Theracurmin

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INTRODUCTION

Curcumin is the yellow pigment of turmeric (*Curcuma longa*) – the chief ingredient in curry. It has demonstrated significant activity in many experimental and clinical studies. Many of its beneficial effects are attributed to its antioxidant and anti-inflammatory effects. Curcumin is used for three primary purposes: (1) as a general antioxidant; (2) as a protector against cancer; and (3) to reduce inflammation.[1]

CURCUMIN'S SPECIAL ANTIOXIDANT EFFECT

The antioxidant activity of curcumin is superior to antioxidant nutrients like vitamin C, beta-carotene and vitamin E. It is not only more powerful, but it has a broader range of activity and is effective in protecting against both water- and fat-soluble toxins including heavy metals such as iron and copper as well as organchlorine pollutants such as lindane.[2] Curcumin is particularly helpful in preventing LDL cholesterol from becoming oxidized and damaging arteries. In addition, it exerts other effects beneficial in preventing atherosclerosis including lowering of cholesterol levels, preventing plaque formation and inhibiting the formation of blood clots by inhibiting platelet aggregation.[3]

As far as slowing down the aging process, there is considerable evidence that curcumin protects against age-related brain damage and in particular, Alzheimer's disease.[4] Researchers began exploring this effect after noting that elderly (aged 70-79) residents of rural India who eat large amounts of turmeric have been shown to have the lowest incidence of Alzheimer's disease in the world: 4.4 times lower than that of Americans. In addition, researchers have also demonstrated that curcumin is able to prevent the development of Alzheimer's brain lesions in mice specifically bred to develop the disease. Curcumin they noted may actually untangle the hallmark brain lesions of Alzheimer's called senile plaques.[5]

WHY IS CURCUMIN REGARDED AS NATURE'S MOST POTENT ANTI-INFLAMMATORY AGENT?

Curcumin has demonstrated significant anti-inflammatory activity in a variety of experimental models as well as clinical studies.[6] In fact, in numerous studies, curcumin's anti-inflammatory effects have been shown to be comparable to the potent drugs hydrocortisone and phenylbutazone as well as over-the-counter anti-inflammatory agents such as ibuprofen.

Human research have substantiated curcumin's anti-inflammatory effects including a clinical effect. In the treatment of rheumatoid arthritis, curcumin (1,200 mg per day) was shown to be comparable when compared to drug therapy (phenylbutazone, 300 mg per day) in improving morning stiffness, walking time and joint swelling.[7]

WHAT ARE CURCUMIN'S ANTICANCER PROPERTIES?

The anticancer effects of turmeric and curcumin have been demonstrated at all steps of cancer formation: initiation, promotion, and progression. Curcumin acts in an remarkable way to help protect against damage to cellular DNA. This effect was recently demonstrated in a study in a community with a high content of groundwater arsenic.[8] Arsenic is extremely carcinogenic because it causes severe oxidative damage to DNA and is recognized as an underlying mechanism of arsenic-induced carcinogenicity. Blood sampled prior to curcumin supplementation showed severe DNA damage with increased levels of free radicals and lipid peroxidation. Three months of intervention with curcumin reduced the DNA damage, retarded free radical formation and lipid peroxidation, and raised the level of antioxidant activity. In another study, cigarette smokers receiving turmeric (1.5 grams per day for 30 days) demonstrated a significant reduction in the level of urinary-excreted mutagens – an indication of the ability of the body to rid cancer-causing compounds via detoxification mechanisms.[9] For many reasons, curcumin is emerging as a very important agent in the battle against cancer.[10] Data also suggest that curcumin causes cancer to regress—that is, to grow smaller. Some of curcumin's benefits come from its antioxidant activity, but it also:

- Inhibits the formation of cancer-causing nitrosamines.
- Enhances the body's production of cancer-fighting compounds such as glutathione.
- Promotes the liver's proper detoxification of cancer-causing compounds.
- Prevents overproduction of cyclo-oxygenase 2 (COX-2), an enzyme that may contribute to development of tumours.

