

## Curcumin Benefits

Centuries-old Indian spice may have multiple health benefits



PubMed.com lists 7,728 studies involving curcumin and another 3,205 studies involving turmeric, with the large majority focused on their effectiveness against multiple medical conditions.

June 10, 2015 12:00 am • David Templetom Pittsburgh Post-Gazette

Over the centuries, the root-like stem of the *Curcuma longa* plant has been used to make yellow dyes and spike food with some tasty zing. But an ever-growing mountain of evidence shows that boldly colored turmeric with its earthy, bitter-gingery taste may offer a plethora of potential health benefits.

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Multiple studies — most originating in India, Europe and Australia — show that turmeric, and especially its color-rich constituent of curcumin, can help prevent or treat a wide spectrum of cancers, inflammatory conditions, autoimmune problems, neurological ailments including Alzheimer’s disease, cardiovascular disease, diabetes and diabetes neuropathy, among other metabolic diseases.

Interest in turmeric and curcumin began decades ago when researchers began asking why India has some of the lowest rates of colorectal, prostate and lung cancer in the world, compared with the United States, whose rates are up to 13 times higher. They traced India’s advantages largely to its diet staple of curry powder, which is a combination of spices, with turmeric as a main ingredient.

A recent review published in the journal *Molecules* said studies to date “suggest that chronic inflammation, oxidative stress and most chronic diseases are closely linked, and that antioxidant properties of curcumin can play a key role in the prevention and treatment of chronic inflammation diseases.”

An M.D. Anderson Cancer Center review of curcumin research, in the journal *Phytotherapy Research* in 2014, found that it regulates inflammation that “plays a major role in most chronic illnesses, including neurodegenerative, cardiovascular, pulmonary, metabolic, autoimmune and neoplastic diseases.”

Yet another M.D. Anderson study found that curcumin exhibits “antioxidant, anti-inflammatory, antiviral, antibacterial, antifungal, and anticancer activities,” all bolstering its “potential against various malignant diseases, diabetes, allergies, arthritis, Alzheimer’s disease and other chronic illnesses.”

There are no guarantees that turmeric or its active ingredient of curcumin will work for everyone. Researchers also caution that they may delay but not prevent, or slow down but not stop, a medical condition.

The *Curcuma longa* plant is a member of the ginger family. Curcumin makes up 3.4 percent of the turmeric root-stem or rhizome but provides its color and many of its health benefits. Curcumin is available only as a supplement or by eating turmeric spice.

Don’t confuse curcumin with cumin, which is a spicy seed or spice powder made from the seed and another common ingredient in curry with its own healthful properties. Cumin is unrelated to turmeric or the similar-sounding curcumin.

The NPD Group’s Kitchen Audit, conducted every three years, shows that a steady 40 percent of American kitchens since 2008 have had curry “on hand,” with turmeric showing a slow but steady rise in popularity by being available in 28 percent of American kitchens in 2008, 30 percent in 2011 and 33 percent in 2014.

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“Turmeric, I’ve learned, is often used as a substitute for curry, which could account for curry powder not increasing in household penetration,” NPD Group spokeswoman Kim McLynn said.

The cascade of research about the healthful qualities of turmeric, curcumin and curry haven’t been lost on two Pittsburgh researchers.

Joseph Maroon, the noted University of Pittsburgh Medical Center neurosurgeon, says he uses curcumin supplements as part of his health regimen as an ultra-marathon runner. He also recommends the use of curcumin and fish oil to his patients with pain and inflammation from degenerative conditions of the spine, neck and lower back. He said 17,000 Americans die each year from over-the-counter, nonsteroidal pain medications.

He was lead author of a 2006 study, “Natural anti-inflammatory agents for pain relief in athletes,” that concludes that “Curcumin’s therapeutic effects are considered comparable to pharmaceutical nonsteroidal medications ... but with a major difference in that this compound is relatively nontoxic and free of side effects.”

Dr. Maroon said his patients “would much rather have a natural approach to reducing inflammation and pain than a prescription of nonsteroidal pain killers and their potential risks. There is no question about the benefits. I take it every day and use curry in my cooking, although I tolerate capsules better than the curry.”

He recommends people consume 500 to 1,000 milligrams supplement of curcumin a day, with daily doses not exceeding 2,000 milligrams. A teaspoon of turmeric contains about 200 milligrams of curcumin. Some health advocates recommend consuming turmeric rather than a curcumin supplement because other compounds in turmeric offer their own health advantages.

Curcumin influences 700 genes, including ones that inhibit activation of the COX 2 gene, which produces an enzyme by the same name that causes pain and inflammation, Dr. Maroon said.

“It’s similar to drugs but with none of the side effects of drugs,” he said. While studies have found no notable side effects, possible drug interactions should be discussed with one’s physician. Ingesting black pepper and ginger along with the curcumin improve the biological breakdown of turmeric compounds so they can be absorbed into the blood.

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“There is a lot of research. But still, much of American research says there’s evidence, but no proof of direct benefits, of turmeric or curcumin,” Dr. Maroon said. “But I’ve yet to read a negative study on curcumin or that it was not effective.”

Human clinical trials, necessary to prove the spice’s direct health benefits, are few because such trials are expensive and natural compounds can’t be patented. That helps explain why some researchers are working to identify the spice’s precise biological mechanisms that could be synthesized, emboldened and patented, then sold as prescribed treatments for multiple medical conditions.

Debasish Bandyopadhyay, a research assistant professor at University of Texas Pan-American, is working to synthesize the properties in curcumin because, he said, “curcumin has everything.”

“In all diseases and almost all cancers it shows very good effects,” he said. “The negative effect is its viability” — the fact its healthful compounds aren’t readily broken down and absorbed into the blood.

“We have synthesized compounds that are anti-cancerous (in laboratory studies),” but these must be tested in expensive human clinical trials. The alternative is to consume curcumin along with ginger root, chili extract and black pepper to help make it more easily absorbed by the body, and realize the synergistic effects it has with other spices, he said.

A research instructor at the University of Pittsburgh Cancer Institute at the Hillman Cancer Center said studies including his own show “strong evidence toward the therapeutic potential of curcumin, while identifying the plethora of biological targets and intricate mechanisms of action that characterize curcumin as a potential drug for numerous ailments.”

“They can kill tumor cells but not normal cells,” said Raghvendra M. Srivastava, whose study years ago explained how curcumin enhanced T cells in the immune system. Studies also have shown that it blocks various inflammatory pathways, with inflammation playing an important role in most cancers. There are even potential benefits, he said, for people with multiple sclerosis.

Bottom line, he said, “Consuming more curcumin is a benefit.”

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