



# Soybean Oil: One of the Most Harmful Ingredients in Processed Foods

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Processed food is perhaps the most damaging aspect of most people's diet, contributing to poor health and chronic disease. One of the primary culprits is high fructose corn syrup (HFCS), the dangers of which I touch on in virtually every article on diet I write.

The second culprit is partially hydrogenated soybean oil.

These two ingredients, either alone or in combination, can be found in virtually all processed foods and one can make a compelling argument that the reliance on these two foods is a primary contributing factor for most of the degenerative diseases attacking Americans today.

Part of the problem with partially hydrogenated soybean oil is the trans fat it contains. The other part relates to the health hazards of soy itself. And an added hazard factor is the fact that the majority of both corn and soybeans are genetically engineered.

As the negative health effects from trans fats have been identified and recognized, the agricultural- and food industry have scrambled to come up with new alternatives.

Partially hydrogenated soybean oil has been identified as the main culprit, and for good reason. Unfortunately, saturated fats are still mistakenly considered unhealthy by many health "experts," so rather than embracing truly healthful tropical fats like coconut oil, which is mostly grown outside the US. The food industry has instead turned to domestic US alternatives offered by companies like Monsanto, which has developed modified soybeans that don't require hydrogenation.

## Why Hydrogenate?

Americans consume more than 28 billion pounds of edible oils annually, and soybean oil accounts for about 65 percent of it. About half of it is hydrogenated, as soybean oil is too unstable otherwise to be used in food manufacturing. One of the primary reasons for hydrogenating oil is to prolong its shelf life. Raw butter, for example, is likely to go rancid far quicker than margarine.

The process also makes the oil more stable and raises its melting point, which allows it to be used in various types of food processing that uses high temperatures.

Hydrogenated oil<sup>1</sup> is made by forcing hydrogen gas into the oil at high pressure. Virtually any oil can be hydrogenated. Margarine is a good example, in which nearly half of the fat content is trans fat. The process

that creates partially hydrogenated oil alters the chemical composition of essential fatty acids, such as reducing or removing linolenic acid, a highly reactive triunsaturated fatty acid, transforming it into the far less reactive linoleic acid, thereby greatly preventing oxidative rancidity when used in cooking.

In the late 1990's, researchers began realizing this chemical alteration might actually have adverse health effects. Since then, scientists have verified this to the point of no dispute.

Beware that there's a difference between "fully hydrogenated" and "partially hydrogenated" oils. Whereas partially hydrogenated oil contains trans fat, fully hydrogenated oil does not, as taking the hydrogenation process "all the way" continues the molecular transformation of the fatty acids from trans fat into saturated fatty acids. Fully hydrogenated soybean oil is still not a healthy choice however, for reasons I'll explain below. The following slide presentation explains the technical aspects relating to the hydrogenation process.

## The Health Hazards of Trans Fats Found in Partially Hydrogenated Oil

The completely unnatural man-made fats created through the partial hydrogenation process cause dysfunction and chaos in your body on a cellular level, and studies have linked trans-fats to:

Cancer, by interfering with enzymes your body uses to fight cancer	Chronic health problems such as obesity, asthma, auto-immune disease, cancer, and bone degeneration
Diabetes, by interfering with the insulin receptors in your cell membranes	Heart disease, by clogging your arteries (Among women with underlying coronary heart disease, eating trans-fats increased the risk of sudden cardiac arrest three-fold!)
Decreased immune function, by reducing your immune response	Increase blood levels of low density lipoprotein (LDL), or "bad" cholesterol, while lowering levels of high density lipoprotein (HDL), or "good" cholesterol
Reproductive problems by interfering with enzymes needed to produce sex hormones	Interfering with your body's use of beneficial omega-3 fats

As usual, it took many years before conventional health recommendations caught up and began warning about the use of trans fats. Not surprisingly, as soon as the FDA required food manufacturers to list trans fat content on the label — which took effect on January 1, 2006 — the industry began searching for viable alternatives to appeal to consumers who increasingly began looking for the "No Trans Fat" designation. It didn't take long before Monsanto had tinkered forth a genetically engineered soybean that is low in linolenic acid, which we'll get to in a moment.

