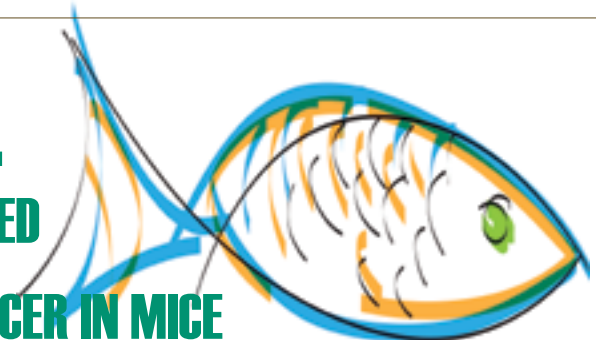
By Jason Cody

FISH OIL

LINKED TO INCREASED RISK OF COLON CANCER IN MICE



Fish oil - long encouraged by doctors as a supplement to support heart and joint health, among other benefits - induced severe colitis and colon cancer in mice in research led by Michigan State University and published this month in the journal Cancer Research.

Jenifer Fenton, a food science and human nutrition researcher at MSU, led the research that supports establishing a dose limit for docosahexaenoic acid (DHA), one of the omega-3 fatty acids present in fish oil, particularly in people suffering from chronic conditions such as inflammatory bowel diseases.

"We found that mice developed deadly, late-stage colon cancer when given high doses of fish oil," she said. "More importantly, with the increased inflammation, it only took four weeks for the tumors to develop."

Specifically, the research team found an increase in the severity of the cancer and an aggressive progression of the cancer in not only the mice receiving the highest doses of DHA but those receiving lower doses as well. The mice used in the study were prone to inflammatory-like bowel disease; inflammation is an important risk factor for many types of cancers, including colon cancer.

"Our findings support a growing body of literature implicating harmful effects of high doses of fish oil consumption in relation to certain diseases," Fenton said. "Currently, there is a call by academics and the food industry to establish dietary guidelines for omega-3 consumption. This is primarily motivated by the fact that most Americans are deficient in omega-3 fatty acids, and there is substantial evidence supporting the beneficial effects of the consumption."

The findings were surprising, specifically because DHA has been shown to have some anti-inflammatory properties, according to Fenton: "We hypothesized that feeding fish oil enriched with DHA to mice would decrease the cancer risk; we actually found the opposite. These mice were less equipped to mount a successful immune response to bacteria that increased colon tumors."

Fenton cautions people may not need to avoid fish oil; what the research shows is needed are guidelines on dosing. With any nutrient, there is a "bell curve" effect. On the left of the curve are those deficient in a nutrient; on the right are those in excess.

She said people already receiving enough omega-3 fatty acids through their normal diet and foods have no need for added supplementation.

"With fish oil, we don't yet know how much is appropriate," said Fenton, also a researcher with the Michigan Agricultural Experiment Station. "There are many examples of taking supplements, nutrients or chemicals in excess that can promote cancer (for example, beta-carotene supplementation in smokers). Supplementation is most useful when the person taking them is deficient in that specific nutrient."

The research team's findings could have an important preventive health impact, specifically in light of the high rates of colon cancer in the United States. Individuals with inflammatory bowel disease have an increased risk of developing colon cancer, and when the cancer metastasizes it can be fatal.

The next step, Fenton said, is to test omega-3 fatty acid levels in people with inflammatory bowel disease. To that end, she is continuing to build relationships - via MSU's College of Osteopathic Medicine campus in Macomb County - with gastrointestinal specialists to develop a cohort of patients.

"To help develop guidelines, we need to see how these findings correlate to human populations," she said.

Michigan State University has been advancing knowledge and transforming lives through innovative teaching, research and outreach for more than 150 years. MSU is known internationally as a major public university with global reach and extraordinary impact. Its 17 degree-granting colleges attract scholars worldwide who are interested in combining education with practical problem solving.