

Metabolic Effects of Interesterified Fats: A Review of the Literature

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Interesterification is commonly used to modify the physical characteristics of edible fats and oils for food manufacturing purposes as an alternative for partial hydrogenation. During interesterification the arrangement of the fatty acids on the glycerol backbone of a triacylglycerol molecule is changed without a change in overall fatty acid composition. Consequently, there is no production of trans fatty acids, which have an unfavourable effect on the serum lipoprotein profile and are strongly related to an increased risk of coronary heart disease.

Interesterified fats and oils may cause different effects on metabolic effects in humans than their native fats and oils. In order to study this, the results of seventeen well-documented and controlled studies were summarized in which men and women received interesterified fats and oils. These studies were published between 1970 and 2008. Palmitic acid (C16:0; 11 studies) and stearic acid (C18:0; 6 studies) were the major fatty acids of interest.

The majority of long-term studies showed no effects of the interesterified fats on the fasting serum lipoprotein profile. However, one study found an adverse effect of an interesterified C18:0-rich fat on the total to HDL cholesterol ratio, a well-known risk marker for cardiovascular risk.

If anything, short-term postprandial studies found a decrease in postprandial lipemia with interesterified fat. A smaller lipid response after a meal may reduce cardiovascular risk. Postprandial responses of plasma levels of glucose, insulin and factor VII were not systematically affected by interesterification. Again, only one study showed opposing effects: an interesterified C18:0-rich fat caused adverse effects on fasting and postprandial glucose concentrations.

Taken together, the studies discussed do not suggest that at current intakes interesterified fats and oils have different effects on the metabolic parameters examined than their native fats and oils.