23 TOXIC THREATS IN OUR FOOD THAT TRIGGER AUTOIMMUNE DISEASE & HOW TO REVERSE THEIR EFFECTS

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TABLE OF CONTENTS

INTRODUCTION

Hippocrates, the father of modern medicine, once said, "Let food be thy medicine."
While this is still true today, much of our food now contains toxic chemicals, genetically modified organisms (GMOs), and pesticides. Not to mention the toxins typically found in our homes in the form of cleaning agents and in our everyday personal care products that add to our total toxic load. While we don't wish to frighten anyone, we do want to make you aware of the possible dangers so that you can avoid them.

Our health is largely determined by what we eat, drink, breathe, and absorb.
Our bodies naturally detoxify themselves. The liver, kidneys, skin, digestive system, and lungs all work together to rid our bodies of toxic substances. However, when this burden becomes too large, the body starts to malfunction. Toxic overload leads to a host of health issues including leaky gut, inflammation, DNA damage, autoimmune reactivity, and eventually, various autoimmune and chronic diseases.

What are toxic substances?
There's a difference between toxins and toxic substances. By definition, *toxins* are poisonous substances that are byproducts of the biological processes of a living organism and which cause antibody formation when introduced into tissues.

A *toxic substance*, however, is any substance that can be poisonous or have negative health effects on the body. Chemicals like dioxin and polychlorinated biphenyls (PCBs) that are often found at hazardous waste sites are among the most well-known toxins. However, ingredients in daily products like household cleaners, furniture, carpets, gasoline, cosmetics, over-the-counter and prescription drugs, alcohol, pesticides, and sometimes the very food we eat can be toxic as well.

Poisoning occurs when toxic substances are ingested, absorbed by the skin, or inhaled, and cause damage to healthy tissues. This can occur in small amounts with no adverse effects seen at first but they have a cumulative effect over time.

What effect do toxins have on the onset of chronic and autoimmune diseases?
Chronic diseases are conditions that last a year or more and require ongoing medical attention or that limit daily activities or both. Some common chronic diseases include diabetes, neurocognitive disorders, cardiovascular and cerebrovascular disease, metabolic syndrome, cancer, and immune dysfunction like autoimmune diseases.

It is impossible to pinpoint an exact cause of every chronic illness, because many factors, either autonomously or together, could bring about a disease state. However, it is certain that exposure to toxic substances plays a major role in their onset.

There are three main ways through which toxins get into the body—ingestion (mainly through food and water), inhalation, and absorption by the skin (through direct contact via clothing, applied substances, air, or water).

Some toxins end up being stored in the muscle, fat, bones, or other soft tissues for long periods. Other factors apart from the concentration of the toxin also contribute to the development of chronic disease. They include the person's genetic predisposition, their immune system function, the degree of stress they're under, their overall nutritional health, and exposure to other chemicals.

This is where the overall body burden comes into play. The term refers to the total amount of toxic chemicals in a person's body at any one point in time. It tells us what toxins and chemicals we have progressively been exposed to. The amount of toxins and chemicals found in urine and blood is often transitory — though in some cases they might be representative of toxins in other tissues and organs of the body.

Though it is difficult to determine the exact action of toxins on our health in a simple "cause and effect" formula, an overload of toxins has been observed to often cause:

- Oxidative stress which plays a big role in the onset and exacerbation of various chronic conditions
- Endocrine disruption which leads to glucose sensitivity, changed (cell) energy utilization, and altered neurological development
- Genotoxicity, which may cause carcinogenesis (cancer formation) or mutagenesis and smaller DNA sequence alterations leading to a state of disease. In a nutshell, this is the development of cancerous diseases.
- Inhibition or alteration of enzymes that would normally ensure that efficient body processes like metabolism take place
- Dysbiosis, which is a disruption of the gut microbiome. This affects many gut functions including detoxification and proper digestion. These, in turn, may lead to the onset of chronic and autoimmune diseases.

Toxins and Autoimmune Diseases

There are almost 100 known autoimmune diseases, including rheumatoid arthritis, lupus, multiple sclerosis, inflammatory bowel disease, type-1 diabetes, hypothyroidism, and psoriasis. However, there are many other autoimmune diseases that affect the nervous system, joints and muscles, skin, endocrine gland, and heart.

Basically, autoimmune diseases occur when the body's immune system is attacked by its own tissues instead of foreign agents like bacteria. The body mistakes its tissues for foreign invaders and sets up an inflammatory response. Increasingly, the incidence of this confusion has been linked to the toxins that abound in our bodies.

Autoimmune diseases have tripled in recent decades with 24 million Americans now affected. Factors such as genetics, a person's environment, and gender (with 8 out of 10 being women) are certainly contributing factors. Autoimmune diseases affect more women than breast cancer and heart disease combined. They do, however, also affect men and children.

The Role of Toxins in Cardiovascular Disease

Cardiovascular disease is an increasing problem worldwide. While many studies have been done on dietary and genetic causes, the role of toxic substances in the development of obesity-related cardiovascular and metabolic diseases requires more investigation. Toxic exposure is thought to increase the incidence of cardiovascular disease by interfering with thrombosis, thermogenesis, or blood pressure regulation.

Drug and toxin exposure in expectant mothers has been associated with cardiac birth defects and the premature onset of cardiovascular disease in the child.

