



**THAI
FREEZE
DRY**
COMPANY LTD

Turmeric (*Curcuma longa*)

Much of the turmeric powder in the market will have been processed by boiling or steaming as a first step after washing. This is done to remove the raw odor, gelatinize the starch to produce a more uniform color and reduce drying time by softening the rhizomes. During the boiling/steaming process enzymes are denatured and the value of thermo-sensitive vitamins and vital ingredients decline.

Thai Freeze Dry's "Cellular Fraction-Line Technology" produces turmeric powder that has never been exposed to heat during any part of the process. This is the "Thai Freeze Dry" difference. Our mission is to revive our relationship to nature's complete foods and we deliver turmeric as a complete whole food as nature has designed it. Our premium freeze dried turmeric powder has the taste, odor, and health benefits equivalent to eating freshly ground turmeric. High concentrations found in extracts are not necessary. If you use turmeric as part of your daily regimen the accumulated protective properties will produce the desired results.

Turmeric contains hundreds of chemical species including a variety of curcuminoids working together in synergy. If we isolate one or several curcuminoids we exclude others that include essential oils that help make Turmeric easier for your body to absorb and metabolize. While curcumin is the most notable and most important of the curcuminoids in Turmeric its benefits are more effective if it is not isolated as a single extract.

Brain Function and Health: Curcumin crosses the blood-brain barrier to exercise a direct influence in reducing oxidative damage and inflammation in the brain. Thai Freeze Dry's process also captures bioactive compounds such as aromatic-turmerone which encourages the growth of nerve cells creating the potential to help repair the brain and thereby prevent neurodegenerative problems associated with dementia such as Alzheimer's. Allegorical support for the benefits of turmeric includes the low incidence of Alzheimer's in areas such as India where turmeric (contained in their curry) is a staple in their daily diet. Are these folks taking isolated curcumin extracts? Certainly not. They are using the whole turmeric root and we believe that you should do the same and enjoy even greater benefits since our dynamic freeze dried turmeric powder is not boiled or cooked.

Neurons form new connections and also grow and multiply in the brain. A growth hormone, essential to this process is BDNF (Brain-Derived Neurotrophic Factor). This hormone decreases as you grow older. Decreased levels of BDNF are linked to brain disorders such as Alzheimer's disease, depression (see below) and age-related decreases in cognitive functions. Curcumin has been shown to increase levels of BDNF. (1)

Anti-Inflammation: Inflammation is part of the body's natural defense system, repairing damage and fighting foreign invaders, but when short-term inflammation becomes chronic appropriate therapeutic interventions are needed.

Turmeric displays powerful anti-inflammatory effects. Given the fact that inflammation is linked to a wide spectrum of health issues including heart disease, metabolic syndrome, arthritis, and degenerative nervous system disorders such as Alzheimer's disease and contributes significantly to the aging process, Turmeric makes a great daily supplement to your diet.

The protein tangles know as Amyloid plaque are a feature of Alzheimer's disease that curcumin can help to clear. In doing so, Turmeric may prove to help slow down and even reverse the progression of Alzheimer's. (2)

Curcumin supplementation has shown the ability to effectively improve the symptoms of rheumatoid arthritis (joint inflammation) due to its anti-inflammatory prowess.

Turmeric is a highly effective anti-inflammatory as powerful as anti-inflammatory drugs that have a long list of negative side effects. Curcumin acts on the molecular level to block NF-kB, a molecule that travels into the nuclei of cells and turns on the gene expression for inflammation. This effectively interrupts the inflammation cycle. (3)

Antioxidant Capacity: A wide range of diseases and effects of aging are associated with free radical imbalance. Excessive free radicals that attack our healthy cells are kept in check by antioxidants. Curcumin has a double antioxidant effect. It contains strong antioxidant compounds that neutralize free radicals and, at the same time, boosts the body's natural ability to synthesize the enzymes that act as our endogenous antioxidants. It acts along both of these metabolic pathways at the same time. (4)

