Conjugated fatty acids and breast cancer

Perilla oil and safflower oil have shown the ability to inhibit breast cancer tumors. A study examined the chemopreventive effects of conjugated fatty acids from safflower oil (SO), which contains large amounts of conjugated linoleic acid, and from perilla oil (PO), high in conjugated linolenic acid. Rats were given a carcinogen over an eight week period. Diets containing SO or PO were administered during or after the carcinogen for 40 weeks. The results showed that over a six-month period there was a retardation of the emergence of breast tumors in the animals that received SO or PO together with the carcinogen. The groups given SO or PO after the carcinogen demonstrated a significant decrease in the final incidences of breast cancer. In a second experiment, when females were given the carcinogen together with SO or PO for four weeks, there was a suppression of the formation of DNA adducts, caused by the carcinogen in the breast, colon and pancreas. (DNA adducts are compounds formed between cancer-causing substances and DNA, which activate the DNA repair process, and unless repaired prior to DNA replication, may lead to abnormal chromosome rearrangements, and ultimately, cancer.) Thus, perilla oil and safflower oil suppress the growth and proliferation of breast cancer cells as well as the formation of DNA adducts in the colon and pancreas.

CANCER LETTERS, 2002, Vol 178, Iss 2, pp 131-139

Lung cancer and green tea

A study examined the growth inhibition of human lung cancer using green tea polyphenols. For accuracy, they used a biomarker which is highly expressed in the very early stages of human lung cancer. As a control, the potency of green tea polyphenols to inhibit cancer was compared with that of genistein. Both green tea and genistein dose-dependently inhibited the growth of lung cancer cells in culture and increased the cell growth phase associated with the induction of apoptosis (programmed cell death). There was a significant inhibition of the expression levels of the cancer cell biomarkers and of the activity which promotes the protein for cancer gene expression. Thus, researchers concluded that together with steadily accumulating evidence from clinical trials, green tea extract shows that it would be an efficient means of lung cancer prevention.


Vitamin E and the kidneys

Vitamin E protects antioxidant enzymes in the kidneys and reduces the damage to kidney tissue. In kidney failure, there is a weakening of kidney structure, and lesions develop along with fibrous tissue (a response to the lesions). There are also decreased activities and mRNA levels of antioxidant enzymes. (mRNA is a messenger molecule that specifies the amino acid sequence during protein synthesis.) A study investigated the effect of vitamin E supplementation on antioxidant enzyme activities in the kidneys of rats given a carcinogen. It was found that vitamin E supplementation of a normal diet weakened the scarring, lesions and degeneration of kidney tissue. In the kidney cortex, vitamin E completely prevented the reduction in enzyme activity of the endogenous antioxidants superoxide dismutase (SOD) and catalase (CAT), and partly for glutathione peroxidase (GPX). Thus, dietary supplementation of vitamin E protects the activities of antioxidant enzymes in the kidney cortex and basic structures during kidney disease.

NEPHRON, 2002, Vol 91, Iss 1, pp 129-133

Effect of genistein on the prostate gland

The consumption of soy in Asian countries is higher than in the U.S., and the incidence of prostate cancer is lower. Genistein, the main isoflavone in soy, has been shown to inhibit prostate tumor development in animals. A study investigated the effect of dietary genistein on the activity of the sex steroid cell receptor in the prostate gland, on circulating male hormones, and the potential for toxicity in the reproductive tract in rats. After exposure to genistein in the diet, the activity of the male and female steroid receptors of the prostate were reduced in a dose-dependent manner. After two weeks there was a reduction in mRNA expression of male and female steroid receptors. When the animals received 1000 mg genistein/kg diet, the female estrogen receptor protein levels were significantly reduced compared to control animals. There were no significant alterations to the male reproductive tract. Thus, a diet containing high levels of phytoestrogens lower activity of sex steroid receptors and may be responsible for the lower incidence of prostate cancer.


Carotenoids protect against UVB radiation

Exposure of living organisms to UV light leads to photo oxidative reactions. Peroxyl radicals are involved in the propagation of lipid peroxidation. Carotenoids are dietary antioxidants that show photo protective effects in human skin, efficiently scavenging peroxyl radicals and inhibiting lipid peroxidation. A study examined the protective effects of the carotenoids, lycopene, beta-carotene and lutein on