

Harvard Study Links Trans Fat to Heart Disease

A new study ties high consumption of trans fat, found mainly in partially hydrogenated vegetable oils and widely used by the food industry, to an increased risk of coronary heart disease.

The study by the Harvard School of Public Health provides the strongest association to date between trans fat and heart disease. It found that women in the U.S. with the highest levels of trans fat in their blood had three times the risk of CHD as those with the lowest levels.

The study was published online on March 26, 2007, and will appear in the April 10, 2007 print issue of *Circulation: Journal of the American Heart Association*.

"The strength of this study is that the amount of trans fatty acid levels was measured in blood samples from the study population." said senior author Frank Hu, associate professor of nutrition and epidemiology at HSPH. "Because humans cannot synthesize trans fatty acids, the amount of trans fat in red blood cells is an excellent biomarker of trans fat intake."

Clinical trials have shown that trans fatty acids increase LDL cholesterol and lower HDL cholesterol, making them the only class of fatty acids, which includes saturated fat, to have this dual effect. HDL (high-density lipoprotein) is considered a "good" cholesterol; LDL (low-density lipoprotein) a "bad" cholesterol.

The researchers, led by Hu and lead author Qi Sun, a graduate research assistant at HSPH, set out to test the assumption that higher trans fatty acid levels in erythrocytes red blood cells were associated with a higher risk of heart disease among U.S. women.

Blood samples collected in 1989 and 1990 from 32,826 participants in the Brigham and Women's Hospital-based Nurses' Health Study were examined. During six years of follow-up, 166 cases of CHD were diagnosed and matched with 327 controls for age, smoking status, fasting status and date of blood drawing.

After adjusting for age, smoking status and other dietary and lifestyle cardiovascular risk factors, the researchers found that a higher level of trans fatty acids in red blood cells was associated with an elevated risk of CHD.

The risk among women in the top quartile of trans fat levels was triple that of the lowest quartile. "Positive associations have been shown in earlier studies based on dietary data provided by the participants, but the use of biomarkers of trans fatty acids is believed to be more reliable than self-reports. This is probably the reason why we see an even stronger

association between blood levels of trans fat and risk of CHD in this study," said Sun.

"These data provide further justifications for current efforts to remove trans fat from foods and restaurant meals," said Hu. "Trans fat intake in the U.S. is still high. Reducing trans fat intake should remain an important public health priority."

The study was supported by the National Institutes of Health.

Trans Fats Linked to Increased Endometriosis Risk, Omega-3 Linked to Lower Risk

Women whose diets are rich in foods containing Omega-3 oils might be less likely to develop endometriosis, while those whose diets are heavily laden with trans fats might be more likely to develop the debilitating condition, new research published March 24 suggests.

The study, which is the largest to have investigated the link between diet and endometriosis risk and the first prospective study to identify a modifiable risk factor for the condition, found that while the total amount of fat in the diet did not matter, the type of fat did. Women who ate the highest amount of long-chain Omega-3 fatty acids were 22% less likely to be diagnosed with endometriosis than those who ate the least and that those who ate the most trans fats had a 48% increased risk, compared with those who ate the least.

The findings from 70,709 American nurses followed for 12 years, published online in Europe's leading reproductive medicine journal *Human Reproduction*, not only suggest that diet may be important in the development of endometriosis, but they also provide more evidence that a low fat diet is not necessarily the healthiest and further bolster the case for eliminating trans fats from the food supply, said the study's leader, Dr. Stacey Missmer, an assistant professor of obstetrics, gynaecology and reproductive biology at Brigham and Women's Hospital and Harvard Medical School in Boston, Massachusetts, USA.

"Millions of women worldwide suffer from endometriosis. Many women have been searching for something they can actually do for themselves, or their daughters, to reduce the risk of developing the disease, and these findings suggest that dietary changes may be something they can do. The results need to be confirmed by further research, but this study gives us a strong indication that we're on the right track in identifying food rich in Omega-3 oils as protective for endometriosis and trans fats as detrimental," Dr. Missmer added

Stacey A. Missmer, Jorge E. Chavarro, Susan Malspeis, Elizabeth R. Bertone-Johnson, Mark D. Hornstein, Donna Spiegelman, Robert L. Barbieri, Walter C. Willett, and Susan E. Hankinson. **A prospective study of dietary fat consumption and endometriosis risk.** *Human Reproduction*, March 23, 2010