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IN THE NEWS

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Soy isoflavones help prevent urological cancer

There's been some debate over whether the chemopreventive benefits of soy bean foods lie in their isoflavone content as a whole, or if individual compounds are to be credited. A new study shows that isoflavones, such as genistein and daidzein, work synergistically to inhibit cancer growth and induce apoptosis (Clin Cancer Res 2000 Jan;6[1]: 230-6). After analyzing the effects of soy on several bladder cancer cell lines, researchers at the National Cheung Kung University suggested the potential use of soybean foods as a means of chemoprevention for urinary tract cancer. The investigators administered isoflavones individually in various doses or in a mixed regimen to mice. Inhibition of cancer cell growth was observable with each independent type of isoflavone in all cancer cell lines that were tested. Overall, though, genistein was the most potent in its preventive action, and the combined regimen of all three forms of isoflavones had the greatest inhibitory effect than any of the single compounds exerted. Soy and its isoflavone constituents in general have already been shown to be chemopreventive in previous research.



For example, a meta-analysis of peer reviewed studies and reports from 1966-1998 by researchers at the West Virginia University School of Medicine revealed that a number of epidemiological studies support the use of dietary agents to protect against various urological forms of cancer, including the bladder, prostate and kidney (J Urol 1999 Jun;161[6]:1748-60). Among the reviewed findings, strong evidence surfaced about the preventive effect of soy protein consumption-in addition to reduced fat intake, vitamin E and selenium-against prostate cancer. When Ohio State University researchers compared the effects of diets containing soy protein isolate (whole soy protein with low isoflavone content) and soy phytochemical concentrate (isoflavone-rich soy extract with 85 times the amount found in soy protein), they found a dose-dependent benefit with regards to higher isoflavone consumption (J Nutr 1999;129:1628-35). While mice on a soy protein diet had tumors that were 11% smaller than control mice consuming milk protein, those that received a combined diet of soy protein and the phytochemical concentrate had tumors that were 40% smaller than the controls. In particular, genistein (the main isoflavone in soy) is believed to be chemopreventive because of its anti-estrogenic activity. Moreover, it inhibits carcinogenic enzymes, including tyrosine-specific protein kinases, as well as DNA topoisomerases. It also inhibits angiogenesis, the growth of blood vessels, which cancer cells require to fuel their growth, as well as promoting apoptosis in cancer cells. In fact, two thirds of research that examined the effects of genistein on in vitro and in vivo cancer models suggests that it significantly reduced the risk of cancer (J Nutr 1995 Mar;125[3 Suppl]:777S-783S). One animal study reported that a genistein diet significantly increases antioxidant activity in various organs, such as catalase in the small intestine, liver and kidney, the activity of superoxide dismutase and glutathione peroxidase in skin, and glutathione reductase in skin and the small intestine (Nutr Cancer 1996;25[1]:1-7). These results followed a 30-day diet of the soybean isoflavone genistein.

Just as no single dietary means serves a magic bullet for any disease, though, the Chinese study authors suggest that soy consumption could be considered part of a whole preventive dietary approach. They comment that, "Taken together with the fact that diets high in vegetables and fruits are the most effective means of preventing bladder cancer, dietary change can be considered a practical strategy in confronting urinary tract cancer." -Angela Pirisi

Growth hormone may help treat Crohn's disease

The cause of Crohn's disease, a chronic inflammatory disorder of the bowel, remains still largely unexplained, which is what makes it difficult to treat. Theories suggest that Crohn's may be the result of an infection or toxin that alters the permeability of the gut, while others believe that a genetic defect may predispose certain individuals to the chronic inflammation. So far, a number of treatments exist but with variable results. These have included immunosuppressive drugs, anti-inflammatory drugs, antibiotics, narcotics, a high-protein diet and regulatory peptides such as growth hormone. A recent study published in the New England Journal of Medicine (2000;342:1633-7) suggests that administering growth hormone (GH) to patients with Crohn's disease may help to resolve many of the symptoms associated with the disorder.