In addition to these preventative actions, curcumin has also been shown to inhibit tumour growth in several ways:[11]

- Inhibiting epidermal growth factor (EGF) receptor sites: EGF stimulates cells to proliferate by connecting to a

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receptor on the cell surface. About two-thirds of all cancers produce an abundance of these receptors, which make them highly sensitive to EGF. By reducing the number of EGF receptors, curcumin decreases the cell's tendency to proliferate.

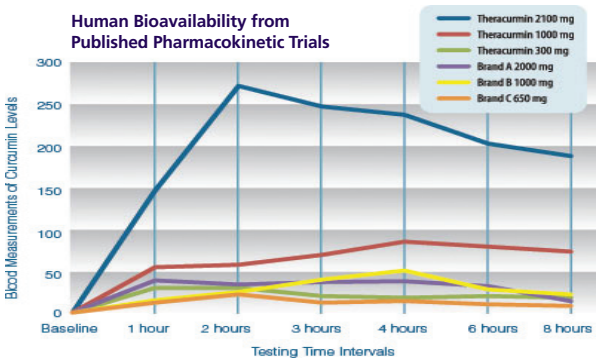
- Inhibiting angiogenesis: Fibroblast growth factor is a protein that promotes the formation of new blood vessels to feed the growing tumour. Curcumin inhibits production of this growth factor.
- Inhibiting nuclear factor kappa beta (NF-kb): This is a protein that many cancer cells produce to block the signals commanding them to stop proliferating.
- Increasing the expression of the nuclear p53 protein: This protein is essential for apoptosis, the normal process of cell "suicide."
- Inhibiting enzymes that promote cancer cell growth.

While more human studies are needed on the use of curcumin in cancer treatment, the experimental and preliminary clinical evidence is quite encouraging. However, the clinical studies in cancer patients have shown that curcumin is poorly absorbed and rapidly metabolized and eliminated from the body. Dosages as high as 12 grams of curcumin have failed to significantly raise blood levels.[12] Fortunately, there now exists new curcumin products with much greater bioavailability.[13]

HOW CAN CURCUMIN ABSORPTION BE ENHANCED?

There now exists a number of methods and products that enhance the absorption of curcumin. The one that produces the greatest absorption of curcumin, particularly of the more active free curcumin, is Theracurmin. This all natural preparation utilizes advanced manufacturing techniques to reduce the particle size of curcumin as well dramatically increase its solubility (bioavailability). The average particle size of curcumin in Theracurmin is 0.19 µm compared to an average particle size of 22.75 µm in curcumin powder. That represents a reduction of over 100 times! This nanonized, or micronized, curcumin is then mixed with all natural emulsifiers resulting in a dramatic increase in the absorption of curcumin compared to all other commercial forms tested.[14,15] At equal dosage levels, Theracurmin produces blood levels in human and animal studies that are higher bioavailability compared to standard curcumin in humans.

- Advanced manufacturing techniques increase free curcumin blood levels in a dose-dependent linear relationship
- Curcumin modulates an impressive number of molecular targets – enhanced absorption allows for significantly greater potency and therapeutic effect
- Naturally emulsified curcumin microparticles have significantly increased bioavailability
- High potency formula allows for easy dosing



WHY IS THE SERUM LEVEL OF FREE CURCUMIN IMPORTANT?

While most absorption studies based their curcumin levels upon total curcuminoids including metabolites, the only product that has shown to actually increase the free curcumin in its purest form is Theracurmin. As free curcumin is significantly more active than the metabolites, it is likely that Theracurmin produces much better results than other supplemental forms of curcumin. More detailed clinical studies are in process to evaluate additional health benefits of Theracurmin.

Furthermore, Theracurmin demonstrates a clear pharmacological dose response. What that means is that even small dosages of Theracurmin increase the blood measurements of curcumin, and, as the dosage increases so does the blood level. Moreover, this increase is linear, meaning that it increases in the blood in a parallel fashion to the dosage. Again, no other form of curcumin demonstrates this amazing responsiveness.

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