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Life Extension Update Exclusive

Pectin triggers self-destruction of prostate cancer cells

The August, 2007 issue of the journal *Glycobiology* published the discovery of scientists at the University of Georgia's Complex Carbohydrate Research Center that treatment with pectin causes the self-destruction of cultured prostate cancer cells. Pectin, a type of fiber which occurs in fruits and vegetables, is one of the most complex molecules known, and can bind to several cell sites to elicit different cellular responses simultaneously. Previous research in rats and tissue cultures treated with pectin has found a protective effect against lung and colon tumors, as well as reduced metastasis.

Professor of biochemistry and molecular biology Debra Mohnen and her associates at the University of Georgia and the VA Medical Center in Augusta exposed androgen-responsive and androgen-independent human prostate cancer cells to commercially available pectin powder. The induction of cellular self-destruction known as apoptosis was approximately 40-fold greater in cultures treated with fractionated pectin powder compared with non-treated cells.

Androgen-independent cells cannot be combated with hormone therapy and are therefore difficult to treat, yet both androgen-responsive and androgen-independent cells were found to have undergone apoptosis following treatment with pectin.

The research team found that heat treatment increased pectin's apoptotic activity, suggesting a way to improve its cancer-fighting ability. They are currently seeking to identify the smallest structure within pectin that elicits apoptosis in order to develop pectin-based nutraceuticals or drugs.

The study is the first to demonstrate an apoptotic effect of pectin in prostate cancer cells and contributes to the understanding of the anticancer property of pectin found in previous research. "What this paper shows is that if you take human prostate cancer cells and add pectin, you can induce programmed cell death," Dr Mohnen stated. "If you do the same with noncancerous cells, cell death doesn't occur."

"Even though we hear constantly that we're supposed to eat lots of fruits and vegetables, it wasn't until we started working on these studies that it finally hit home how really important that was," she added. "By simply increasing your intake of fruits of vegetables, you're going to get a lot of pectin and you're going to get all of the other beneficial phytochemicals at the same time."

Health Concern

Prostate cancer overview

Measures to prevent prostate cancer (PC) must be a routine part of the counsel that general practitioners and internists give their patients. Selenium intake of at least 200 mcg a day should be a consideration in the prevention of PC. Low plasma selenium is

associated with a four- to fivefold increased risk of PC.

A large-scale study of almost 11,000 men in Maryland showed that the protective effects of high selenium levels, and similarly that of the alpha-tocopherol isomer of vitamin E, were only observed when the concentrations of the gamma tocopherol isomer of vitamin E were also high. In this study, the risk of PC declined with increasing concentrations of alpha-tocopherol, with the highest concentration associated with a 68% PC risk reduction. For gamma-tocopherol, men with levels in the highest fifth of the distribution had a fivefold greater reduction in the risk of developing PC than men in the lowest fifth ($p = .002$). The observed interaction between alpha-tocopherol, gamma-tocopherol, and selenium suggested that combined alpha- and gamma-tocopherol supplements, used in conjunction with selenium, should be considered in future PC prevention trials.

Each Life Extension (LE) Booster softgel contains 210 mg of gamma-tocopherol plus 200 mcg of selenium in addition to 10 mg of lycopene. Combining one LE Booster softgel with one LE Vitamin E capsule containing 400 IU of D-alpha-tocopherol succinate should contribute to both the prevention and active nutritional treatment of PC.

<http://www.lef.org/protocols/prtcl-138.shtml>

Featured Products

Life Extension Booster

The original Life Extension Booster provides grape seed skin extract, but does not contain chlorophyllin, ginkgo, vitamin K, or sesame lignans. Like the Super Booster formula, Life Extension Booster provides significant cost savings over purchasing each ingredient separately.

<http://www.lef.org/newshop/items/item00579.html>



Apple Pectin Powder

Apple pectin is a water-soluble fiber, helpful in removing cholesterol out of the intestines and delaying glucose absorption. Pectin is one of the compounds that act as a substrate for the production of short chain fatty acids that help maintain a healthy colonic mucosa.

<http://www.lef.org/newshop/items/item00105.html>



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