Trans Fats vs. Saturated Fats

Dietitians and government spokespersons are finally admitting that trans fats have many harmful effects; unfortunately, they continue to insist that trans fats are “just as bad” as saturated fats (the kind found in butter, meat fat and the tropical oils), implying that saturated fats are very harmful. In fact, saturated fats play many important roles in the body chemistry and have the opposite effect of trans fats.

- Trans fats raise Lp(a) (indicating they cause heart disease), while saturated fats lower Lp(a).
- Trans fats interfere with immune function, while saturated fats enhance immune function.
- Trans fats inhibit the body’s use of omega-3 fatty acids and the production of long-chain omega-3 fatty acids, while saturated fats enhance the body’s use of omega-3 fatty acids and the production of the long-chain versions.
- Foods containing trans fats are associated with increased asthma; saturated fats are needed for the proper functioning of the lungs.
- Trans fats contribute to weight gain, while some types of saturated fats (the medium-chain triglycerides) boost metabolism and help with weight loss.
- Trans fats are associated with increased cancer and decreased fertility. Sources of saturated fat, such as butter and meat fats, contain many nutrients that fight against cancer and promote fertility.
What are Trans Fatty Acids?

Trans fatty acids are a type of fat molecule produced by a process called “partial hydroge-
nation,” which rearranges the hydrogen atoms in liquid unsaturated fatty acids to produce an
unnatural fat, which, like saturated fat is solid at room temperature.

Natural saturated fatty acids are straight mol-
ecules which pack together easily so they tend to
be solid at room temperature. In a saturated fatty acid such as stearic acid, each carbon atom is
joined to two hydrogen atoms. The hydrogen atoms are arranged in pairs, thus creating electron
clouds. Each one of our cell membranes is com-
pose of billions of fatty acids; chemical reactions
occur in the cell membranes at sites where two hydrogen molecules form electron clouds.

Natural unsaturated fatty acids, such as oleic acid, tend to be liquid at room temperature. They have two or more hydrogen atoms missing where the carbons are double bonded together, but the remaining hydrogen atoms at the double bond are paired on the same side—called the cis configuration—forming an electron cloud where reactions can take place in the cell membrane.

During the process of partial hydrogenation, one of the hydrogen atoms in a pair is moved to
the other side of the molecule, forming a trans fatty acid, such as elaidic acid—trans means “across.” This causes the molecules to straighten out so that they pack together easily and form a solid fat at room temperature. This is the kind of fat that manufacturers use for frying and to make cookies, crackers and other baked goods; it is less expensive for manufacturers to use partially hydrogenated vegetable oils for these purposes than natural saturated fats like butter, lard, tallow, palm oil and coconut oil.

Unfortunately, when these trans fatty acids are incorporated into the cell membrane, they are
missing the hydrogen pairs needed for chemical reactions to occur. The result is dysfunction and
chaos on the cellular level.

How to Avoid Trans Fat

Trans fats are used in most processed foods, such as commerical cakes, pies, cookies, crackers,
bread, chips, pretzels, snack foods, breadcramed foods and salad dressings. Most restaurants fry foods in oil blends containing trans fats.

Any food item containing “partially hydroge-
nated” oil contains trans fats. Small amounts of
trans fats occuring in deodorized vegetable oils (such as canola oil) and mono- and di-glycerides are not labeled.

The only way to avoid trans fats is to avoid
processed foods. Instead, prepare your own foods using fresh, natural ingredients. Use traditional fats such as butter, lard, tallow, goose fat, duck fat, palm oil and coconut oil for cooking and bak-
ing; and olive oil for salad dressing. Use butter instead of margarine or spreads. (Even “low-trans” spreads should be avoided as they are made from highly processed vegetables oils and contain many additives.)

Note: Butter and tallow (fat from beef and lamb) contain small amounts of natural trans fats that are not harmful.

STEARIC ACID, a naturally saturated fatty acid.

OLEIC ACID, a monounsaturated fatty acid with
two hydrogens forming a pair at the double bond, in the cis configuration.

TRANS ELAIDIC ACID, one of the common man-made
trans fatty acids, with two hydrogens across from each other at the double bond.

Dangers of Trans Fats

CANCER: Consumption of trans fats is associated with increased rates of cancer in many studies; trans fats interfere with enzymes the body uses to protect itself against cancer.

DIABETES: Trans fatty acids interfere with the insulin receptors in the cell membranes, thus triggering Type II diabetes.

HEART DISEASE: Trans fats raise the levels of atherogenic lipoprotein-a (Lp(a)) in humans.

IMMUNE FUNCTION: Trans fats interfere with both B and T cell functions, thus reducing im-

FERTILITY AND REPRODUCTION: Trans fats interfere with enzymes needed to produce sex hormones; they decrease the levels of testosterone in male animals and increase the level of abnormal sperm.

LACTATION: In animals and humans, consump-
tion of trans fats lowers the overall fat content in
mother’s milk, thus compromising the nourish-
ment to the infant. In addition, trans fats can
cross the mammary gland into mother’s milk and interfere with neurological and visual develop-
ment of the infant.

DEVELOPMENT AND GROWTH: Trans fats can cross the placenta, creating many problems for the developing fetus including low birth weight; they also interfere with the formation of long-chain polyunsaturated fatty acids needed for growth and development, especially development of the brain.

OBESITY: Women who consume trans fatty acids weigh more than women who do not consume trans fats, even though caloric intake is the same.