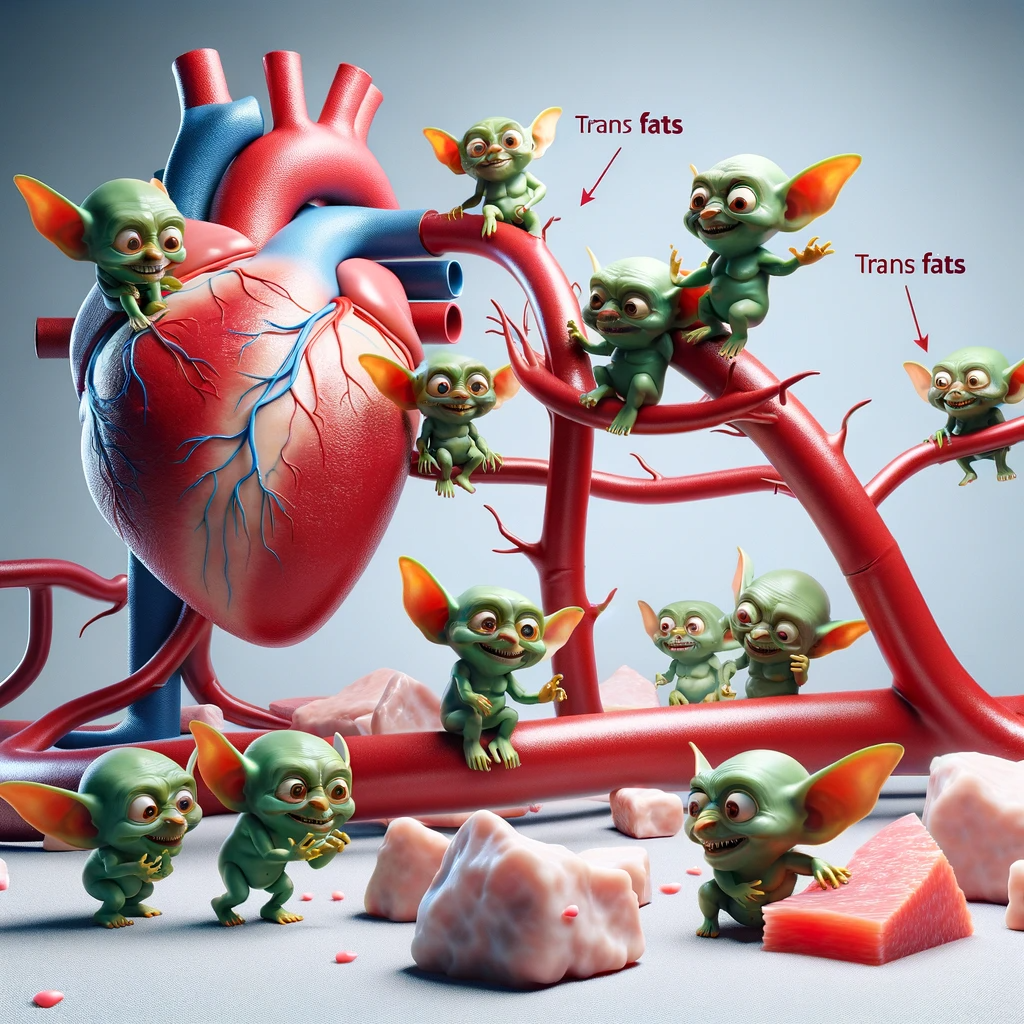
Villain 1: Trans Fatty Acids (TFA’s)



### **How to Find Trans Fats in Food:**

**The key is the ingredient list on food labels.**

Look for words like hydrogenated, partially hydrogenated, hydrolyzed, shortening, margarine, cottonseed oil, and/or hydrolyzed proteins. They may show up as hydrolyzed soybean oil or hydrogenated vegetable oil, too.

