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How Ultraprocessed Foods Are Slowly Killing Us

Analysis by Dr. Joseph Mercola | May 13, 2024

STORY AT-A-GLANCE

- In a lecture at The Royal Institute, Chris van Tulleken shared details of how ultraprocessed foods impact human health, tracing a timeline from the mid-1970s when childhood obesity was a mere 2% to the present day, just 50 years later, when it now hovers at 20%
- Van Tulleken notes that processed foods are not the same as ultraprocessed foods because processing is ancient and people have been grinding, salting, smoking, curing and fermenting food for hundreds of thousands of years. As he says, humans are the "only obligate processivores"
- Food products are not just a sum of the nutrient parts, as has been demonstrated in multiple studies, including a case study by van Tulleken in which he discovered that after just four weeks of eating 80% ultraprocessed food, he experienced heartburn, anxiety, 15.4-pound weight gain and poor sleep
- Based on research, van Tulleken proposes the brain is a prediction engine, and taste is an early warning system that your body uses to warn of toxins and predict the nutrients that are on the way to the stomach. When the tongue signals sugar, fat, or protein that doesn't arrive, it may trigger a stress response that causes you to eat more
- Ultraprocessed food manufacturers propose that obesity is caused by not getting enough exercise or not having enough willpower. Yet, the evidence suggests these theories are invalid and that obesity and other diseases are linked to consuming ultraprocessed foods that may be slowly killing us

Consumption of ultraprocessed foods in the U.S. grew from 53.5% of the total calories consumed between 2001 to 2002 to 57% of the total calories consumed between 2017 to 2018.[1]

During a lecture at the Royal Institution in October 2023,[2] Dr. Chris van Tulleken from the University College London cited 60% of the total calories in Great Britain are consumed from ultraprocessed foods and 1-in-5 people consume 80% of their calories from ultraprocessed food.

A 2024 systematic review of the literature[3] confirmed what multiple past studies have also shown — the higher your intake of ultraprocessed food, the higher your risk of adverse health outcomes. Many of these adverse health events are closely linked to obesity and van Tulleken finds strong associations between consuming ultraprocessed food and obesity.

During his lecture,[4] he presented a slide illustrating the meteoric rise in obesity that began in the mid-1970s, calling the situation "pandemic obesity." At the time, childhood obesity was a mere 2% but now it's more than 20%.

Data Confirms Ultraprocessed Food Is Killing Us

To fully understand how ultraprocessed food is altering human health, it is crucial to understand what it is. The concept of ultraprocessed food didn't become part of nutritional conversations until the NOVA system was first proposed in 2009 by Carlos Monteiro. Researchers now use this system to classify types of foods used in interventional studies.

Van Tulleken notes that the category definitions are long and involved, so he simplified ultraprocessed food as: "Wrapped in plastic with at least one ingredient you wouldn't normally find in a standard home kitchen."[5] However, while van Tulleken notes that ultraprocessed food does drive excess consumption and weight gain, it doesn't just cause obesity.[6]

There is also a strong association with a long list of other diseases such as cardiovascular disease, certain cancers, Type 2 diabetes, high blood pressure, fatty liver disease, inflammatory bowel disease, mood disorders, frailty and other "complaints that we all just think are part of growing old."

The 2024 analysis[7] included 45 unique pooled analyses and 9,888,373 participants. There was a direct association between 32 health parameters and exposure to ultraprocessed food. These health outcomes included metabolic, cancer, mental, respiratory, heart, gastrointestinal and all-cause mortality.

According to this study and others, this increasing exposure is contributing to rising rates of chronic disease and illness in the population. In other words, eating ultraprocessed foods is slowly killing us and, we really are what we eat.

Humans Have Always Processed Food

Van Tulleken notes that processed foods are not the same as ultraprocessed foods because processing is ancient.[8] He calls humans the "only obligate processivores," or mammals that must process their food before eating. Compared to other mammals of similar size and weight, humans have much smaller jaws and teeth with shorter digestive tracts.

The kitchen became our extended gastrointestinal system where knives and grinders are used to cut and chop food and cooking is used to process, mash and extract to make food more easily digestible.

> *"For hundreds of thousands of years, we've been grinding it and mashing it and extracting it and salting it and curing it and fermenting it and smoking it and doing all of these wonderful things that make diets edible and delicious,"* van Tulleken said.