Cancer Protection: Studies show that curcumin reduces the growth of blood vessels in tumors, reduces metastasis (spread of cancer) and contributes to apoptosis (the death of cancer cells). Proof that curcumin can treat cancer in humans has yet to be proven, however there is evidence that it may prevent some cancers from occurring in the first place, specifically cancers of the digestive system (such as colorectal cancer). In a study of 44 men with lesions of the colon that tend to turn cancerous, 4 grams of curcumin per day for 30 days reduced the number of lesions by 40%. (5)

Cardiac Health: Heart disease, the greatest killer of mankind, is a complicated matter with various contributing factors. One of the major causes of heart disease is endothelial dysfunction with is the inability of the endothelium to regulate blood pressure, blood clotting and other factors. Studies attribute curcumin with improvements in endothelial function as effective as the drug Atorvastatin. This is in addition to the reduction of inflammation and oxidation which greatly affect cardiac health.

In a study involving 121 patients undergoing coronary artery bypass surgery, the patients were randomized to either placebo or 4 grams of curcumin per day, only a few days before and after the surgery. The curcumin group demonstrated a 65% decreased risk of heart attack in the hospital. (6)

Anti-Depressant: Curcumin shows promise as an anti-depressant. Depression is linked to reduced levels of brain-derived neurotrophic factor (BDNF - a brain growth hormone) and a

shrinking hippocampus (the area of the brain associated with learning and memory). Curcumin has been shown to boost levels of BDNF and there is evidence that curcumin boosts neurotransmitters in the brain such as serotonin and dopamine. In a study of 60 patients suffering from depression, curcumin was shown to be as effective as Prozac in alleviating symptoms of depression. (7)

Anti-Aging: j Given curcumin's anti-inflammatory and antioxidant capabilities, support of heart function, and defense and prevention against cancer and neurodegenerative disorders, Turmeric has become known as an anti-aging supplement.

To dramatically increase the absorption of curcumin into the bloodstream it is helpful to consume black pepper (which contains piperine) which enhances the absorption of curcumin by up to 20 times. (8) For this reason Thai Freeze Dry's dynamic freeze dried curcumin powder contains appropriate levels of black pepper.

Disclaimer: We advise our readers to use Turmeric as a food and not as medicine. Although Turmeric appears to have many health benefiting qualities, its healing qualities are not yet approved as a medicine.

This brief is solely intended as a source of information and does not prescribe or advise the use of any substance mentioned herein. The authors do not intend to diagnose, cure, treat, or prevent any disease. The Food and Drug Administration of Thailand has not evaluated any statements made herein.

Consult with your doctor about all prescription and non-prescription medicines you take before you begin to use any herbal products and partner with your professional health care practitioner on determining your own health destiny.

If you are a pregnant, considering pregnancy or are a nursing mother you should consult your physician prior to using any health supplement product.

End notes:

- (1) Curcumin and Alzheimer's Disease published online: 3 Sept 2010, <http://onlinelibrary.wiley.com/doi/10.1111/j.1755-5949.2010.00147.x/full>
- (2) "Vitamin D, curcumin may help clear amyloid plaques found in Alzheimer's" Journal of Alzheimers Disease. Dr. Milan Fiala et al. July 2009
- (3) "Activation of Transcription Factor NF-kB is Suppressed by Curcumin", Journal of Biological Chemistry. Singh, S. and Aggarwal, B., Vol 270 p 30235. Oct. 20, 1995.

- (4) "Antioxidant Activities of Curcumin", Journal of Agricultural and Food Chemistry 2012
<http://pubs.acs.org/doi/pdf/10.1021/o1000173t>
- (5) "Curcumin as an Anti-Cancer Agent: /Review of the Gap between Basic and /Clinical Applications"- Author(s): G. Gar-Sela,R. Epelbaum and M. Schaffer Pages 190-1
- (6) "Effect of curcuminoids on frequency of acute myocardial infarction after coronary artery bypass grafting",. American Journal of Cardiology, July 2012 pp.40-44, Authors: Wongcharoen W. et.al.
- (7) "Efficacy and safety of curcumin in major depressive disorder: a randomized controlled trial" Authors: Sanmukhani, J. et. Al. . Phytoher Res. 2014, Aril 28 (4) pp. 579-85..
- (8) "Influence of piperine on the pharmacokinetics of curcumin in animal and human volunteers", Authors Shoba G. et.al. Planta Med. 1998, May, 64(4) pp.353-6