OMEGA-3 FATTY ACIDS AFFECT RISK OF DEPRESSION, INFLAMMATION

COLUMBUS, Ohio – A new study suggests that people whose diets contain dramatically more of one kind of polyunsaturated fatty acid than another may be at greater risk for both clinical depression and certain inflammatory diseases.

The report, published online this week in the journal *Psychosomatic Medicine*, suggests that we need to balance out our intake of omega-6 and omega-3 fatty acids. The current typical American diet contains 20 times more omega-6 than omega-3, a ratio that researchers say should be lowered to 4-to-1, or even 2-to-1.

This is the most recent in a long series of experiments Ohio State University researchers have conducted on the links between psychological stress and immunity. The addition of dietary questions to studies that have previously focused solely on emotional and biochemical markers may yield important new clues about the immune system.

“In this study, we're looking at the intersection of behavior, immune function and diet. In past experiments, we concentrated only on the first two,” explained Jan Kiecolt-Glaser, professor of psychiatry and psychology at Ohio State and lead author on the paper.

“It now appears that diet is a very important variable in the equation as to how people respond to depression and stress.”

The study, conducted in OSU’s Institute for Behavioral Medicine Research, focused on a group of 43 middle-aged to elderly men and women, nearly half of which were the caregiver spouses of people with Alzheimer's or other dementias. By including caregivers who typically report greater stress and more depression than similar adults who are not caregiving, the researchers could look...
Blood samples were drawn from each person in the study and tested for interleukin-6 (IL-6), tumor necrosis factor-alpha (TNF-alpha) and the receptor molecule for IL-6. Participants also completed a survey questionnaire that gauged their level of depression.

The analysis showed that participants who had much more omega-6 -- compared to omega-3 -- fatty acids, and who also were reporting more symptoms of depression, had much higher levels of IL-6 and TNF-alpha, two cytokines which enhance inflammation.

“The data suggest that higher depression and a poorer diet in terms of omega-3 can work together to promote inflammation. Other researchers have shown that clinically depressed people -- those with more severe depression -- often have lower omega-3 levels in their blood, and several studies have shown that supplementing diets with omega-3 improves depression,” Kiecolt-Glaser said, although the reason isn't clear.

“People who are depressed don't eat well, or it might be that there is something about depression that affects how well people process such foods.”

In recent years, research has shown that an increase in omega-3 fatty acids in the diet has specific health benefits, especially in patients with depression, cardiovascular disease and inflammatory and autoimmune diseases.

Martha Belury, an associate professor of human nutrition, endocrinology, diabetes & metabolism at Ohio State and co-author of the study, said the design of the study was important.

“We looked at people who were experiencing real depression, not those whose depression arose as a part of some experiment, and we could clearly see a relationship between lower omega-3 fatty acids and certain markers of depression and inflammation.”

Belury said that current recommendations allow up to two
servings each week of cold-water fish – the best source of omega-3 – such as salmon or trout. This would not apply to pregnant women, she said, where concerns are greater about the heavy metal contamination such fish might contain. Omega-3 is also available as nutritional supplements.

“This study has shown that even in people who did not take supplements, maybe just a little bit more omega-3, could help reduce their markers for both stress and depression,” Belury said.

“The important message for consumers is that they don't have to take mega-doses of omega-3 to have some impact. It might not take a whole lot to have a significant clinical impact,” Belury said.

The researchers are now starting a larger, more comprehensive randomized and controlled trial of omega-3 in adults between the ages of 50 and 80 in hopes of testing the questions raised in this pilot study.

Ron Glaser, professor of internal medicine, molecular virology, immunology and medical genetics; David Beversdorf, an assistant professor of neurology; Stanley Lemeshow, dean of the College of Public Health, and Kyle Porter, a statistician in the Center for Biostatistics, were also part of the project. The research was supported in part by the National Institutes of Health.

Contact: Jan Kiecolt-Glaser, (614) 292-0033; kiecolt-glaser.1@osu.edu

Written by Earle Holland, (614) 292-8384; Holland.8@osu.edu.