Beware that some food manufacturers have opted to simply fool buyers — a tactic allowed by the FDA as any product containing up to half a gram of trans fat per serving can still legally claim to have zero trans fat<sup>2</sup>. The trick is to reduce the serving size to bring it below this threshold. At times, this will result in unreasonably tiny serving sizes, so any time you check a label and a serving is something like 10 chips or one cookie, it probably contains trans fats.

The Health Hazards of Soybeans

Besides the health hazards related to the trans fats created by the partial hydrogenation process, soybean oil is, in and of itself, NOT a healthy oil. Add to that the fact that the majority of soy grown in the US is genetically engineered, which may have additional health consequences. When taken together, partially hydrogenated GE soybean oil becomes one of the absolute worst types of oils you can consume.

Years ago, tropical oils, such as palm and coconut oil, were commonly used in American food production. However, these are obviously not grown in the US. With the exception of Hawaii, our climate isn't tropical enough. Spurred on by financial incentives, the industry devised a plan to shift the market from tropical oils to something more "home grown." As a result, a movement was created to demonize and vilify tropical oils in order to replace them with domestically grown oils such as corn and soy.

The fat in soybean oil is primarily omega-6 fat. And while we do need some, it is rare for anyone to be deficient as it is pervasive in our diet. Americans in general consume FAR too much omega-6 in relation to omega-3 fat, primarily due to the excessive amount of omega-6 found in processed foods. Omega-6 fats are in nearly every animal food and many plants, so deficiencies are very rare. This omega-6 fat is also highly processed and therefore damaged, which compounds the problem of getting so much of it in your diet. The omega-6 found in soybean oil promotes chronic inflammation in your body, which is an underlying issue for virtually all chronic diseases.

#### What About Organic Soybean Oil?

Even if you were fortunate enough to find organic soybean oil, there are still several significant concerns that make it far from attractive from a health standpoint. Soy in and of itself, organically grown or not, contains a number of problematic components that can wreak havoc with your health, such as:

**Goitrogens** – Goitrogens, found in all unfermented soy whether it's organic or not, are substances that block the synthesis of thyroid hormones and interfere with iodine metabolism, thereby interfering with your thyroid function.

**Isoflavones: genistein and daidzein** – Isoflavones are a type of phytoestrogen, which is a plant compound resembling human estrogen, which is why some recommend using soy therapeutically to treat symptoms of menopause. I believe the evidence is highly controversial and doubt it works. Typically, most of us are exposed to too much estrogen compounds and have a lower testosterone level than ideal, so it really is important to limit exposure to feminizing phytoestrogens. Even more importantly, there's evidence it may disturb endocrine function, cause infertility, and promote breast cancer, which is definitely a significant concern.

**Phytic acid** -- Phytates (phytic acid) bind to metal ions, preventing the absorption of certain minerals, including calcium, magnesium, iron, and zinc -- all of which are co-factors for optimal biochemistry in your body. This is particularly problematic for vegetarians, because eating meat reduces the mineral-blocking effects of these phytates.

Sometimes it can be beneficial, especially in postmenopausal women and in most adult men because we tend to have levels of iron that are too high which can be a very potent oxidant and cause biological stress. However, phytic acid does not necessarily selectively inhibit just iron absorption; it inhibits all minerals. This is very important to remember, as many already suffer from mineral deficiencies from inadequate diets.

The soybean has one of the highest phytate levels of any grain or legume, and the phytates in soy are highly resistant to normal phytate-reducing techniques such as long, slow cooking. Only a long period of fermentation will significantly reduce the phytate content of soybeans.

Natural toxins known as "anti-nutrients" -- Soy also contains other anti-nutritional factors such as saponins, soyatoxin, protease inhibitors, and oxalates. Some of these factors interfere with the enzymes you need to digest protein. While a small amount of anti-nutrients would not likely cause a problem, the amount of soy that many Americans are now eating is extremely high.

Hemagglutinin -- Hemagglutinin is a clot-promoting substance that causes your red blood cells to clump together. These clumped cells are unable to properly absorb and distribute oxygen to your tissues

#### Worst of All — Genetically Engineered Soybean Oil

The genetically engineered (GE) variety planted on over 90 percent of US soy acres is Roundup Ready — engineered to survive being doused with otherwise lethal amounts of Monsanto's Roundup herbicide. The logic behind Roundup Ready crops such as soy is that you can decrease the cost of production by killing off everything except the actual soy plant.