And keep in mind the sneaky part - even if the Nutrition Facts panel states ZERO grams of trans fat, small amounts (under 0.5 grams per serving) are still *allowed* to be in the food under FDA guidelines, if any of the above ingredients are listed! According to the FDA website on TFA’s:

*“If a serving contains less than 0.5 gram [trans fats], the content, when declared, must be expressed as “0 g.” For conventional food products (those food products other than dietary supplements), declaration of “0 g” of trans fat is not required for such products that contain less than 0.5 g of total fat in a serving if no claims are made about fat, fatty acid or cholesterol content. In the absence of these claims, the statement “Not a significant source of trans fat” may be placed at the bottom of the table of nutrient values in lieu of declaring “0 g” of trans fat.”*

Now that’s some dark, devious, deceptive villain handiwork right there! You really have to be diligent about reading ingredient lists on food labels to see if any TFA’s are in there.

Artificial trans fats can be found in various processed foods like baked goods, fast foods, frozen meals, snacks, and fried foods. They’re not trying to hide, so it’s your job to avoid them by not purchasing or eating the food they’re infecting. EVER.

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### **Why Trans Fats Are Bad:**

**Trans Fats are known to cause Coronary Heart Disease (CHD), Atherosclerosis, Hypertension, Type 2 Diabetes, Metabolic Syndrome, Chronic Systemic Inflammation, Cognitive Decline (e.g., Alzheimer's Disease, Dementia), Non-Alcoholic Fatty Liver Disease (NAFLD), Infertility, Impaired Fetal Development, Obesity, Leptin Resistance, Breast Cancer, Colorectal Cancer, Prostate Cancer, Rheumatoid Arthritis, Gut Dysbiosis, Psoriasis, Acne, Stroke, Heart Failure.**

**Cardiovascular disease, stroke, diabetes, and increased cancer risk.**

Trans fats wreak havoc on your biochemistry.Theydirectly have animpact on cellular integrity, cholesterol metabolism, inflammation, blood vessel health, insulin sensitivity, and potentially liver function and metabolic regulation. Let’s dive deeper into some of this villain’s sneaky work.

**Cell Membrane Integrity and Function**

Fatty acids are crucial components of all cell membranes. They make up the protective outer layer of the cell, and help bring nutrients in and waste materials out. The structure of trans fats differs from that of natural unsaturated fatty acids in your cell membranes, so when you eat TFA’s, they burrow themselves into normal cell membranes and alter the cell’s fluidity and function. Once inside the membrane, these little buggers can potentially affect how the cell is supposed to do its job.

**Cholesterol Metabolism**

**LDL Oxidation:** Trans fats contribute to the oxidation of low-density lipoprotein (LDL). Oxidized LDL (bad) cholesterol is more likely to form plaques in the arterial walls, a key factor in atherosclerosis.

**Reduced Reverse Cholesterol Transport:** HDL (good) cholesterol helps in the process of reverse cholesterol transport. Here, excess cholesterol is carried back to the liver to be processed, and sent to your poop to be removed. Trans fats decrease HDL levels, and short-circuit or inhibit this protective process.

**Inflammatory Response**

TFA’s can activate inflammatory pathways in the body. They increase the production of inflammatory cytokines and reduce the production of anti-inflammatory molecules. Chronic inflammation is a critical player in the development of atherosclerosis, insulin resistance, heart disease, brain fog, poor gut function, joint and muscle pain, and other metabolic disturbances. Worse-case scenario is higher risk of developing cancer because of chronic inflammation and oxidative stress.

**Endothelial Dysfunction**

The endothelium is the lining inside of blood vessels, and plays a vital role in vascular health, like healthy blood clotting and blood pressure regulation. Trans fats can impair the production of nitric oxide, a molecule essential for blood vessel dilation (dilation = relaxed and open). If blood vessels have a smaller hole in the center for blood to travel through (constricted), it can lead to increased blood pressure and reduced blood flow. Now you’re looking at the danger of drastically increasing the risk of heart attacks and strokes.

**Insulin Sensitivity and Glucose Metabolism**

Trans fats may interfere with the insulin signaling pathways in the pancreas, contributing to insulin resistance. This reduced sensitivity to insulin can lead to impaired glucose metabolism, higher blood sugar levels, and an increased risk of developing or worsening type 2 diabetes.

