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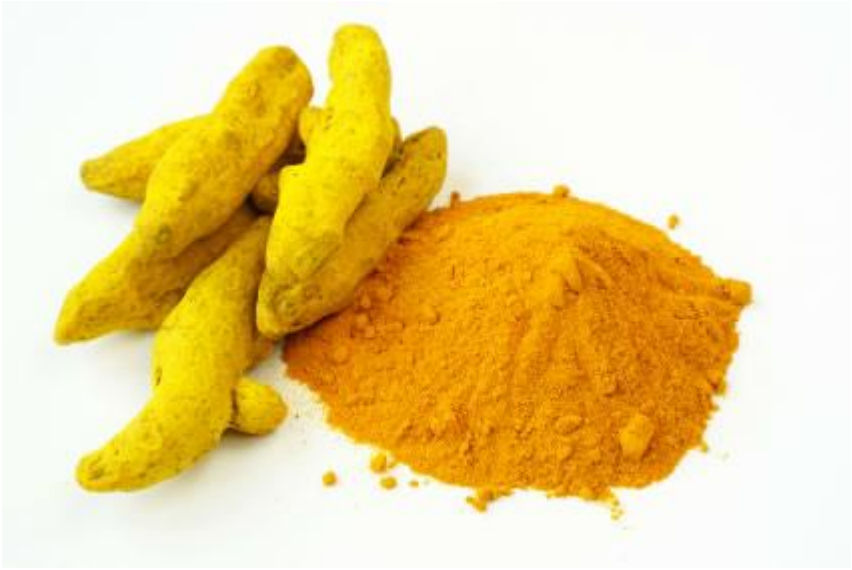
How Turmeric Reduces Oxidative Stress and Supports Your Brain and Heart

Curcumin has increasingly come under the scientific spotlight in recent years, with studies investigating its potential health benefits. It has even been found to **outperform pharmaceuticals** in preventing disease. Curcumin is a compound found in the spice turmeric which gives it a natural pigment. It has been linked to a range of health benefits, including potential protection against prostate cancer, Alzheimer's, protection against heart failure, diabetes, and arthritis. Two studies add to that mix with benefits for arterial aging and cognition.



The first of the news studies, published in Experimental Gerontology and performed by scientists from the University of Colorado, found that curcumin was associated with improved vascular health in aging lab mice.

Curcumin is a diferuloylmethane derived from turmeric (popularly called "curry powder") that has been shown to interfere with multiple cell signaling pathways, including cell cycle, proliferation, survival, invasion, metastasis and inflammation.

Adding curcumin to human cells with the blood cancer multiple myeloma, Dr. Bharat B. Aggarwal of the University of Texas **MD Anderson Cancer Center** in Houston and his colleagues found stopped the cells from replicating. And the cells that were left died.

Researchers at Rutgers, the State University of New Jersey, found that a combination of turmeric and phenethyl isothiocyanate (PEITC) was effective against **prostate cancer**. PEITC is abundant in a group of vegetables that includes cauliflower, cabbage, watercress, winter cress, broccoli, Brussels sprouts, kale, kohlrabi and turnips.

Intake of curcumin at 'physiologically attainable' doses have recently been reported to slow the development of prostate cancers by jamming receptors linked to cancer tumour growth, say researchers.

Supplementing the chow of aged mice with 0.2% curcumin "ameliorates age-associated large elastic artery stiffening, NO-mediated vascular endothelial dysfunction, oxidative stress and increases in collagen [...] in mice", wrote the researchers, led by Bradley Fleenor.

Study Details

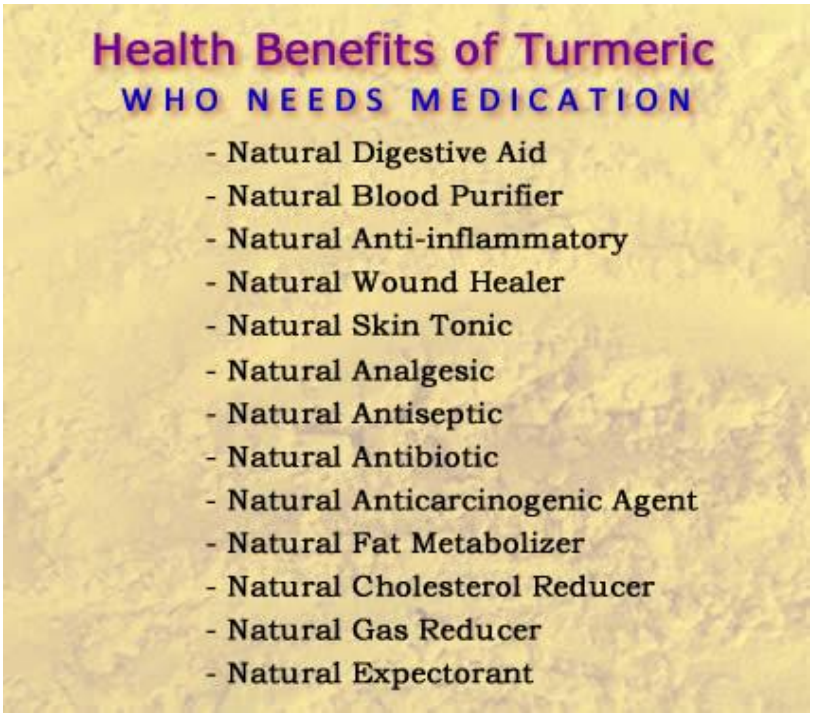
Fleenor and his co-workers gave old mice the equivalent of 14 grams per day of curcumin when compared with a 60 kg person.

