What are Trans Fatty Acids?

Trans fats are produced during the hydrogenation of vegetable oils. Concerns about these fats brought about changes to the Nutrition Facts panel in 2006.

Photo credit: David Kessler, Flickr Creative Commons

Tip: Choose foods with 0 grams trans fat and less than 5 percent Daily Value of saturated fat more often.

What Are the Health Consequences of Consuming Trans Fats?

Consuming trans fats increases low-density lipoprotein (LDL, or "bad") cholesterol. This effect contributes to increased coronary heart disease and death. Trans fats may also have other adverse health effects like decreasing high-density lipoprotein (HDL, or "good") cholesterol. When you add this to the LDL-raising effect of saturated fat, the risk for coronary heart disease is further increased.

What Are Trans Fats?

Trans fats are produced during hydrogenation of vegetable oils, making the oil more solid than liquid in nature. This process is used in the food industry to produce partially or fully hydrogenated vegetable oils. Basically, hydrogenation converts one form of a monounsaturated fat (cis) into another (trans) by moving a hydrogen atom from one side of a double bond to the other.

Although most trans fats in the food system come from hydrogenation, ruminants (cattle, sheep, goats) have bacteria in their stomachs that produce natural trans fats. That's why small amounts can be found in animal products like meat, milk, and milk products. There have not been sufficient studies to determine if these naturally occurring trans fats have the same effects as the manufactured trans fats on LDL cholesterol levels.

Why Are Trans Fats Used as an Ingredient?

While many food manufacturers have reformulated their products to contain smaller amounts of trans fats, hydrogenated and partially hydrogenated oils are still a main ingredient used in a variety of products. These oils are less expensive and help extend shelf life, provide stability, and improve the taste of food. When used in deep fat frying, the length of time the oil can be used increases because heat does not break it down as rapidly.

Nutrition Information

With changes to the Nutrition Facts panel in 2006 that listed the content of trans fats in foods, industry efforts to reformulate food products, and government efforts to limit use of these of fats in restaurants and food service operations, consumption of trans fats has declined from about 5.8 grams per day to 1.3 grams per day. While this is good news, health experts agree that consumers must continue to pay attention to their intake of trans fats and strive to reduce it as much as possible. Cardiovascular disease is the leading cause of death in both men and women in the United States.
Where Are Trans Fats Found?
Foods like coffee creamer; commercially made crackers, cookies, cakes, frozen pies, and other baked goods; fast food; frozen pizza; ready-to-use frostings; refrigerated dough products (biscuits and cinnamon rolls); snack foods; and vegetable shortenings and stick margarines contain hydrogenated/partially hydrogenated oils. Some restaurants may still use hydrogenated oil for frying or in food preparation. The amount of trans fat can vary within food categories.

<table>
<thead>
<tr>
<th>Food category</th>
<th>Grams of trans fats per serving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margarine and spreads</td>
<td>0.0-3.0</td>
</tr>
<tr>
<td>Cookies</td>
<td>0.0-3.5</td>
</tr>
<tr>
<td>Frozen pies</td>
<td>0.0-4.5</td>
</tr>
<tr>
<td>Frozen pizza</td>
<td>0.0-5.0</td>
</tr>
<tr>
<td>Savory snacks</td>
<td>0.0-7.0</td>
</tr>
</tbody>
</table>

How Do I Identify Products That Contain Trans Fats?
The Nutrition Facts Panel on foods is the place to start. The amount of trans fats per serving is listed in grams. There is no %Daily Value as the Institute of Medicine recommends an intake of trans fats as near zero as possible. A listing of 0 grams of trans fats does not necessarily mean there are no trans fats in the product. Under the labeling regulations, if a product contains less than 0.5 gram per serving, it can declare 0 grams per serving. To avoid trans fats entirely, check the ingredient list. If hydrogenated or partially hydrogenated oil is listed, then the product does contain some amount of trans fats and your intake will depend on the number of servings you consume.

In 2015, the Food and Drug Administration (FDA) took action that will require food manufacturers to further reduce the use of partially hydrogenated oils and/or petition the FDA to permit specific uses of these oils. They have three years to comply with the regulation. This action is expected to reduce coronary heart disease in the United States.

Should I Continue to Monitor Saturated Fat and Cholesterol?
Yes, limiting your intake of trans fats is just one component of a healthful diet. The 2015 U.S. Dietary Guidelines recommends keeping the intake of saturated fat to less than 10 percent of total calories and the intake of trans fats as low as possible.

Shopping Tips
- Switch from stick margarine to soft margarine (liquid, tub, or spray), but check the ingredient list for partially hydrogenated oil.
- Choose lean cuts of meat and skinless poultry.
- Choose crackers, cookies, and snack foods that are low in both saturated and trans fats.
- When eating out, look for nutrition information on the menu. Ask what fats are being used in food preparation.
- Choose liquid vegetable oils such as canola, safflower, sunflower, or olive oil most often.

Learn the basics of nutrition and find ways to implement health eating patterns and choices in our new online course Nutrition 101: Healthy Eating Guidelines and Meal Planning.

Sources
What are Trans Fatty Acids?


Originally prepared by J. Lynne Brown, professor emeritus of food science, and Robin Rex, former extension educator. Reviewed and revised by Sharon McDonald, senior extension educator.

Authors

J. Lynne Brown, Ph.D., R.D.
Professor Emeritus of Food Science

Lynn James, MS, RDN, LDN
Senior Extension Educator, Food, Families & Health and Food Safety & Quality Teams

extension.psu.edu

Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Extension is implied.

This publication is available in alternative media on request.

Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to all qualified applicants without regard to race, color, religion, age, sex, sexual orientation, gender identity, national origin, disability, or protected veteran status.

© The Pennsylvania State University 2024

Code: ART-2919