



# curcumin 7X

## 7X GREATER ABSORPTION

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Curcumin is derived from the yellow curry spice turmeric *Curcuma longa*. Delightful as a food, it is even more prized as an anti-inflammatory medicine. The active principle is diferuloylmethane, which inhibits NFκB and its entire inflammatory cascade, including powerful inhibition of COX-2 and PGE-2.

Clinicians find it effective in the management of inflammation, edema, injury and pain in conditions such as arthritis, rheumatoid diseases, trauma, and sports injury. Inflammation is a repair process associated with pain and swelling in acute trauma or sports injury. Unfortunately it can become chronic and cause tissue damage as in rheumatoid and osteoarthritis. Managing inflammation requires control of pro-inflammatory histamine, fibrin, tumor necrosis factor alpha (TNFα), eicosanoids such as arachidonic acid (AA), prostaglandins (PGE) and leukotrienes such as cyclooxygenase (COX), and lipoxygenase (LOX). Curcumin decreases interleukins, stimulates the reticulo-endothelial immune system, activates phagocytosis and inhibits complement pathways. This is an anti-inflammatory that really does it all.

If curcumin is a powerful COX-2 inhibitor, does it cause increased risk of heart attack and stroke, like several anti-inflammatory drugs like Vioxx pulled off the market lately? Fortunately, no! The synthetic drugs strongly inhibit prostacyclin PGI-2, which interacts with thromboxane TxA-2 to trigger clots, including heart attacks, stroke and thrombo-embolic disease. Curcumin slightly increases prostacyclin PGI-2 levels, reducing risk of clots.

Curcumin is a powerful support for detoxification, slowing Phase I to reduce build-up of reactive oxygenated toxins, while increasing phase II conjugation reactions. Curcumin reverses liver damage from fungal aflatoxins. It induces

heat shock protein hsp70 to protect cells from stress.

Highly chemoprotective, it blocks tumor induction by chemical carcinogens, such as mutagens in tobacco smoke.

Curcumin inhibits cancer initiation, promotion and progression. Even simple dietary intake of turmeric reduces risk. Curcumin also suppresses cancer by maintaining DNA methylation, inhibits spontaneous DNA damage from lipid peroxidation, promotes pro-apoptotic p53 gene, inhibits tumor survival genes egr-1, c-myc and bcl-XL, oncogenes c-jun, c-fos, , NIK, MAPK's, ERK, P13K, Akt, and iNOS.

Inflammation is involved in the growth of cancers, "the wound that will not heal". COX-2 and its product PGE-2 contribute to tumor viability and progression by increasing cell proliferation, de-differentiation, inhibiting apoptosis, increasing angiogenesis, increasing invasiveness via up-regulating matrix metallo-proteinases, increasing metastasis, promoting aromatase, up-regulating matrix metallo-proteinases and by immunosuppression. Tumor derived PGE-2 promotes the production of the potent immunosuppressive cytokine IL-10 by lymphocytes and macrophages, while simultaneously inhibiting IL-2 production, a cytokine which dampens inflammation. PGE-2 also inhibits natural killer cells and lymphokine-activated killer cells.

Curcumin significantly inhibits the number and volume of tumors by several mechanisms - significantly inhibits angiogenesis, blocks cell cycle progression at G2/S phase transition, blocks APN protein - reducing tumor blood flow and invasiveness, inhibits tumor growth factors and signaling pathways mTOR, PKC and EGFR tyrosine kinases and CDK's., and induces apoptosis in cancers via the ubiquitin-proteasome pathway.

A current hot topic in oncology is the recruitment of bone-marrow derived stem cells to manage inflammation in and around tumors. These pluripotent and



highly mobile cells may confer the most malignant properties to the tumor, namely invasion and metastasis. They are also capable of prolonged dormancy and are therefore resistant to cytotoxic chemotherapy and radiation. Controlling inflammation must be a core part of any cancer protocol.

Curcumin is useful in radiation therapy, improving safety and efficacy. I do not recommend giving curcumin with chemotherapy, although there is some evidence it may be useful. However, it is safe and most desirable to use it after chemotherapy, for detoxification and tumor suppression.

Unfortunately, despite all the good this phytochemical can do, its efficacy has been hampered by poor absorption in the gut. Several adjuncts are known to improve its clinical utility, including bromelain from pineapple and bioperine/piperine from black pepper. A novel approach to increasing absorption has been developed utilizing a proprietary ratio of volatile turmeric oil which boasts more than an 8-fold improvement in absorption in humans.

The only contraindication is in cases of biliary tract obstruction, as it is a mild cholegogue. Curcumin can in rare cases trigger thrombocytopenia or low platelet count. Curcumin should only be taken with blood-thinning medicines under professional guidance. If gastrointestinal upset such as bloating or diarrhea occurs, discontinue the product and consult your health practitioner.

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