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**Grapeseed extract blocks colorectal tumor growth in human cells and animals**

An article published in the October 18, 2006 issue of the journal *Clinical Cancer Research* reported the finding of researchers at the University of Colorado Health Sciences Center in Denver that grape seed extract inhibits the growth of human colorectal tumors in cell cultures as well as in mice.

"Many phytochemicals of diverse chemical nature, such as bioflavonoids, proanthocyanidins, and phytoestrogens, have shown promising chemopreventive and/or anticancer efficacy in various cell culture and animal models," the authors write in their introduction. "A rich source of proanthocyanidins is grape seed extract (GSE), which was studied for its anticancer activity against colorectal cancer in the present investigation . . . GSE is widely marketed as a dietary supplement and is considered safe for human consumption."

Rajesh Agarwal, PhD, who is a professor in the Department of Pharmaceutical Sciences, and his colleagues at UCHSC administered three concentrations of grape seed extract in DMSO or DMSO alone to two cultured human colorectal cancer cell lines. They found an inhibition of cell growth that increased with the concentration and time exposed to grape seed extract, and an increase in programmed cell death. In one of the cell lines that received the higher dose for the longest time period, a 92 percent reduction in live cells was observed.

The team discovered that grape seed extract increases the availability of a protein called Cip1/p21 which halts the cell cycle and can cause the cells to self-destruct. They also found a decrease in several different cyclin proteins and associated cyclin-dependent kinases (CDKs) which encourage cell division. "This protein physically interacts with CDKs," Dr Agarwal explained. "In normal cells, it attaches to CDKs to inhibit growth, but if a cell wants to grow, as it does in cancer, levels of Cip1/p21 are reduced, or nonfunctional."

When the researchers gave grape seed extract to mice at the same time that one of the human colorectal tumor cell lines was implanted, they found a 44 percent reduction in tumor volume per mouse after eight weeks compared to mice who did not receive the extract. Cip1/p21 protein levels were found to have doubled in the tumors, suggesting a similar mechanism of action as that observed in the cultured cells.

"The value of this preclinical study is that it shows grape seed extract can attack cancer, and how it works, but much more investigation will be needed before these chemicals can be tested as a human cancer treatment and preventive," Dr Agarwal stated.

Health Concern

## Colorectal cancer

Interventions that can prevent the development of colorectal cancer include screening for adenomas, removal of polyps by endoscopic polypectomy, excision of the large bowel (in FAP) (Munkholm P 2003; Watson P et al 1998), and regular NSAID use (Reeves MJ et al 1996; Giardiello FM et al 1993), in addition to the following dietary interventions:

**Fiber** from bran and cellulose is effective in reducing the risk of colorectal cancer development (Gonzalez CA 2006b); Greenwald P et al 1986). In those with low intake of dietary fiber, doubling of total fiber intake could reduce the risk of colorectal cancer by 40 percent (Bingham S 2006). Fruit fiber consumption, as opposed to vegetable fiber, reduces the risk of colorectal adenomas (Platz EA et al 1997). High-fiber foods include legumes, beans, seeds, nuts, wild rice, and oatmeal.

**Calcium** reduces the growth rate of rectal and colon epithelial cells both directly and by binding bile acids and fatty acids in the stool, resulting in compounds that are less likely to adversely affect the colon (Rozen P et al 1989). Calcium's beneficial effects may occur only in individuals who have a low level of fat intake (Cats A et al 1995). Oral calcium supplementation reduces benign tumor (adenoma) formation by 19 percent (Baron JA et al 1999) and slightly reduces cell proliferation in the rectum (Cats A et al 1995). Foods such as broccoli, kale, Chinese cabbage, milk, cheese, and yogurt are good sources of calcium.

**Curcumin** is currently being investigated in human clinical trials for the prevention and treatment of colorectal cancer (Jiao Y et al. 2006a). Curcumin may be effective in preventing the development of colon cancer related to Apc mutations (Corpet DE et al 2003; Pierre F 2003; Reddy BS et al 1994, 2002). The suggested daily dose is 1.6 grams (Perkins S et al 2002). Curcumin is extracted from turmeric root and is used as a spice in cooking.

**Multivitamin** use reduces the risk of benign tumor (adenoma) formation in high-risk individuals (Whelan RL et al 1999). Vitamins C, E, and A reduce the risk of developing colorectal cancer (Howe GR et al 1992; Newberne PM et al 1990).

[http://www.lef.org/protocols/cancer/colorectal\\_01.htm](http://www.lef.org/protocols/cancer/colorectal_01.htm)

## Featured Products

### Grape Seed Extract with Resveratrol

Life Extension's Grapeseed Extract with Resveratrol formula provides a concentrated blend of standardized proanthocyanidins found in grape seed and skins. The proanthocyanidins and flavonoids in this new formula are rapidly absorbed and distributed throughout the body, helping to eliminate free radicals while promoting healthy collagen formation.

<http://www.lef.org/newshop/items/item00816.html>



### Enhanced Fiber Food Powder

Enhanced Fiber Food Powder provides natural, bulk-producing soluble fiber. These fibers help maintain healthy bowel function and help to maintain cholesterol levels that are already within the normal range. Enhanced Fiber Food Powder helps clean the walls of the intestines and enhances the elimination of unwanted fecal byproducts.

By taking soluble fibers before meals, one can often achieve earlier satiety, thereby reducing one's calorie intake.

<http://www.lef.org/newshop/items/item00907.html>



## Life Extension Skin Care Sale

Since 1980, Life Extension has been at the forefront in identifying novel and innovative antiaging therapies. Aging first displays its outward signs on the skin. Now, help combat skin aging with our exciting range of skin care products that are years ahead of the commercial cosmetics industry!

We invite you to take advantage of this special Skin Care Sale, and enjoy up to a **60% discount** across a range of selected skin care products. Hurry, this incredible sale ends on **October 30, 2006**.

<http://www.lef.org/skin/>

If you have questions or comments concerning this issue or past issues of Life Extension Update, please send them to [ddye@lifeextension.com](mailto:ddye@lifeextension.com) or call 954 202 7716.

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