However, animal studies reveal there may be significant adverse health effects from these GE soybeans, including progressively increased rates of infertility with each passing generation. By the third generation, virtually all the hamsters in one feeding study were found to be infertile. Second-generation hamsters raised on GE soy also had a five-fold higher infant mortality rate.

#### Are Low-Linolenic Soybeans the Answer?

We now also have other Monsanto-made soy crops to contend with. Responding to the growing demand for healthier diets, Monsanto launched Vistive low-linolenic soybeans in 2005. Most soybeans contain roughly seven percent linolenic acid. The new varieties contain one to three percent. As explained by Monsanto<sup>3</sup>:

“The oil from these beans can reduce or virtually eliminate trans fat in processed soybean oil... Vistive low-linolenic soybeans have lower levels of linolenic acid. Because of these lower levels, which were achieved through traditional breeding practices<sup>4</sup>, the oil produced by Vistive low-linolenic seeds does not require hydrogenation, the process that is used to increase shelf life and flavor stability in fried foods, baked goods, snack products and other processed foods.”

Yet another soybean variety created by Monsanto is the high stearate soybean, which also has the properties of margarine and shortening without hydrogenation. But are these soybeans any better or safer than either conventional soybeans or Roundup Ready soybeans, even though they don't have to go through partial hydrogenation, and therefore do not contain trans fat? No one knows.

#### Another Hazard of GE Soybeans: Glyphosate

I keep stacking health risks upon health risks, and here's another one: Research has shown that soybean oil from Roundup Ready soy is loaded with glyphosate, the main ingredient in Roundup — the broad-spectrum herbicide created by Monsanto.

According to a report in the journal *Chemical Research in Toxicology*, the highest MRL for glyphosate in food and feed products in the EU is 20 mg/kg. GE soybeans have been found to contain residue levels as high as 17 mg/kg, and malformations in frog and chicken embryos occurred at 2.03 mg/kg.<sup>5</sup> That's 10 times lower than the MRL.

This is an alarming finding because glyphosate is easily one of the world's most overlooked poisons. Research published in 2010 showed that the chemical, which works by inhibiting an enzyme called EPSP synthase that is necessary for plants to grow, causes birth defects in frogs and chicken embryos at far lower levels than used in agricultural and garden applications.<sup>6</sup> The malformations primarily affected the:

- Skull
- Face
- Midline and developing brain
- Spinal cord

When applied to crops, glyphosate becomes systemic throughout the plant, so it cannot be washed off. And once you eat this crop, the glyphosate ends up in your gut where it can decimate your beneficial bacteria. This can wreak havoc with your health as 80 percent of your immune system resides in your gut (GALT – Gut Associated Lymph Tissue) and is dependent on a healthy ratio of good and bad bacteria. Separate research has also uncovered the following effects from glyphosate:

Endocrine disruption	DNA damage
Developmental toxicity	Neurotoxicity
Reproductive toxicity	Cancer

## To Avoid Harmful Fats of All Kinds, Ditch Processed Foods

If you want to avoid dangerous fats of all kinds, your best bet is to eliminate processed foods from your diet. From there, use these tips to make sure you're eating the right fats for your health:

- Use organic butter (preferably made from raw milk) instead of margarines and vegetable oil spreads. Butter is a healthy whole food that has received an unwarranted bad rap.
- Use coconut oil for cooking. It is far superior to any other cooking oil and is loaded with health benefits.
- Be sure to eat raw fats, such as those from avocados, raw dairy products, olive oil, olives, organic pastured eggs, and raw nuts, especially macadamia nuts which are relatively low in protein. Also take a high-quality source of animal-based omega-3 fat, such as krill oil.

Following my comprehensive nutrition plan will automatically reduce your trans-fat intake, as it will give you a guide to focus on healthy whole foods instead of processed junk food. Remember, virtually all processed foods will contain either HFCS (probably made from genetically engineered corn) and/or soybean oil — either in the form of partially hydrogenated soybean oil, which is likely made from GE soybeans, loaded with glyphosate, or from one of the newer soybean varieties that were created such that they do not need to be hydrogenated. They're ALL bad news, if you value your health.