



IN EVERY ISSUE

Beneficial Brew

BY LENA HUANG

Can green tea prevent cancer?

For centuries, green tea has been a common drink in Asian countries. But with claims of its health benefits flourishing today, green tea is -common not only as a beverage, but also in products you wouldn't expect, such as yogurt, cookies, and sodas.

One health claim that has garnered attention is green tea's possible ability to prevent cancer. While some studies have yielded positive results, others have been contradictory, leaving cancer patients and survivors wondering what to pick at tea time.

Jian-Min Yuan, MD, PhD, associate professor at the Masonic Cancer Center at the University of Minnesota in Minneapolis, says green tea's anticancer activity is likely related to high levels of polyphenols, substances in plants that have antioxidant properties, such as protecting or preventing cells from free radical damage.

"Tea polyphenols, specifically tea catechins, are believed to be the active compounds in green tea that exert biological effects on cancer cells," says Yuan. In laboratory studies, tea catechins' antioxidant behavior reduced both the size and incidence of tumors and inhibited the growth of cancer cells.

One catechin subgroup in green tea that has been studied is epigallocatechin-3-gallate (EGCG), which has been shown in laboratory studies to inhibit the growth of cancer cells, among other activities. Green tea has a high EGCG content.

Human studies, however, have been more elusive. "Human studies, observational epidemiological studies, suggest that green tea may have beneficial effects and warrant careful further investigation," says Anna Wu, PhD, professor of preventive medicine at the University of Southern California. "However, it is difficult to conduct these epidemiological studies. In green tea-consuming populations—for example Japan—practically everyone drinks some green tea, and thus, you lack a clean, baseline group of non-green tea drinkers for comparison purposes."

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A recent review, published by *The Cochrane Database of Systemic Reviews*, looked at 51 studies of green tea consumption and its effect on a variety of cancers, including breast, prostate, lung, oral, and digestive tract. Although some studies showed a decreased risk for prostate cancer in men, other studies were contradictory. The authors concluded there was “insufficient and conflicting evidence” to recommend green tea as chemoprevention; however, drinking a cup or two of green tea a day appears to be safe.

And yet, it may not be safe for everyone. In June, a study published in the journal *Blood* found that EGCG may counteract the effects of Velcade (bortezomib), an approved treatment for multiple myeloma and mantle cell lymphoma. In the study, high concentrations of EGCG (obtained by two to three capsules of green tea extract supplements) blocked Velcade’s antitumor effect, suggesting that patients on Velcade should avoid green tea products.

Faced with food manufacturers who want to put claims of green tea’s health benefits on food labels, in 2005 the Food and Drug Administration came out with its own conclusion that, although green tea is a safe substance in moderation, it is unlikely to reduce the risk of cancers based on current data.

However, last July, the FDA granted orphan drug designation, which provides incentives for pharmaceutical companies to develop treatments for rare diseases, to the botanical drug Polyphenon E for the treatment of chronic lymphocytic leukemia. Polyphenon E’s primary ingredient is EGCG extracted from green tea leaves. A phase 2 trial is currently under way, testing the agent’s effectiveness in CLL patients taking a daily oral dose.

Currently, there are more than 20 clinical trials examining green tea and its effect on cancer. So until more conclusive evidence emerges, Yuan and Wu agree that in moderation (one to two cups a day) green tea is not harmful and may, one day, prove helpful.