Clinical Update

Mechanism for calcium and vitamin D's benefits against cancer explained

Epidemiological studies supporting vitamin D and calcium for protection against colorectal cancer may be biochemically and biologically plausible, suggests new research.

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Scientists from Emory University in Atlanta and the University of Minnesota are reporting that the vitamin-mineral combination may increase levels of a protein called Bax, which plays a role in the controlling programmed cell death (apoptosis) in the colon. Moreover, high levels of calcium and vitamin D together are were also linked to higher levels of E-cadherin, which reportedly plays a role in the movement and proliferation of colon cells. Taken together, the studies add to a small but ever-growing body of research supporting the anti-cancer benefits of vitamin D plus calcium.

The first study, led by Veronika Fedirko, followed 92 people with sporadic colorectal adenoma and randomly assigned them to receive daily calcium (2.0 g) and/or vitamin D3 supplements (800 IU), or placebo for six months.

Results of the pilot, randomized, double-blind, placebo-controlled, showed that expression of the Bax protein increased by 56 per cent in the vitamin D group, and by 33 per cent in the calcium and vitamin D plus calcium groups, compared to placebo.

In another study, one with a 200-patient case-control, the researchers looked at the effects of vitamin D and calcium levels on levels of E-cadherin and beta-catenin - the latter plays an important role in the Wnt pathway (a cellular signalling pathway linked to more than 85 per cent of colon cancers).

Results showed that, although no overall differences were observed in the expression of E-cadherin or beta-catenin between the groups, when the researchers looked at vitamin D and calcium levels, they observed a link between high consumption levels of the vitamin and mineral and E-cadherin or beta-catenin expression, compared to people who consumed low amounts of both nutrients together or high amounts of only one nutrient.

The potential benefits for the vitamin-mineral combination in relation to colorectal cancer is somewhat controversial, with some studies reporting benefits while others report null results.

Indeed, back in 2006 results from the Women's Health Initiative (WHI) stated that daily supplements of vitamin D and calcium 'had no effect' on the risk of colorectal cancer. The results were questioned however and independent cancer experts said at the time that the claims should be interpreted in the light of the complexities of the study.

Michele Forman and Bernard Levin from the MD Anderson Cancer Center at the University of Texas, noted that the WHI trial had three overlapping components, with 69 per cent of the women enrolled on the Dietary Modification trial, 54 per cent enrolled on the Hormone Therapy trial, and 14 per cent enrolled on both.

Colorectal cancer accounts for nine per cent of new cancer cases every year worldwide. The highest incidence rates are in the developed world, while Asia and Africa have the lowest incidence rates. It remains one of the most curable cancers if diagnosis is made early.

Source: www.nutraingredients.com