A 2022 paper[9] noted that a food product is not simply the sum of the nutrients and that "Human diets are progressively incorporating larger quantities of industrially processed foods." Throughout his lecture, van Tulleken agreed. In the early 2000s when Carlos

Montero proposed the NOVA system, he also proposed that food is more than the sum of its parts and that how we process food matters to how our body processes food.[10]

What We Do to Food Matters

As an example of why processing is important, van Tulleken recounted an experiment done in the 1970s by a group of scientists in Bristol. The group used apples. They left some unprocessed, some chopped into chunks, some pureed and some were squashed with the fiber out. The processing was done immediately before the participants consumed them and what they found was revealing.[11]

> *"If you eat a whole apple, it leaves you feeling fuller for longer, it doesn't spike your blood sugar, and you don't get a sort of rebound hypoglycemia. If you drink the apple juice, you get a big spike of blood sugar, you don't feel full at all. Now, when you back-add the fiber, so it's whole pureed apple, you still get that sugar spike, and you still don't feel satisfied.*
>
> *So even when we have a pureed whole apple, it's very, very different to eating the whole apple, to dismantling the apple with your teeth. Eating, the act of chewing, of manipulating food with your tongue, causes all sorts of internal physiological changes that are really, really important. So we do need to process food with our mouths."*

In 2016, Kevin Hall, a scientist and nutrition researcher with the National Institute of Diabetes and Digestive and Kidney Diseases, was at a conference with a representative from PepsiCo.[12] They discussed the recent NOVA classifications and Brazil's food guidelines to avoid ultraprocessed foods. Hall believed it was a silly rule because obesity had nothing to do with food processing.

He was attracted to the idea that food is the sum of its nutrient parts. Yet, there was damning evidence in the scientific literature that appeared to be correlative rather than causative. He believed that ultraprocessed foods were being wrongly blamed and so at

the end of 2018 he and his colleagues were the first to test whether diet could cause overeating and weight gain.

In a randomized controlled, crossover study,[13] participants ate either an unlimited amount of ultraprocessed food or an unprocessed diet matched for equal amounts of salt, fat, sugar and fiber for two weeks. The researchers found that while on the ultraprocessed food, the participants gained roughly 1 kilogram (2.2 pounds) and lost the same amount on the unprocessed diet.

Van Tulleken was also curious about how ultraprocessed foods affect the body. So, over one month, the 42-year-old increased his daily intake from 30% of ultraprocessed products to 80%, which mimicked how 20% of the U.K. population eats. By the end of four weeks, van Tulleken experienced a myriad of changes, including:[14]

Poor sleep	Heartburn
Anxiety	Sluggishness
Low libido	Unhappy feelings
Hemorrhoids (from constipation)	Weight gain of 7 kilograms (15.4 pounds)

"I felt 10 years older, but I didn't realize it was all [because of] the food until I stopped eating the diet," van Tulleken told the BBC.[15] This is significant since the physician recognized that he had purposely changed his diet, and yet he did not recognize that feeling 10 years older after only four weeks was associated with the food he was eating.

Your Brain Predicts Nutrition From Taste

Van Tulleken makes the point that "The brain is a prediction engine. It's constantly making predictions about the world. And when you get a mismatch between a prediction … there may be a stress response."[16]

In his first example, he uses artificial sweeteners and Diet Coke. He notes that these artificial sweeteners are not linked to weight loss and the phosphoric acid in the beverage doesn't just dissolve teeth, it also reduces bone density. He frames it as a way of "commodifying ill health."

Looking at the labels on ultraprocessed foods, he noticed a theme.[17] Each begins with four commodity crops — rice, corn, soy and wheat. The crops are broken down into powder, so they have "a nearly infinite shelf life and cost very, very little." These are then mixed with commodity oils such as vegetable, sunflower and palm oils. These can be mixed with a little meat if needed and then the additives are included.[18]

> *"In the UK and in Europe we have around two and a half thousand additives that we use in food, and they're somewhat regulated. In the United States, there are between 5,000 and 15,000 additives. No one has a list. The FDA who regulate, or are supposed to regulate additives, don't have a list of all the additives that are added to food."*

Finally, whey powder, which was once a waste product of the dairy industry, and sugars may be added. Many of these ultraprocessed foods are being sold as healthy. The rating Diet Coke receives is an interesting example, which "gets four green traffic lights on the bottle. So, this isn't just a health food. This is the healthiest product you can possibly buy. Very few foods get four green traffic lights."[19]

As van Tulleken notes, the body has evolved a sophisticated system for understanding what food does. This may have been the basis for manufacturers developing the "bliss point," or the point where salt, sweetness and richness were perceived as being just right on the tongue.[20] When you taste sweetness, it prepares the body for sugar and carbohydrates.

