

***Trans*-fatty acids in fried foods and baked foods**

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Trying to stay away from your favorite cakes to keep you healthy? Did you calm your cravings by nibbling on cookies, biscuits, pies or turnovers? Have you made the right decision? Not so sure, are you!

Cookies, biscuits, pies, turnovers, and all baked foods of similar category contain major ingredients, flour, butter/margarine/shortenings, and sugar. Generally speaking, margarine and shortenings are preferred since they help maintain the shape of baked foods such as cookies. Cookies made from shortenings stay crisper and are less brittle than ones using butter. Moreover, the aroma of baked foods will not be too “buttery”, which is how most consumers prefer it. Deep-fried or pan-fried foods e.g. fried chicken, French fries, fried/baked snacks which appear dry on the outer surface and non-oily to the touch should be viewed with suspicion for using shortenings in the recipes unless they have been prepared by experienced chefs or bakers.

How are margarine and shortenings processed?

Shortenings and some type of margarine are manufactured using the hydrogenation process. The process converts liquid vegetable oil into solid vegetable fat (plastic fat) by the addition of hydrogen at double bonds of the unsaturated fatty acids, thus making the oil more saturated. Generally, hydrogenation of fats is not carried to completion, and fats are hydrogenated only partially. This results in parts of *cis*-fatty acids (*cis*-isomers) being transformed into *trans*-fatty acids. By the end of the hydrogenation process, the content of *trans*-fatty acids can increase from 0% of all isomers (in liquid vegetable oil) to 26.8-59.1% (in plastic fat).

What are the detrimental health effects of *trans*-fatty acids?

According to several human studies, sufficiently high dietary *trans*-fatty acids could increase LDL-cholesterol (the “bad” cholesterol) and decrease HDL-cholesterol (the “good” cholesterol) levels, compared with diets high in *cis*-fatty acids. Compared with control diets essentially *trans*-free, the dietary levels of *trans*-fatty acids which increased LDL-cholesterol appeared to be approximately 4% of energy or higher whereas the dietary levels of *trans*-fatty acids which decreased HDL-cholesterol appeared to be approximately 5%-6% of energy or higher.

In summary, consuming diets high in *trans*-fatty acids will increase the risk of coronary heart disease.

Contents of *trans*-fatty acids in several types of food fats/products

Trans-fatty acids can be found in shortenings used in cookies, biscuits, and baked foods, margarine, and frying fats. They vary in level as shown in the following table.

Food fats	<i>Trans</i> -fatty acids content (% of total fatty acids)
Frying fats	0%-35% of fatty acids
Margarine/spreads	Fat: 0%-25% of fatty acids Product: 0%-15% by weight
Shortenings	0%-30% of fatty acids
Beef and dairy fat	3% of fatty acids

However, food manufacturers have been trying to use or develop the hydrogenation process to reduce or eliminate *trans*-fatty acids in their products. Therefore, before you purchase these food fats, spend a few minutes reading the label and buy the products that provide the lowest contents of *trans*-fatty acids or those which are *trans*-fatty acids free.

At what level should one limit the content of dietary *trans*-fatty acids?

According to the studies, *trans*-fatty acids can be more detrimental in increasing the risk of coronary heart disease than saturated fatty acids.

Currently, the American Heart Association has issued a Dietary Recommendation for *Trans*-fatty acids of <1% Energy. The figure is much lower than the level recommended for saturated fatty acids (<7% Energy). Other health professional organizations issued a more general Dietary Recommendations for *trans*-fatty acids, "as low as possible". Naturally, avoiding *trans*-fatty acids as much as possible in your diets should be the healthier choice, in relation to coronary heart disease risk.

Levels of *trans*-fatty acids in deep-fried/fried foods and baked foods

In choosing cookies, biscuits, and baked foods packed by industrial manufacturers, one should take time inspecting the ingredients shown on the label---whether or not the products contain margarine or shortenings. In case they do, the label should provide the contents of *trans*-fatty acids.

As for fast foods (deep-fried in shortenings), baked foods, snack bars or sticks with dry, non-oily outer surface, etc., where no labels are attached, one should be aware of the possible presence of *trans*-fatty acids. Thus, one is totally reliant on the ethics and responsibility of the food caterer.

The contents of *trans*-fatty acids in the following table were extracted from some studies outside Thailand.

Food item	<i>Trans</i> -fatty acids content (min.-max.) (% of total fatty acids)
Hamburger	3.0-9.6
Fried chicken	0.4-38
Nuggets	2.08-56.7
French fries	0.45-56.9
Cookies	1.3-45.6
Granola bars	5.1-21.7
Pies and turnovers	6.33-16.63

Note: Sample figures were extracted in part from studies outside Thailand. Please do not link them to the food products available in Thailand. The content of *trans*-fatty acids in any food product depends on the particular food fats used in the preparations.

The best practice is to avoid consuming deep-fried foods, crispy baked foods which look “suspicious”. In case your cravings get the better of you, try to avoid consuming high quantities of such foods, and only infrequently.

As a city dweller, my wish is to live to see the day when Bangkok follows New York City in banning, throughout the city, the use of fats containing *trans*-fatty acids in restaurants and bakeries (the only exception being those in manufacturers’ packages). Then, people living in Bangkok might be better off healthwise against the risk of coronary heart disease.

Note: an educational article about foods and nutrition by Associate Professor Vimol Srisukh, Department of Food Chemistry. Edited by N.&V.P. of U.K.

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