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Vitamin D Supplements Could Fight Crohn's Disease

ScienceDaily (Jan. 27, 2010) — A new study has found that Vitamin D, readily available in supplements or cod liver oil, can counter the effects of Crohn's disease. John White, an endocrinologist at the Research Institute of the McGill University Health Centre, led a team of scientists from McGill University and the Université de Montréal who present their findings about the inflammatory bowel disease in the *Journal of Biological Chemistry*.

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"Our data suggests, for the first time, that Vitamin D deficiency can contribute to Crohn's disease," says Dr. White, a professor in McGill's Department of Physiology, noting that people from northern countries, which receive less sunlight that is necessary for the fabrication of Vitamin D by the human body, are particularly vulnerable to Crohn's disease.

Vitamin D, in its active form (1,25-dihydroxyvitamin D), is a hormone that binds to receptors in the body's cells. Dr. White's interest in Vitamin D was originally in its effects in mitigating cancer. Because his results kept pointing to Vitamin D's effects on the immune system, specifically the innate immune system that acts as the body's first defense against microbial invaders, he investigated Crohn's disease. "It's a defect in innate immune handling of intestinal bacteria that leads to an inflammatory response that may lead to an autoimmune condition," stresses Dr. White.

What Vitamin D does

Dr. White and his team found that Vitamin D acts directly on the beta defensin 2 gene, which encodes an antimicrobial peptide, and the NOD2 gene that alerts cells to the presence of invading microbes. Both Beta-defensin and NOD2 have been linked to Crohn's disease. If NOD2 is deficient or defective, it cannot combat invaders in the intestinal tract.

What's most promising about this genetic discovery, says Dr. White, is how it can be quickly put to the test. "Siblings of patients with Crohn's disease that haven't yet developed the disease might be well advised to make sure they're vitamin D sufficient. It's something that's easy to do, because they can simply go to a pharmacy and buy Vitamin D supplements. The vast majority of people would be candidates for Vitamin D treatment."

"This discovery is exciting, since it shows how an over-the-counter supplement such as Vitamin D could help people defend themselves against Crohn's disease," says Marc J. Servant, a professor at the Université de Montréal's Faculty of Pharmacy and study collaborator. "We have identified a new treatment avenue for people with Crohn's disease or other inflammatory bowel diseases."

This study was funded by a grant from McGill University.

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Journal Reference:

1. Tian-Tian Wang, Basel Dabbas, Ari J. Bitton, Hafid Soualhine, Luz E. Tavera-Mendoza, Serge Dionne, Alain Bitton, Ernest G. Seidman, Marcel A. Behr, John H. White, Marc J. Servant, David Laperriere and Sylvie Mader. **Direct and indirect induction by 1,25-dihydroxyvitamin D3 of the NOD2/CARD15-beta defensin 2 innate immune pathway defective in Crohn's disease.** *The Journal of Biological Chemistry*, (in press)

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