The initial theory was that the taste released insulin, which dropped blood glucose and made you hungry. Van Tulleken notes that more recent research has demonstrated that artificial sweeteners increase blood glucose, which may be part of a stress response when the body predicts sugar and doesn't receive it.[21]

And the same may be happening with fat. In the 1980s when fat was demonized, food manufacturers began producing low-fat products. The food manufacturers also created the sensation of fatty textures but without real fat. Van Tulleken notes that your mouth isn't tasting for fun, it's an early warning system.

So bitter taste identifies toxins and sweetness tells your body that sugar is on its way. If your mouth detects fat in food that doesn't have fat or savory tastes without protein, he and others believe this is one factor that drives excess consumption. The flavor tells your body a nutrient is coming, but it never arrives. This throws off the homeostatic mechanisms built into mammals.[22]

> *"And remember, we do all have an internal mechanism that is able to say 'I am full.' There is no obesity in wild animals, and that is not to do with scarcity of food. Many animals live with very plentiful food, but they have homeostatic mechanisms …*
>
> *We all have a way of keeping all of our internal physiology the same. Our temperature, our blood pressure, our oxygen levels, our carbon dioxide levels, our blood pH, our sodium, our potassium, we regulate it all tightly. It would be bizarre if we didn't do the same for calorie intake, and we can if we eat real food."*

Debunking Food Manufacturers Reasons for Obesity

As the manufactured food industry became a primary driver of obesity and ill health, they also began proposing reasons that people were obese that had nothing to do with the ingredients in the manufactured products. However, as van Tulleken notes throughout his lecture to The Royal Institution, these reasons have since been debunked.

- **Calories in, calories out —** The theory is that if you eat more calories than you burn, you will gain weight. Van Tulleken notes that the phrase "exercise is medicine" was

trademarked by the Coca-Cola Company and developed in partnership with the American College of Sports Medicine.[23]

However, through study of different populations, researcher Herman Pontzer[24] found the benefits people spend roughly the same number of calories no matter the activity level. The difference is in where the calories are expended. In people in Western society, calories are spent on inflammation, anxiety, and toxic hormone levels. The benefits of exercise appear to be dampening those factors, which explains why you cannot out exercise a bad diet.

- **Willpower —** The second reason trotted out to explain obesity is a lack of willpower,[25] which has been used as a proxy for poverty.[26]

  During the lecture, in addition to other evidence to debunk the theory, van Tulleken points listeners back to the graph presented at the start of lecture demonstrating the meteoric rise in obesity at nearly the same point that ultraproccessed foods became popular, noting that "unless you propose that simultaneously there was some failure of moral responsibility in all those different communities, the willpower argument doesn't stack up."

The Most Destructive Ingredient in Ultraprocessed Food

While ultraprocessed foods contain a wide variety of harmful ingredients, including synthetic and/or genetically engineered compounds and contaminants like pesticides, one of the most harmful ingredients found in most processed and ultraprocessed foods is the **omega-6 fat linoleic acid (LA)**, thanks to the liberal use of seed oils in the making of these products.

One significant problem with polyunsaturated fats (PUFAs) like LA is that they are chemically unstable, which makes them highly susceptible to being damaged by oxygen species generated from the energy production in your cells.

This damage causes them to form advanced lipoxidation end-products (ALEs), which in turn generate dangerous free radicals that damage your cell membranes, mitochondria,

