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IN THE NEWS

Curcumin protects against mammary tumors in rats

Epidemiological data has shown that curcumin plays a role in the prevention of several types of cancer. [Carcinogenesis 2000 Oct; 21(10):1835-1841]. The latest evidence suggests that curcumin may inhibit the incidence and progression of breast tumors. In the experiment, 54 animal subjects were irradiated to induce cancer development, then divided evenly into a group who received curcumin while the other half received no supplementation. Results showed a much lower mammary tumor incidence (18.5%) in the curcumin-fed animals compared to a high incidence (70.3%) in the control rats. In addition, results showed that tumor development was delayed by six months in the curcumin group. The average latent period before mammary tumors appeared was 2.5 months longer in curcumin-fed group. Moreover, the proportion of adenocarcinoma among curcumin-fed rats was half (16.7%) of that found in the controls (32.1%). A similar study by Japanese researchers, in which irradiated rats were separated into a group of 25 curcumin-fed rats and 39 controls [Carcinogenesis 1999 Jun;20(6):1011-1018]. Of the controls, 84.6% developed mammary tumors, while only 28% of the curcumin-fed group revealed tumor development.



Studies have shown that breast tumor cell lines are highly sensitive to curcumin, including multidrug-resistant lines. Moreover, curcumin seems to have a particular affinity for cancer cells as opposed to targeting healthy cells for apoptosis. For example, a study from the University of Miami demonstrated that a human multidrug-resistant breast cancer cell line was 3.5 times more sensitive to curcumin than mammary epithelial cells [Breast Cancer Res Treat 1999 Apr;54(3):269-278]. The results also showed that, while both cell lines accumulated similar amounts of curcumin, a significantly higher number of apoptotic cells were noted in the cancer cells compared to a very low proportion among the epithelial cells.

Some researchers have suggested that curcumin inhibits tumor cell growth by means of producing apoptosis, and that “genes associated with cell proliferation and apoptosis may be playing a role in the chemopreventive action” [Breast Cancer Res Treat 1999 Apr;54(3):269-278]. Other research has proposed that it is curcumin’s ability to be a free radical scavenger and inhibit nitric oxide (a compound implicated in both inflammation and cancer) that may explain its activity. In one study, curcumin was shown to directly scavenge nitric oxide and effectively reduce the amount of nitrate formed by the reaction between oxygen and nitric oxide [J Pharm Pharmacol 1997 Jan;49 (1):105-107]. Others insist that curcumin’s actions are unrelated to “apoptosis [or] to any significant change in the expression of apoptosis-related genes.” Rather, researchers at the University of Texas demonstrated tumor growth inhibition seemed to correlate with curcumin’s inhibition of ornithine decarboxylase activity, of which an overexpression has been implicated in cancer.

Curcumin’s anticancer effects, however, extend beyond just breast cancer. Other studies have elucidated the spice’s protective role against digestive tract cancers. In fact, research has shown that, in India, where curcumin is a commonly used cooking spice, the incidence rates of both large and small bowel cancer are low compared to the high prevalence in developed countries [Indian J Gastroenterol 1999 Jul-Sep;18(3):118-121]. -Angela Pirisi

Folate acid, breast cancer and alcohol consumption

For many years now, women have been in a quandary. One set of studies indicates that light and moderate drinking leads to significant cardiovascular benefits, including a lower risk of a heart attack and better chances of survival should a heart attack occur. Simultaneously, another set of studies warns that even moderate drinking increases a woman's risk of breast cancer.



A recent Mayo Clinic study, part of the Iowa Women's Health Study and based on a 12-year follow-up of over forty-thousand women aged 55 to 69, found that women who drank alcohol were at no greater risk of breast cancer as teetotalers as long as they maintained adequate folate intake. Specifically, women who drank four or more grams of alcohol a day but were also in the highest quartile of folate intake (above 350 mcg/day) had identical breast cancer risk as women who never drank. Women who drank even as little as 2 grams of alcohol a day but were in the lowest quartile of folate intake had a 59% higher risk of breast cancer. This study confirms the results of two previous large studies.

The majority of the American population is deficient in folate. The intake of 400 to 800 micrograms of supplemental folic acid a day is regarded as adequate. This critical nutrient is absorbed more efficiently from supplements than from the food. Dietary folate can be obtained from green leafy vegetables, beans and peas, and folic acid-enriched cereal products.

Folate intake counteracts breast cancer risk associated with alcohol consumption.

Besides its well-known role in methylation, folic acid could also help repair DNA damaged by acetaldehyde, a carcinogenic metabolite of alcohol. Acetaldehyde depletes methylfolate, an especially important form of folate. Adequate intake of folic acid has also been associated with lower risk of colon cancer. —AP

Eurekaalert press release, April 18, 2001.

Large-dose COQ10 helps ataxia victims

Hereditary ataxia, also called spinocerebellar ataxia, is a genetic disorder involving coordination and balance. Many victims are unable to walk. They also suffer from muscle weakness and speech difficulties. In addition, some ataxia patients develop seizures; often there is also a deterioration of the cerebellum (the part of the brain that governs coordination). A recent study at Columbia University found that hereditary ataxia patients have low levels of CoQ10 in their muscles. CoQ10 plays an important role in cellular energy generation and antioxidant protection of the mitochondria. The research team found that their six hereditary ataxia patients had only about one-third (26% to 35%) the normal concentration of CoQ10 in their muscles. The patients were then given high doses of CoQ10, ranging from 300 mg to 3000 mg a day for a year.

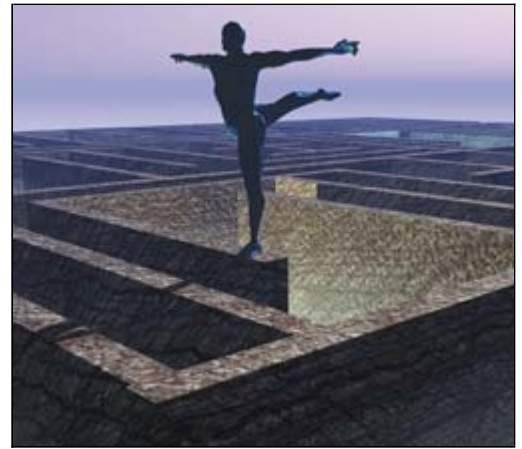
All patients showed significant improvement. Initially, five of the six patients were unable to walk. After one year on the CoQ10 treatment, all patients were able to walk with some reliance on devices such as a rolling walker. An eight-year-old boy was no longer confined to his wheelchair; a twenty-year-old woman began working outside the home for the first time. A test measuring movement, balance and ability to speak showed that the average improvement was 25%. Patients also showed an increase in muscle strength, and their seizures became less frequent.

The study suggests that a primary deficiency of CoQ10 may be an important cause of familial ataxia. The authors recommended that ataxia patients have their CoQ10 levels tested. If a deficiency is found, supplementation should be initiated. Treatment should begin early, and high doses of CoQ10 should be used.

Motor dysfunction, poor balance and muscle weakness are among the most common problems of old age. It would be interesting to investigate if aggressive doses of CoQ10 might be helpful, especially if combined with synergistic supplements such as lipoic acid. —Ivy Greenwell

Neurology 2001 April 10;56:849-55.

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