



What Are Highly Processed Foods?

By Courtney Davison
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Americans [eat more highly processed foods](#) today than ever, a trend that is especially pronounced among [children and adolescents](#), who get 67 percent of their daily calories from these foods. At the same time, nutrition research continues to uncover ways in which highly processed foods are detrimental to human health, implicating them in a host of chronic diseases ranging from diabetes to cancer. But what exactly are highly processed foods, and why are they so bad for you? Read on for a breakdown.

What Are Highly Processed Foods?

Also known as ultra-processed foods, highly processed foods consist primarily of extracted or synthesized ingredients. Hallmarks of ultra-processed foods include a lack of fiber; high amounts of [added sugar](#) (even in foods that don't taste sweet), [salt](#), and fat; and long ingredient lists, often full of hard-to-pronounce substances.

These industrially formulated products first gained popularity in the U.S. in the mid-20th century, as manufacturers began leveraging technological advances to cheaply produce convenient, highly palatable foods with long shelf lives. By the 21st century, they'd become a fixture of the American diet, making up more than half all calories consumed.

Examples of Highly Processed Foods

The average supermarket today is stocked with thousands of ultra-processed foods. Some of the most common include:

- White flour
- White pasta
- White bread
- Potato chips
- Pretzels
- Sweetened juice products
- Soft drinks
- Sweetened breakfast cereals
- Margarine
- Reconstituted meat products (e.g., hot dogs)
- Candy
- Cookies and cakes

The NOVA System

While the Food and Drug Administration doesn't have an official classification for highly processed foods, nutrition researchers at the University of Sao Paulo in Brazil developed the [NOVA](#) system, which categorizes foods into four groups based on the type and extent of processing that they undergo:

- **Group 1: Unprocessed or minimally processed foods**, such as fresh fruits and vegetables; single-ingredient canned fruits, vegetables, and beans; dried beans; intact whole grains; unprocessed meat; and dairy milk.
- **Group 2: Processed culinary ingredients**, such as oil, sugar, and salt, which have been extracted from foods and are commonly used in home kitchens.
- **Group 3: Processed foods** are derived directly from whole foods and typically only contain a main ingredient plus one or two others, usually from Group 2. These include foods such as tofu, brined olives, salted nuts, and whole grain pastas.
- **Group 4: Ultra-processed foods** are industrial formulations made entirely or mostly from substances extracted from foods. They often contain no whole foods; instead, they are reconstituted from extracted substances and substances

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synthesized in labs. They typically contain five or more ingredients. (See the list above for examples.)

What Are the Health Risks of Highly Processed Foods?

Mounting scientific evidence suggests that highly processed foods are a [key culprit](#) behind some of the most common chronic diseases and health conditions.

Diabetes

Diets high in ultra-processed foods have been linked to higher rates of diabetes. This could be partly because highly processed foods promote obesity, which is a primary risk factor for type 2 diabetes. But research suggests that there is more to the connection than obesity alone.

In [one study](#), researchers followed 100,000 diabetes-free people over several years, surveying them about their eating habits along the way. They found that even after adjusting for body mass index, physical activity, and other variables, participants who ate more ultra-processed foods were significantly more likely to develop diabetes during the course of the study.

The researchers suggested a few potential contributing factors. For one, because ultra-processed foods are typically high in refined sugars and low in fiber, they are quickly digested, causing sudden increases in blood sugar, which, over time, can cause [insulin resistance](#) and type 2 diabetes.

By contrast, whole plant foods (including most fruit) tend not to cause spikes, because they contain fiber that helps slow digestion. A [2013 study published in BMJ](#) found that greater consumption of whole fruits was strongly associated with a decreased risk of type 2 diabetes, while greater consumption of fruit juice increased the risk.

Notably, sugar-laden processed foods like ice cream and Twinkies are also often loaded with [saturated fats](#), which can [contribute to insulin resistance](#) and type 2 diabetes, as saturated fatty acids in the bloodstream can prevent insulin from working efficiently.

Obesity

A number of [observational studies](#) have found a significant association between ultra-processed foods and risk of being overweight or [obese](#).

