

## Trans Fat-Formation, Adverse Effects And Alternative Foods



### Chemistry

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### ABSTRACT

*Some diseases are linked to food which we eat. All the fats are not dangerous, some fats increase the risk for heart disease, while others are good for health.*

*We consume four types of fats as food these are polyunsaturated, monounsaturated, saturated and Trans fat. Polyunsaturated and monounsaturated are the preferred fats. Saturated fats and Trans fats are those that we should consume the least because these fats are responsible for the development of insulin resistance and heart disease.*

*The food stuffs such as Pork, Fried chicken, Beef or pork hot dogs, Polish sausage, Pizza with sausage or extra cheese, Sandwiches with bologna, corned beef, Regular mayonnaise, whole milk, whole chocolate milk, Regular cheese, Pasta with cream sauce, Butter, stick margarine, Cream-based salad dressings, Packaged cookies, cakes, and crackers have Trans fats and they should be avoided.*

Fat is a major source of energy and helps our body to absorb vitamins. It is also important for proper growth, and for keeping us healthy. Fats are important ingredient of our food, they provide flavor, consistency and stability – and help us feel full.

The fats can be classified as healthy fats (Omega-3, monounsaturated and polyunsaturated) and unhealthy fats (saturated and trans fat). The trans fat are the most dangerous one. There exist in two isomeric forms, trans and cis form. In Trans fats two parts of fatty acid molecules are on opposite sides of double bonds. In the usual “cis” fatty acids, the two parts are on the same side of the double bonds.

Trans fat may be naturally occurring or man-made. Naturally occurring trans fat is structurally different than man-made trans fat and are not having adverse health effects (Belury, 2002) and (Lock et al., 2004). Man-made trans fat is a concern because research shows it raises LDL cholesterol levels (Mensink and Katan, 1990) and also lowers HDL cholesterol levels, thereby increasing risk for heart disease (Williams, 2000) and (Zock and Katan, 1997).

#### Adverse effects of Trans fat

Trans fats have absolutely no positive benefit to the human body, they harm the body in a variety of ways. Trans fat raises bad (LDL) cholesterol levels (Hu and Willett, 2002), lower good (HDL) cholesterol levels, cause heart disease (Rosamond et al., 2007), strokes, Alzheimer's Disease, cancer, or even infertility. These are the worst things which we can eat.

Essential fatty acids are converted in the body by a series of reactions to long chain polyunsaturated fatty acids, which is essential for tissue growth and development. Trans fatty acids compete with the essential fatty acids for the enzyme systems involved in these reactions (Decsi and Koletzko, 1995), (Sebedio, 2000) and (Carlson et al., 1997). The International Study showed the prevalence of asthma, allergic rhinoconjunctivitis, and atopic eczema in children aged 13–14 years around the world (Weiland, et al., 1999).

Trans fat must be avoided completely or should be kept to a minimum in diet. Foods such as fried foods, fast foods, chips, cookies, Doughnuts, pastries are rich in trans fat and so they should be avoided.

**Formation of trans fat:** To increase shelf life, oils are partially hydrogenated. Partially hydrogenated oils have been used to replace butter, lard, palm oil, coconut oil, and other “hard” fats in such foods as many processed foods. During hydrogenation of polyunsaturated fatty acids to monounsaturated and saturated fatty acids, some of the fatty acids are converted to the “trans” form.

Some natural sources, especially beef and milk products (bacte-

ria in cattle produce Trans fat that gets into meat and milk) may contribute to trans fat. A little more occurs naturally in vegetable oils and forms when vegetable oils are purified.

Foods that are labelled as containing partially-hydrogenated oils or fats are a source of Trans fatty acids. These foods include hard margarines, fried products and bakery products such as cookies, pastries and cakes.

The hydrogenation process destroys some of the vitamin K in vegetable oil leading to problem for persons which consume lesser amount of this vitamin.

Fully hydrogenated oils are less dangerous. The hydrogenation process increases the amount of saturated fat, but most of that fat is stearic acid. Stearic acid does not raise “bad” (LDL) cholesterol levels, because the body converts it quickly to monounsaturated oleic acid.

#### CONCLUSION

Try to avoid intake of Trans fat completely as they are the main culprits for developing heart and other fat related diseases.

Saturated fat intake should be limited to some degree, the exact extent of which depends on factors specific to lifestyle. In general, it shouldn't be avoided *completely*.

polyunsaturated or monounsaturated oils, such as canola, sunflower, soybean, olive, and peanut oils should be used. Shallow or deep frying must be reduced and baked, grilled and steamed products should be used.

Use reduced low or no fat dairy products. Opt for cheeses that are lower in saturated fat, Try to limit fatty snacks, such as crisps, cakes, pastries, biscuits and chocolate, to once a week. Use of fruits, vegetables, whole grain cereals must be encouraged as such foods have low total fat content and at the same time increase their fibre content.

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