

Breaking News on Food & Beverage Development - North America

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Trans-fat alternatives - are they really healthier?

By Stephen Daniells

1/18/2007- **Interesterified fats, seen by some as alternatives to unhealthy trans fats, may also raise blood sugar levels and decrease insulin levels, as well as adversely affecting so-called 'good' cholesterol levels, says a new US-Malaysian study.**

"In this study we discovered that trans fat also has a weak negative influence on blood glucose. The newer replacement for trans, so-called interesterified fat, appears even worse in that regard, raising glucose 20 per cent in a month," said co-author Kc Hayes from Brandeis University in Massachusetts.

Lead authors of the new study, Kalyana Sundram from the Malaysian Palm Oil Board, said in a statement: *"This is the first human study to examine simultaneously the metabolic effects of the two most common replacement fats for a natural saturated fat widely incorporated in foods. As such, it is somewhat alarming that both modified fats failed to pass the sniff test for metabolic performance relative to palm olein itself."*

Though trace amounts of trans fats are found naturally, in dairy and meats, the vast majority are formed during the partial hydrogenation of vegetable oil that converts the oil into semi-solids for a variety of food applications.

Trans-fatty acids are attractive for the food industry due to their extended shelf life and flavour stability, and have displaced natural solid fats and liquid oils in many areas of food processing.

But scientific reports that trans fatty acids raise serum levels of LDL-cholesterol, reduce levels of HDL-cholesterol, can promote inflammation can cause endothelial dysfunction, and influence other risk factors for cardiovascular diseases (CVD), has led to a well-publicised bans in New York City restaurants, and other cities, like Boston and Chicago, considering similar measures.

Denmark introduced legislation in 2004 that required locally and imported foods to contain less than two per cent industrially made TFAs, a move that effectively abolished the use of partially hydrogenated vegetable oils in the country.

Writing in the journal *Nutrition and Metabolism*, the authors report the results of a small randomised, cross-over intervention trial with 30 subjects (average age 30, average BMI 22 kg per sq. m) consuming one of three test diets for four weeks. They were then cross-over to one of the other two diets.

Diets were tightly controlled and diet 1 was based on palm olein (POL) and provided 12.0 per cent of energy as palmitic acid. Diet 2 contained trans-rich partially hydrogenated soybean oil (PHSO) and provided 3.2 per cent of energy as trans fatty acids with an additional 6.5 per cent from palmitic acid. Diet 3 used an interesterified fat (IE) enriched with stearic acid (12.5 per cent of energy).

Measures of fasting blood glucose and insulin levels, along with blood lipoproteins (cholesterol) revealed that blood glucose levels after the IE meals were 40 per cent higher than for either the PHSO or POL meals.

Fasting insulin levels were also found to be adversely affected by both IE and PHSO consumption, with the researchers reporting a 10 per cent lower level after PHSO and 22 per cent lower after IE.

Furthermore, levels of so-called 'good' cholesterol (HDL) decreased by eight and seven per cent for the PHSO and IE diets, relative to the POL diets, while the trans-fat PHSO diet also raised levels of 'bad' cholesterol (LDL) by seven per cent, relative to the POL diet.

"In this study we discovered that trans fat also has a weak negative influence on blood glucose. The newer replacement for trans, so-called interesterified fat, appears even worse in that regard, raising glucose 20 per cent in a month," said Hayes.

"Further investigation is warranted before interesterification is disseminated as the process of choice for replacing partial hydrogenation as a primary means for hardening vegetable oils for use in food," concluded the researchers.

It should be noted that all three authors are either employed or connected to the Malaysian Palm Oil Board, which also provided funding for this study.

Source: *Nutrition & Metabolism*

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"Stearic acid-rich interesterified fat and trans-rich fat raise the LDL/HDL ratio and plasma glucose relative to palm olein in humans"

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