"Because of **curcumin's poor absorption** and rapid metabolism, clinical trials in humans also have used high doses of curcumin (8 to 12 g) similar to the amount our old mice consumed, while observing only infrequent, minor side effects," they explained.

"Our results provide the first evidence that dietary curcumin supplementation ameliorates two clinically important markers of arterial dysfunction with aging: large elastic artery stiffening and endothelial dysfunction.

"Given its accessibility and safety, these pre-clinical findings provide the experimental basis for future translational studies assessing the potential for curcumin to treat arterial dysfunction with aging and reduce CVD risk in humans," they concluded.

Healthy Brain Aging



The second curcumin study, published in Biogerontology and performed by researchers from Selcuk University in Turkey, examined the effects of curcumin on cognitive functions in old female rats.

Lab animals were given either curcumin or corn oil (control) for seven days, and a further five days when they were tested using the Morris water maze.

Results showed that curcumin supplementation decreased the time needed by the animals to reach the platform, and also decreased the total distance traveled by the rats.

"In addition to the behavioral testing, biochemical results showed that MDA levels decreased in brain tissue by curcumin supplementation," they said. MDA (malondialdehyde) is a marker of oxidative stress.

"It may be concluded that, curcumin supplementation improves cognitive functions by decreasing the lipid peroxidation in brain tissue of aged female rats."

One of the most comprehensive summaries of a review of 700 turmeric studies to date was published by the respected ethnobotanist James A. Duke, Phd. He showed that turmeric appears to outperform many pharmaceuticals in its effects against several chronic, debilitating diseases, and does so with virtually no adverse side effects.

Alzheimer's:
Duke found more than 50 studies on turmeric's effects in addressing Alzheimer's disease. The reports indicate that extracts of turmeric contain a number of natural agents that block the formation of beta-amyloid, the substance responsible for the plaques that slowly obstruct cerebral function in Alzheimer's disease.

Arthritis:
Turmeric contains more than two dozen anti-inflammatory compounds, including six different COX-2-inhibitors (the COX-2 enzyme promotes pain, swelling and inflammation; inhibitors selectively block that enzyme). By itself, writes Duke, curcumin - the component in turmeric most often cited for its healthful effects - is a multifaceted anti-inflammatory agent, and studies of the efficacy of curcumin have demonstrated positive changes in arthritic symptoms.

Cancer:
Duke found more than 200 citations for turmeric and cancer and more than 700 for curcumin and cancer. He noted that in the handbook *Phytochemicals: Mechanisms of Action*, curcumin and/or turmeric were effective in animal models in prevention and/or treatment of colon cancer, mammary cancer, prostate cancer, murine hepato-carcinogenesis (liver cancer in rats), esophageal cancer, and oral cancer. Duke said that the effectiveness of the herb against these cancers compared favorably with that reported for pharmaceuticals.

Weight Loss:
Dietary curcumin can stall the spread of fat-tissue by inhibiting new blood vessel growth, called angiogenesis, which is necessary to build fat tissue. Curcumin-treated groups have been found to have less blood vessel growth in fat tissue. Blood glucose, triglyceride, fatty acid, cholesterol and liver fat levels also were lower.

Parkinson's:
A team of researchers has now demonstrated that slow-wriggling alpha-synuclein proteins are the cause of clumping, or aggregation, which is the first step of diseases such as Parkinson's. A new study led by Ahmad, which appears in the Journal of Biological Chemistry, shows that curcumin can help prevent clumping.

- Only 1 percent of the elderly in India develop Alzheimer's disease - this is one-quarter the rate of Alzheimer's development in North America. This difference is thought to be due in part to regular consumption of curry in India.
- Daily intake of curcumin may decrease the risk of developing polyps in the colon, which in turn, decreases the risk of developing colorectal cancer.
- Regular consumption of turmeric may help to ease pain and inflammation that accompanies arthritis.
- Curcumin may be helpful in the treatment of some cases of cystic fibrosis.
- Curcumin can help to effectively treat skin cancer cells.
- Turmeric may help to prevent the spread of breast cancer cells.

Mae Chan *holds degrees in both physiology and nutritional sciences. She is also blogger and technology enthusiast with a passion for disseminating information about health.*