The four-month study examined 37 adults with moderate to severe Crohn's disease, 19 of which were put on a regimen of daily self-injections of GH (5 mg/day for first week, then 1.5 mg/day), while the remaining 18 received placebo. In addition, the test group was

instructed to raise their protein intake to 2 grams per kilogram of body weight. Results were then measured using a self-report disease activity scale of 0-600, whereby a higher number means more disease activity. While side effects associated with taking GH included edema in 10 patients, and headaches in five, they dissipated within two to three weeks of being on a maintenance dose. Results showed that the GH group experienced a marked improvement in symptoms within the first month of the self-administered treatment, and an increasing benefit over the next three months. Disease activity scores revealed that 14 of the 19 GH patients had a decrease of over 90 points, eight of whom had a score reduced by 150 points, and four of whom showed a drop of over 300 points. More specifically, the GH group showed significant improvement in three areas of disease activity by the end of the study, which included the number of liquid or very soft stools per day, the severity of abdominal pain and well-being. In addition, half of the patients in the GH group who were on medication were able to reduce their dose. Contrarily, the placebo group showed no significant improvement in disease activity, and 11% of them required more medication. While the authors aren't sure of how GH may benefit Crohn's disease, they do note its positive effect on gut growth and function in conditions such as Crohn's. "Growth hormone" they write, "enhances the uptake of amino acids and electrolytes by the intestines, decreases intestinal permeability and increases intestinal protein synthesis in animals." Meanwhile, supplemental protein intake, add the researchers, "has been shown to enhance the synthesis of protein by muscles and overall. The beneficial effect of supplemental prote in on the intestinal tract is further enhanced when growth hormone is administered."

This authors hope that growth hormone may prove effective for Crohn's disease patients, while boasting less severe side effects than other therapies. A large multicenter study, state the researchers, would help confirm their findings and determine the most appropriate GH dosage, rate of administration and length of treatment to maximize benefits. -AP

Folic acid from fortified cereals and supplements best at lowering homocysteine levels and heart disease risk



For the longest while, extolling the virtues of folic acid have followed along the lines of its ability to reduce the risk of birth defects, such as spina bifida. Besides being an essential nutrient in pregnancy, folic acid has also been recommended as an effective tool in the war against heart disease. The link in both preventive instances has been that this powerful B vitamin-found in green, leafy vegetables, orange juice, beans and fortified grains-works by activating an enzyme called methylenetetrahydrofolate reductase (MTHFR) that regulates blood levels of the amino acid homocysteine (tHcy).

Previous research, such as findings presented at the 20th Congress of the European Society of Cardiology in Vienna by Greek researchers, report that low levels of folic acid were closely linked to the incidence of acute heart attacks. Another study from the University of Michigan announced that about 10% to 50% of heart patients have high blood levels of tHcy. While it is known that tHcy levels correlate inversely to folic acid levels, the question of how much folate is enough to prevent cardiovascular disease and what are the best sources are still pending. While multivitamins typically include 400 mcg of folate, an amount that's known to reduce tHcy concentrations, most U.S. adults don't achieve this level through their dietary intake. Moreover, a new study published in the American Journal of Clinical Nutrition (2000;71:1448-54) suggests that folic acid-rich foods don't seem to reduce tHcy levels nearly as effectively as a supplement or folic-acid enriched breakfast cereals do.

This study, led by researchers at the University of Otago, in Denedin, New Zealand, compared three approaches for increasing dietary folate to a target intake of about 600 mcg per day with a view to reducing tHcy levels. Enrolled were 65 subjects, aged 36-71, with high tHcy levels and a baseline folic acid intake of about 250 mcg. The researchers examined the relative effects of folic acid supplementation, consumption of folic acid-fortified breakfast cereals and a higher intake of folate-enriched foods over a 12-week period. Compared to a control group, results showed that taking a daily supplement reduced tHcy levels by 21% and folic acid-fortified breakfast cereals decreased levels by 24%, while folate-enriched foods brought tHcy down by only 9%. This was despite the fact that all three folic acid sources raised blood folate levels. The reason for the disparity among these figures, suggest the researchers, may boil down to the bioavailability of folate from various sources. Apparently, as little as 50% of folate is actually available from food-based sources that make up a mixed diet. The study authors conclude that, "Daily consumption of folic acid-fortified breakfast cereals and the use of folic acid supplements appear to be the most effective means of reducing tHcy concentrations." -AP

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