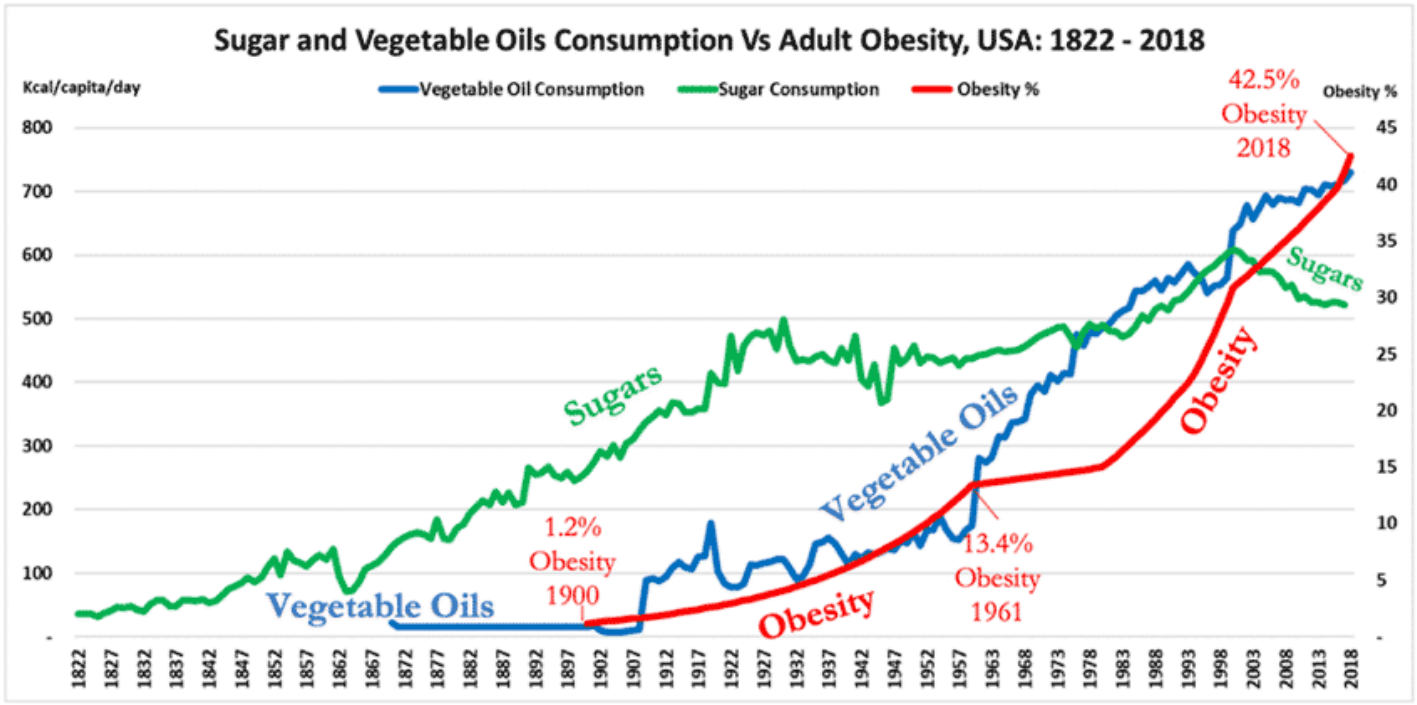
proteins and DNA. LA also breaks down into harmful metabolites such as oxidized LA metabolites (OXLAMs), which have a profoundly negative impact on your health. These ALEs and OXLAMs then go on to cause mitochondrial dysfunction, which is a hallmark of most all chronic disease.

The video above reviews the health risks associated with vegetable oils and seed oils, which are found in most processed foods. It shows how chronic diseases such as heart disease began to skyrocket after the introduction of these oils to the market.

Seed Oils Are Far Worse Than Sugar

While most nutritional experts blame the epidemic of chronic disease on the increase in sugar consumption, the role of sugar is relatively minor when compared to the impact of seed oils.

Processed foods typically contain about 21% sugar. However, up to 50% or more of the overall calories contained in most processed foods come from seed oils.[27,28] The connection is further confirmed by looking at the U.S. carb consumption. It's been declining since 1997, yet obesity and Type 2 diabetes have steadily increased. Interestingly, this continued rise coincides with the surge of seed oil consumption.



