

Nutrition and Health Info-Sheet

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Trans Fats and Coronary Heart Disease

What are cardiovascular disease and coronary heart disease?



- Cardiovascular disease includes all diseases affecting the heart and circulation (1).
- It includes coronary heart disease (CHD), heart failure, stroke, pulmonary heart disease, atherosclerosis, and high blood pressure (1).
- Coronary heart disease is the partial or complete blockage of the arteries supplying the heart by atherosclerotic plaques.
- Heart attacks, or myocardial infarctions, are considered CHD events and are caused by a complete blockage, cutting off blood flow to a portion of the heart muscle (1).

What are the major risk factors for coronary heart disease?

There are several modifiable risk factors for CHD (1,2):

- Cigarette smoking.
- Elevated low-density lipoprotein (LDL) levels ("bad cholesterol")
- High blood pressure
- Diabetes mellitus
- Low level of physical activity
- Overweight and obesity
- Low high-density lipoprotein (HDL) levels ("good cholesterol")
- Poor diet



What are trans fatty acids (TFA)?

- *Trans* fatty acids (TFA) are a type of unsaturated fatty acid that behave more like saturated fat in foods.
- Most TFA acids found in foods are produced commercially (4-7).
- The chemical process used to produce TFA results in a semi-solid or solid product with a higher melting point, increased stability, resistance to oxidation, and shelf life (3-7).

What foods contain TFA?

The major source of TFA in the diet are commercially-produced hydrogenated oils found in many processed foods, because it provides these foods with a desirable texture and longer shelf-life (4,7). The most common foods are:

- Margarine
- Bakery products
- Cookies and crackers
- Fried potatoes
- Chips and snacks
- Household shortening



What are the current estimated intakes of TFA?

The average consumption of TFA is estimated to be 2 to 3 percent of total calories consumed, which corresponds to an average of 5.3 to 5.8 g of *trans* fatty acids per day, most of which comes from commercially-produced TFA. (4-6, 9).

What are the current estimated intakes of saturated and unsaturated fat?



The average daily intake of fat is 79 grams (32.7 percent of calories), with 27 grams coming from saturated fat (11.2 percent of calories), 30 grams of monounsaturated fat and 16 grams of polyunsaturated fat (10,11).



What are the health concerns related to TFA?

The main concern is the effect of TFA on heart health. *Trans* fatty acids have been shown to negatively impact several factors that increase risk for cardiovascular disease. Consumption of TFA:



- Lowers high-density lipoprotein (HDL, "good cholesterol") concentrations, while raising low-density lipoprotein (LDL "bad cholesterol") and very low-density lipoprotein (VLDL) concentrations, resulting in higher total cholesterol to HDL ratios (4,6,8,12-14).
- Increases blood levels of triglycerides (4,13,14).

How do the effects on health of TFA compare to that of unsaturated and saturated fats?

- Consumption of saturated fatty acids and TFA raises LDL cholesterol, however, TFA also lower HDL, while saturated fat does not (5,13,14).
- Both saturated and TFA are associated with increased CVD risk, but there is greater increase in risk with consumption of TFA.
- Consumption of poly- and mono-unsaturated fatty acids (found in the *cis* formation) tends to lower overall cholesterol by lowering LDL, while HDL rises or remains relatively unchanged (12,13). For this reason, consumption of unsaturated fatty acids is associated with a decreased risk of CVD (6,13,14).



What are the concerns associated with reducing TFA in food and TFA consumption?

- To reduce TFA in foods, manufacturers will have to replace it with another kind of fat that will give the same texture and taste to foods. Replacing TFA with healthier fats will not reduce the amount of calories in the food.
- There is concern that foods will become higher in saturated fat, cost more, and/or lose some of their palatability (4,6).
 - Denmark banned the use of oils containing more than 2 percent TFA in 2004, and has not experienced these problems (4).
 - Overall, saturated fat consumption in Denmark has not increased, and cost, quality, and availability has not noticeably changed (4).
- Another concern is that by focusing on eliminating TFA, individuals may ignore other lifestyle changes that could have a greater impact on reducing risk for CVD, such as exercising regularly or smoking cessation. (17). Effective prevention should include emphasis on healthy diet and lifestyle choices, and not focus solely on one risk factor (17).



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