One of the most likely driving factors is that ultra-processed foods make it easy to overeat. Because these foods have been stripped of their natural fiber and water content during processing, they are inherently more calorie-dense (and [less satiating](#)) than whole foods. Added sugars and fats drive up the calorie count. And added salt and other flavor enhancers make ultra-processed foods [highly palatable](#) and hard to resist.

In 2019, researchers at the [National Institutes of Health](#) investigated the obesity angle with a randomized controlled trial. They had 20 adults stay at an in-patient facility for 28 days. For the first two weeks, participants were assigned either an ultra-processed diet or unprocessed diet. They then switched to the alternate diet.

During the study, participants were provided breakfast, lunch, dinner, and unlimited snacks. Researchers tried to match the overall nutrient profiles of both the unprocessed and ultra-processed diets. To make up for the lack of fiber in ultra-processed foods, they gave participants beverages that contained added fiber. "I thought that if we matched the two diets for components like sugars, fat, carbohydrates, protein, and sodium, there wouldn't be anything magical about the ultra-processed food that would cause people to eat more," said lead author Kevin Hall, a laboratory section chief with the NIH, in a news release.

But to Hall's surprise, participants on the ultra-processed diet still consumed significantly more calories—about 500 more per

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day—and gained an average of 2 pounds during the two weeks. By contrast, participants lost 2 pounds while on the unprocessed diet.

Hall and his team suggested a few possible explanations: It could be that the fiber-supplemented beverages did not contribute to satiety in the way that naturally fiber-rich whole foods would have. Another potential factor is that people tend to eat ultra-processed foods more quickly than unprocessed foods. "If you're eating very quickly, perhaps you're not giving your gastrointestinal tract enough time to signal to your brain that you're full. When this happens, you might easily overeat," Hall said.

Cardiovascular Disease

Consumption of ultra-processed foods is [significantly associated](#) with cardiovascular disease. A [2021 study](#) found that each daily serving of ultra-processed food was associated with a 9 percent increase in coronary death and a 9 percent increase in death from [cardiovascular disease](#). The results were in line with that of a [2019 study](#), which found that for every 10 percent of a person's diet that consisted of highly processed foods, there was a 12 percent increase in cardiovascular disease.

The link isn't surprising, given the sodium content of these foods: Eating too much salt causes the body to retain excess water to help flush out the salt. The extra water increases blood volume and blood pressure, which damages the lining of the arteries over time and is a major cause of stroke and heart attack.

Notably, though, one [large observational study](#) in 2019 found that even after adjusting for sodium intake, consumption of ultra-processed foods significantly increased the risk of cardiovascular disease, coronary heart disease, and cerebrovascular disease (such as stroke). More research is needed to understand why.

Cancer

A [2018 French study](#) of 100,000 people found that for every 10 percent increase in the proportion of ultra-processed foods in the diet, there was a more than 10 percent increase in risk of breast cancer and [cancer](#) overall. A [2021 study](#) found a similar connection when looking at ultra-processed food consumption and colorectal cancers specifically.

This could be due to ultra-processed foods' propensity for promoting weight gain: Being overweight is a known risk factor for at least 13 cancers. [Insulin](#) may be a mediating factor connecting obesity and cancer.

Acne

Diets high in ultra-processed foods may contribute to [acne](#). In a [randomized controlled trial](#) in 2007, researchers divided 43 males who had acne into two groups: One group ate as they normally would; the other group substituted whole grains for refined carbohydrates. After 12 weeks, the whole grain group had a greater reduction in acne lesions.

Researchers have [posited](#) that the apparent link between diet and acne might be [related to blood sugar](#): Because refined carbohydrates, such as white bread, are stripped of fiber, they are digested more quickly, causing sudden increases in blood sugar. These spikes increase the level of insulin and insulin-like growth factor-1 in the body, triggering the production of androgen and [sebum \(oil\)](#).

IBD and IBS

Ultra-processed foods may wreak havoc in the gut, observational studies suggest.

