there a role for curcumin in the treatment of bipolar disorder? *Med Hypotheses*. 2013;80(5):606–612.
- Kim DC, Ku SK, Bae JS. Anticoagulant activities of curcumin and its derivative. *BMB Rep*. 2012;45(4):221–226.
- Chin KY. The spice for joint inflammation: anti-inflammatory role of curcumin in treating osteoarthritis. *Drug Des Devel Ther*. 2016;10:3029–3042.
- Aggarwal BB, Harikumar KB. Potential therapeutic effects of curcumin, the anti-inflammatory agent, against neurodegenerative, cardiovascular, pulmonary, metabolic, autoimmune and neoplastic diseases. *Int J Biochem Cell Biol*. 2009;41(1):40–59.
- Menon VP, Sudheer AR. Antioxidant and anti-inflammatory properties of curcumin. *Adv Exp Med Biol*. 2007;595:105–125.
- Lim GP, Chu T, Yang F, et al. The curry spice curcumin reduces oxidative damage and amyloid pathology in an Alzheimer transgenic mouse. *J Neurosci*. 2001;21(21):8370–8377.
- Van Praag H, Christie BR, Sejnowski TJ, et al. Running enhances neurogenesis, learning, and long-term potentiation in mice. *Proc Natl Acad Sci U S A*. 1999;96(23):13427–13431.
- Gomez Pinilla F. Collaborative effects of diet and exercise on cognitive enhancement. *Nutr Health*. 2011;20(3–4):165–169.
- Miquel J, Bernd A, Sempere JM, et al. The curcuma antioxidants: pharmacological effects and prospects for future clinical use. *Arch Gerontol Geriatr*. 2002;34(1):37–46.
- Gupta SC, Patchva S, Aggarwal BB. Therapeutic roles of curcumin: lessons learned from clinical trials. *AAPS J*. 2013;15(1):195–218.
- Conover EA. Herbal agents and over-the-counter medications in pregnancy. *Best Pract Res Clin Endocrinol Metab*. 2003;17(2):237–251.