

Vitamin D May Help Prevent Colorectal Cancer

BY FRAN LOWRY
Orlando Bureau

SAN DIEGO — Calcium and vitamin D supplementation may protect against colorectal cancer by creating an environment in the colon that is less conducive to the formation of polyps and adenomas.

In a pilot study presented in a poster at the annual meeting of the American Association for Cancer Research, subjects who took 800 IU of vitamin D₃ per day for

6 months increased the expression of Bax—a protein that promotes the killing of damaged cells—in their colons by 56%, compared with subjects who took placebo.

When calcium was added to the vitamin D, Bax expression increased to a lesser extent (33%), reported Veronika Fedirko, a Ph.D. candidate at Emory University's Rollins School of Public Health, Atlanta.

"We were interested in how calcium and vitamin D prevent colorectal adenomas and colorectal cancers. There is pretty

good evidence for calcium, but not as much for vitamin D," Ms. Fedirko, the lead author, said in an interview.

Ms. Fedirko and her colleagues randomized 92 patients aged 40-75 years with a history of at least one adenomatous colonic or rectal polyp within the past 36 months to receive one of the following treatments for 6 months:

- ▶ 2,000 mg calcium per day (n = 23).
- ▶ 2,000 mg calcium plus 800 IU vitamin D per day (n = 23).

- ▶ 800 IU vitamin D per day (n = 23).
- ▶ Placebo (n = 23).

Patients underwent a colorectal biopsy at study entry and another at the end of the study. The tissue samples were examined for expressions of Bcl-2, an apoptosis inhibitor, and Bax, an apoptosis promoter.

After 6 months of treatment, Bax expression along the full lengths of the colorectal crypts increased by 56% in the vitamin D-alone group, and by 33% in both the calcium alone and calcium plus vitamin D groups, relative to the placebo group. The vitamin D treatment effect was more pronounced in the upper 40% of the crypts, the researchers said.

There were no statistically significant treatment effects on Bcl-2 expression, although data indicated a potential decrease in Bcl-2 expression after supplementation with calcium alone and with calcium plus vitamin D, they said.

The investigators also looked at the ratio of Bax to Bcl-2 density as an indicator of

the balance of pro-apoptotic versus anti-apoptotic stimuli in the colorectal crypts. They found that the ratio of Bax to Bcl-2 increased 62% in the calcium group, 47% in the vitamin D group, and 71% in the calcium plus vitamin D group.

For the vitamin D group, the proportional increase in the Bax to Bcl-2 ratio in the upper 20% as opposed to the lower 20% of the crypts was 352%, compared with the placebo group. "It appears that the strongest treatment effect was due to vitamin D and that this occurred in the upper sections of the colon crypts," Ms. Fedirko said.

Cells that reach the top of the colon crypt are more likely to be diseased or to have mutations, and are therefore prime candidates to be killed off, Ms. Fedirko explained. The fact that vitamin D enhanced Bax production is therefore encouraging, she said.

"Our patients already had adenomas; they have something in their colon that is not right, so supposedly they have a low rate of apoptosis to start with. If we give them vitamin D, and if this increases the level of apoptosis, they will have fewer cells that will ever get to the top of the crypt, so they will be less likely to develop adenomas."

She and her colleagues, in collaboration with Dr. John D. Potter of the Fred Hutchinson Cancer Research Center, Seattle, and others, have begun another trial with calcium and vitamin D to test their efficacy in preventing adenoma recurrence. The study aims to recruit 1,300 high-risk individuals, and the dose of vitamin D will be much higher, Ms. Fedirko said.

"We used 800 IU of vitamin D in our pilot study, and I would say now even that is a low dose. When we do the other study, we will definitely increase the dose to 2,000 IU of vitamin D." ■

DOES THIS K-9 COME IN PRESCRIPTION STRENGTH?

DISCOVERY HEALTH CME
Earn Free CME Credit and learn more.

Jeff Corwin



Watch our newest DISCOVERY HEALTH CME program

PETS AND PEOPLE:

THE POWER OF THE HEALTH CONNECTION

There are convincing reasons to own a pet beyond popularity. The advantages are far reaching, from the cardiovascular benefits of walking a dog to service pets that assist people with disabilities. Hosted by Jeff Corwin, this CME program addresses the therapeutic roles of pets in helping their human owners achieve positive health outcomes.

Register at DISCOVERYHEALTHCME.COM for credits. Choose your way to watch. TV. Online. Podcast. DVD.

Beginning Sunday, July 20, 2008 at 9AM ET on Discovery Health Channel.
Encore Airings: Sunday, 7/27 8AM ET; Saturday, 8/9 8AM ET;
Saturday, 8/16 9AM ET; Saturday, 8/30 9AM ET; Saturday, 9/6 9AM ET.
Check local listings for other time zones and additional airdates.

Approved for 1 FREE AMA PRA Category 1 Credit™
The most flexible way to earn CME credit on your time.

UNIVERSITY OF VIRGINIA HEALTH SYSTEM
Discovery Health
FACULTY DISCLOSURE: As a sponsor accredited by the ACCME, it is the policy of the University of Virginia School of Medicine to require the disclosure of the existence of any significant financial interest or any other commercial supporter(s) of this activity or the manufacturer(s) of any commercial product(s) discussed in an educational presentation. Detailed disclosure will be made during the program.
ACCREDITATION: This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the University of Virginia School of Medicine and Discovery Health. The University of Virginia School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.
This program is funded by an educational grant from Del Monte.

©2008 DCL

Discovery Communications • The world's number-one nonfiction media company.