

Trans-Fat Free Baking with Annie & Jing



History of Trans-fat

In late 1890s, Nobel laureate Paul Sabatier worked to develop the chemistry of hydrogenation which enabled the margarine, oil hydrogenation, and synthetic methanol industries. During that time, Sabatier only considered hydrogenation of vapors. Until 1901, the German chemist Wilhelm Normann showed that liquid oils could be hydrogenated, and the process was patented in 1902. Ever since, Normann built a fat hardening facility in the Herford Company during the years 1905 to 1910, and the invention was extended to a large scale plant in Warrington, England. Within two years, the hardened fat was successfully produced in the plant in Warrington, and production began in the autumn of 1909. After their initial year's production of nearly 3,000 tonnes of hardened fat, Procter & Gamble Co., an American multinational corporation acquired the US rights to the Normann patent; in 1911, they began marketing the first hydrogenated shortening, Crisco, which composed largely of partially hydrogenated cottonseed oil.

Chemistry & Health Effects of Trans-fat

Trans fat is a type of dietary fat, a lipid molecule that contains one or more double bonds in trans geometric configuration. While a double bond may exhibit one of two possible configurations; trans or cis, in trans configuration, the carbon chain extends from opposite sides of the double bond, rendering a straighter molecule than in cis configuration, where the carbon chain extends from the same side of the double bond, rendering a bent molecule.

In most naturally occurring unsaturated fatty acids (vegetable oil), the lipid molecules are in their cis configuration. Naturally occurring trans fat are only found in small amounts in the meat and dairy products of ruminant animals; these natural trans fats are made by bacteria in the stomach of ruminant animals such as cows, sheep, goats, bison, and deer.

In contrast to the naturally occurring trans-fat, industrially produced Trans fat can be formed through partial hydrogenation, a process used to change liquid oils into semi-solids and solid fats or a commercial refinement of some liquid vegetable oils that cause small amounts of industrially produced trans fat to form. Some of the many reasons partially hydrogenated oils have been used include increasing the product's shelf life, decreasing refrigeration requirements, and replacing animal fats traditionally used by bakers.

Some of the health risks caused by consumption of trans-fat include:

- Risk of coronary heart disease because our human lipase enzyme is ineffective with the trans configuration, so trans fat remains in the blood stream for a much longer period of time and is prone to arterial deposition and subsequent plaque formation.
- Trans fat behaves like saturated fat by raising the level of LDL, but unlike saturated fat it has the additional effect of decreasing levels of HDL. Thus, the net increase in LDL/HDL ratio with trans fat is approximately doubled that of saturated fat.

Does my food have trans-fat?

One way to find out if your food packages have trans-fat is by looking at food labels. In addition to the Canadian Food Inspection Agency that requires the amount of trans fat to show on food labels, all BC food service establishments with a permit to operate a food service must now comply with the trans fat regulation, which acts to ensure that all soft spreadable margarine and oil meets the restriction of 2% trans fat or less of total fat content, and all other food meets the restriction of 5% trans fat or less of total fat content.

Note that when the label reads 0 trans fat, the product may contain 5g or less of trans fat. Please watch for vegetable shortenings or partially hydrogenated oils in the ingredient lists as they mean the same thing as trans fat. While food industries are required to lower their use of trans fat, you must be careful of the type of fat that they replace the trans fat with and the amount of saturated fat stated on food labels.

Nutrition Facts	
Serving Size 1 cup (200g)	
Servings per container 2	
Amount per serving	
Calories 220	Calories from Fat 100
%	
% Daily Value*	
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 2g	
Cholesterol 30 mg	10%
Sodium 235 mg	10%
Total Carbohydrate 16g	5%
Dietary Fiber 5g	20%
Sugars 4g	
Protein 6 g	
Vitamin A	
Citamin C	
Calcium	
* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:	

Tips to reduce Trans-fat consumption

- ☑ Reduce intake of processed bakeries
- ☑ Make your own bakeries to assure minimal use of trans fat
- ☑ Substitute vegetable shortening with vegetable oil or butter.
- ☑ Read food labels
- ☑ Try substituting applesauce in place of vegetable oil in muffin recipes
- ☑ Minimize overall intake of trans fat and saturated fat
- ☑ Focus on mono- and poly-unsaturated fats.



Butterscotch Bar Baking with Annie & Jing

Butterscotch Bar Recipe

350 degrees

¼ cup vegetable oil
1 cup light brown sugar (packed)
1 egg
¾ cup flour
1 tsp baking powder
¼ tsp salt
½ tsp vanilla extract
½ cup chopped pecans

Blend the sugar and vegetable oil in a medium bowl. Stir in the egg and vanilla. Blend all of the dry ingredients. Fold in the pecans.

Spray an 8x8 pan with pan spray until it is well coated. Spread the batter evenly in the pan and bake for 25 minutes at 350 degrees Fahrenheit. Do not overbake. Cut into bars while still warm.

Option Add-On – Butterscotch sauce

11 ounces butterscotch chips
¾ cup light corn syrup
1 tablespoon plus 1 teaspoon water

In a heavy saucepan over low heat, stir together butterscotch chips, corn syrup, and water. Stir until mixture comes to a simmer and butterscotch chips are melted. Pour over top. Add more nuts if desired and bake for 5 minutes. Cool and cut into bars.