**Influence on Liver Function**

The liver plays a crucial role in lipid metabolism. A lipid is an organic compound that is insoluble in water like fats, oils, hormones, and some cell membrane components. They function as chemical messengers and molecules that store energy. Trans fats can alter liver function, contributing to changes in the normal production and metabolism of lipids and lipoproteins, which also increases the risk of cardiovascular diseases and can lead to obesity.

**Potential Impact on Obesity and Metabolic Syndrome**

Some studies suggest trans fats may contribute to obesity and metabolic syndrome by affecting appetite regulation and fat storage. While the evidence is compelling so far, more research is in the works to provide more information on these new findings.

## **The Antidote - Balancing The Risks**

Good news: There is an antidote to TFA’s. Some foods scientifically help to control and decrease the risks associated with eating trans fats. Begin to promote overall health by choosing better foods, making some lifestyle changes and becoming a food label reading Superhero. To counteract TFA’s harmful effects and minimize their impact on your body, choose foods that promote cardiovascular health, reduce inflammation, and support the detoxification processes. Here’s a good list to start:

**1. Omega-3 Fatty Acid-Rich Foods**

Trans fats promote inflammation, while omega-3s counteract this effect by reducing systemic inflammation.

**Sources**:

Fatty fish: Salmon, mackerel, sardines, herring

Chia seeds

Flaxseeds and flaxseed oil

Walnuts

Algal oil (plant-based omega-3)

**2. Antioxidant-Rich Foods**

Trans fats generate free radicals, leading to oxidative stress. Antioxidants neutralize these harmful molecules.

**Sources**:

Berries: Blueberries, raspberries, strawberries

Leafy greens: Spinach, kale, Swiss chard

Citrus fruits: Oranges, lemons, limes

Spices: Turmeric (with black pepper), cinnamon, ginger

Green tea and matcha

**3. Fiber-Rich Foods**

Dietary fiber helps regulate cholesterol levels and supports gut health, mitigating trans fats’ impact on cardiovascular health.

**Sources**:

Whole grains: Quinoa, oats, barley

Legumes: Lentils, chickpeas, black beans

Vegetables: Broccoli, Brussels sprouts, carrots

Fruits: Apples (with skin), pears, bananas

Psyllium husk (as a supplement)

**4. Healthy Fats**

Replacing trans fats with monounsaturated and polyunsaturated fats improves lipid profiles and reduces cardiovascular risks.

**Sources**:

Avocados

Olive oil (extra virgin)

Nuts: Almonds, cashews, pecans

Seeds: Sunflower, sesame, pumpkin

Coconut oil (in moderation)

**5. Fermented and Probiotic Foods**

Trans fats can disrupt gut health. Fermented foods restore gut flora and enhance detoxification pathways.

**Sources**:

Yogurt (unsweetened, with live cultures)

Kefir

Sauerkraut

Kimchi

Miso and tempeh

**6. Cruciferous Vegetables**

These support liver detoxification and help eliminate harmful fats.

**Sources**:

Broccoli

Cauliflower

Cabbage

Kale

Arugula

**7. Magnesium-Rich Foods**

Magnesium supports heart health by relaxing blood vessels and regulating cholesterol.

**Sources**:

Dark chocolate (70% cocoa or higher)

Nuts and seeds

Whole grains

Spinach

Black beans

**8. Potassium-Rich Foods**

Potassium helps maintain healthy blood pressure and counteracts the cardiovascular effects of trans fats.

**Sources**:

Bananas

Sweet potatoes

Avocados

Tomatoes

White beans

**9. Polyphenol-Rich Foods**

Polyphenols reduce inflammation and improve vascular function.

**Sources**:

Dark chocolate

Red grapes and wine (in moderation)

Coffee and tea

Pomegranate

Herbs: Oregano, thyme, rosemary

**10. Hydration and Detox Support**

Proper hydration supports metabolic and detoxification processes to minimize trans fat damage.

**Sources**:

Water (preferably alkalinized)

Herbal teas: Dandelion, milk thistle, green tea

Lemon-infused water

**Dietary Strategy**

Replace processed and fried foods with whole, natural alternatives.

Incorporate these trans-fat-countering foods regularly into meals.

Read food label ingredient lists to identify where these villains are hanging out, and if you find some there, leave them at the store!