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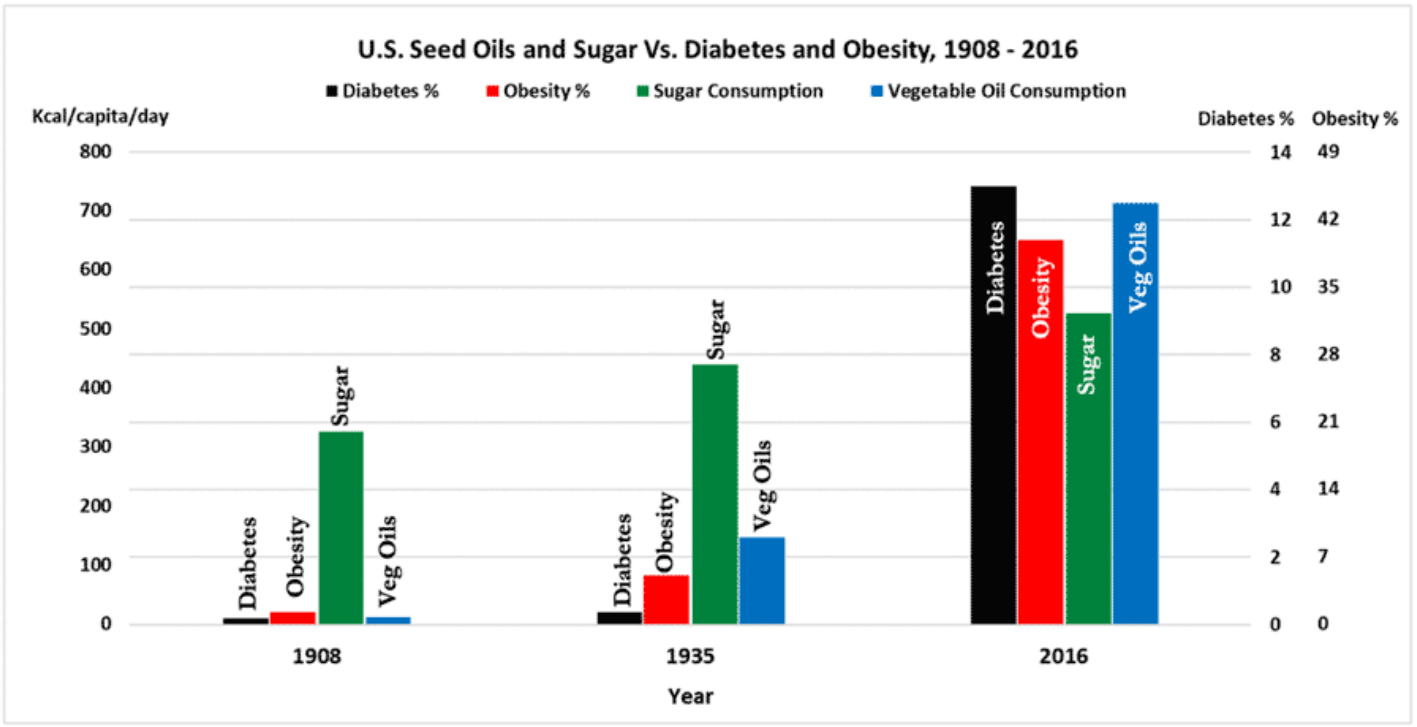

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Another major reason why seed oils are exponentially more pernicious to your health than sugar is that they last much longer in your body. The half-life of LA is around 600 to 680 days, or approximately two years. This means it will take you about six years to

replace 95% of the LA in your body with healthy fats. This is the primary reason for keeping your LA intake low as possible.

Meanwhile, your glycogen stores will be exhausted in about one to two days. So, if you go on a sugar binge, that sugar doesn't stick around for years destroying your health like the LA in seed oils does. Seed oils also play a far greater role in obesity than sugar.

Obesity Is a State of Energy Deficiency

It's important to understand that obesity is a state of energy deficiency due to inhibited mitochondrial respiration, which causes calories to be stored as fat instead of being burned for fuel. The solution is to optimize your mitochondrial function and raise your metabolic rate.

This inefficient burning of fuel (metabolizing of food) is why people who are obese typically also struggle with other health issues, such as low energy, fatigue, an inability to maintain focus, digestive problems and poor immune function.

It is important to note there is a difference between energy and fuel. Your body uses food for fuel to create energy, which it uses in bodily functions, including muscle contraction, digestion, and cognitive function. An important misconception about weight gain is that you are converting your fuel from food into energy, which is adenosine triphosphate (ATP).

Without activity to burn the energy, your body converts ATP into body fat. In other words, you're not producing enough energy and you're in an energy-deficient state, but you have enough fuel. The fuel is stored because your body cannot efficiently metabolize it.

The result is body fat and insufficient energy which forces your body to down-regulate other systems, such as reproductive hormones, thyroid activity, and systems that are not essential for survival. Unfortunately, you also experience perpetual hunger because the hunger signal is predominantly regulated by energy availability.

This in turn leads to overeating, resulting in a vicious cycle of low energy and weight gain. The goal is to fix your metabolism or low energy production. Several strategies can help. You'll find a deeper discussion about this vicious cycle, several suggestions to fix it and links to more help in "**Obesity Study: 'Fat but Fit' Is a Myth**."

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