A [2018 study](#) reviewed data from more than 30,000 participants and found that consumption of ultra-processed foods was associated with a higher risk for irritable bowel syndrome (IBS), even after adjusting for confounding factors. More recently, a

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[large-scale observational study](#) found that regularly consuming these foods may significantly heighten the risk of developing inflammatory bowel disease (IBD), a serious condition that takes the form of Crohn's disease or ulcerative colitis. Researchers speculate that this may be due to the myriad additives found in ultra-processed foods, and/or the lack of fiber.

Artificial sweeteners have been associated with an [increased risk of both IBD and IBS](#).

Are All Processed Foods Bad?

Ultra-processed foods should be avoided entirely, but you don't need to eat only raw whole foods to have an incredibly healthful diet.

Processed vs. Highly Processed

Foods that have undergone some processing but contain very little or no added sugars and salt are considered "minimally processed" or simply "processed." These include whole grain pasta, whole grain flours, tofu, and tempeh. While such foods are more calorie-dense than their unprocessed counterparts, they are still far more nutritious than highly processed foods and can be part of a healthful diet.

Compare tofu with some of the popular [imitation-meat products](#) available today: Both are made with soybeans, but imitation meats often have long ingredient lists and are high in sodium, whereas tofu contains a handful of ingredients and 0 milligrams of sodium.

Similarly, both polenta and Doritos are made with corn. But a small, 1-ounce bag of Doritos contains 150 calories, 8 grams of fat, and 210 milligrams of sodium. An ounce of tube-style polenta contains just 20 calories, 0 grams of fat, and 88 milligrams of sodium.

Nutritionist Brenda Davis, RD, explains, "Generally, the more heavily processed the grain, the lower the nutritional value." Davis illustrates this concept with her "[Whole Grain Hierarchy](#)" chart.

Are Frozen Foods Highly Processed?

Many of the pre-made meals that you'll find in the frozen aisles are highly processed, loaded with added sugar, sodium, and fat. However, frozen foods are not inherently highly processed or unhealthy. Lightly processed frozen foods that have [short ingredient lists](#) and moderate sodium content (i.e., no more than 1 milligram of sodium per calorie) are healthful options.

Additionally, additive-free frozen fruits and vegetables are just as nutritious as their fresh counterparts.

Canned Goods

While canned goods are often very high in sodium, there are low-sodium and no-salt-added options available. To find the most healthful options, check out our tips for [reading a nutrition label](#).

How To Cut Back On Highly Processed Foods

One of the smartest ways to improve your health is to avoid all highly processed foods and adopt a [whole-food, plant-based diet](#), rich in fruits, vegetables, whole grains, and legumes, with some lightly processed ingredients such as whole grain pasta and tofu.

If you're not ready to commit to a lifestyle transformation, simply opting for more whole plant foods and fewer of the ultra-processed foods can make a real impact on your health.

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“Start simple. Begin by adding something ‘whole’ to each meal,” Davis says. “For example, add a piece of fresh fruit to your breakfast meal, a few raw veggies to your lunch, and some steamed greens or other fresh veggies to your dinner.”

“Next, begin swapping out highly processed for lightly or even moderately processed foods,” Davis suggests. “Instead of a sweet ready-to-eat breakfast cereal, select something like muesli or shredded wheat. Gradually, start making your own muesli or cooked grains for breakfast. Instead of white bread or white rice, select whole grain bread and brown, red, or black rice.”

Davis also recommends picking at least one [whole-food, plant-based vegan recipe](#) to try each week, whether a soup, salad, baked good, or entree.

Real-Life Success Stories

Ditching highly processed foods can be challenging at first, but the benefits are well worth the effort, as these inspirational success stories illustrate.

- [Conquering Addiction to Processed Foods on a Plant-Based Diet](#)
- [From Junk-Food Vegan to Whole-Food, Plant-Based](#)
- [How I Lost 100 Pounds by Ditching Processed Foods](#)
- [What Giving Up Meat, Dairy, Processed Foods Did for My Health](#)
- [Plant-Based Power Couple: How We Lost 195 Pounds](#)

Ready to get started? Check out [Forks Meal Planner](#), FOK's easy weekly meal-planning tool to keep you on a healthy plant-based path. To learn more about a whole-food, plant-based diet, visit our [Plant-Based Primer](#).