Exposure to heavy metals (like lead, arsenic, aluminum, mercury, nickel, and cadmium), solvents, pollutant gases, and pesticides has been linked to the onset of cardiovascular disease.[1] While there's currently not enough data to say just how much of a particular metal is enough to cross the safety threshold, researchers are concerned about the cumulative effect of small amounts over a long time. It is suspected that the metals may induce atherogenesis (the hardening and narrowing of the arteries that leads to cardiovascular disease.) Their effect will probably be heightened when a person is genetically susceptible plus has dietary issues as well. While the exact mechanism of how heavy metals cause cardiovascular disease is still unclear, there are enough studies to show a link between the two.

Toxicity, Obesity, and Chronic Diseases

Though poor diet and lack of physical activity are key contributors to the obesity epidemic, these factors alone fail to account for the rapidity and magnitude of the obesity epidemic. It is interesting that the increased incidence of obesity in the last forty years mirrors the increase in the use of industrial chemicals. It is believed that these chemical toxins may play a role in the cause of obesity, particularly those known as endocrine disruptors. These substances change the normal functioning of hormones.

Studies have shown that other chemicals known as "obesogens" adversely affect fat metabolism and the formation of fatty tissue in the body.[2]

Of course, it is well known that overweight or obese adults are more likely to end up with chronic conditions such as type 2 diabetes, hypertension, osteoarthritis, gynecological issues (like infertility and abnormal menses), heart disease, and cancers.[3]

23 TOXIC THREATS LINKED TO AUTOIMMUNE AND CHRONIC DISEASES

1. Heavy Metals

Although there has been a decline in exposure to heavy metals due to measures such as the banning of lead paints, for example, they are still present in many homes. For instance, many cosmetics such as lipstick and talcum powder are potential sources. Heavy metals such as lead, chromium, arsenic, aluminum, mercury, iron, and zinc can also be found in a wide selection of our foods, such as fish, brown rice, and leafy green vegetables.[4] These metals sometimes occur naturally or are added as ingredients. In some cases they are contaminants. The presence of these heavy metals in our foods is more common than we would imagine.

Arsenic is one of the most poisonous metals we know of. It is found in two forms — organic and inorganic (this is the most toxic variety). It enters the food chain as a result of pollution. It has even been found in our drinking water. High levels have been found mostly in rice and rice products such as rice crackers, baby cereal, and rice bran. Rice seems to absorb larger quantities of arsenic than other food crops, probably because it requires large amounts of water to grow in. If the water is contaminated with arsenic, the rice plant will absorb it. White basmati rice from India or Pakistan is safest but brown rice is your healthiest option as it absorbs the least amount of heavy metals plus contains more vitamins and minerals.

Mercury is another extremely toxic heavy metal. Fish and shellfish accumulate mercury in their bodies. Fish that live for a long time and are higher up the food chain, such as tuna and shark, will accumulate more mercury than smaller fish. Humans also collect mercury in their flesh from the food they eat, and high levels are toxic. They cause damage to the central nervous system. Mercury is not only found in the water, but also the air. It can pollute crops and groundwater. It originates from sources such as oil refineries and cement factories.

Lead, another toxic heavy metal, gets into foods via the environment. There may be lead in the soil that gets absorbed by food crops or settles onto them. There are no safe levels of lead – even small amounts are poisonous. Examination of FDA data showed that 20% of processed baby foods contain lead.[5]

Chromium is necessary for our diet in small amounts but too much can be toxic. Chromium particles are present in the air in the form of dust. These settle on the land and water, binding to the soil. Most human exposure occurs via toxic waste sites and occupational exposure.

Exposure to these metals has been associated with health concerns that include reproductive issues, nervous system problems, and immune toxicity. This exposure can intensify the production of reactive oxygen species (ROS) which normally are a byproduct of metabolism. When ROS are overproduced, they cause toxic effects

associated with different pathologies.[6] This includes autoimmune conditions like atherosclerosis, diabetes, cancer, and aging.

So, what is one to do? We clearly cannot and should not avoid green leafy vegetables and stop feeding our babies. The easiest way seems to be to avoid those foods proven to contain extremely, consistently high levels of heavy metals. Rice is a big one. Substitute it with cauliflower rice or potatoes where possible. Don't buy packaged baby rice cereal but rather make home-cooked sorghum or oats porridge or for your little one. Many baby snacks are rice based so rather go for other options like fresh fruit. When it comes to fish, a vegan diet is highly recommended but if you can't manage that, avoid the high mercury ones like tuna and swordfish. Also, although plants can absorb trace amounts of heavy metals from the soil, most are safe. Just make sure you wash them in clean, running water before use to avoid chemical residues. There's no need to be fearful because it is a simple matter to cut down on your exposure.

2. Mold and Mycotoxins

Mold and the resultant gasses they produce called mycotoxins can attack both the nervous and immune systems. Researchers believe that they could lead to chronic inflammation which then develops into full-blown autoimmune conditions such as neuronal autoimmunity, type 1 diabetes, and autoimmune thyroid disease.[7]

A 2017 study conducted in Finland found a significantly elevated incidence of autoimmune conditions in people exposed to mold and therefore mycotoxins.[8]

This being said, mold toxicity could lead to a host of other symptoms including muscle aches, fatigue, difficulty concentrating, digestive issues, and more. This creates an overlap in symptoms the same as those of autoimmune conditions.

Molds occur commonly in homes, especially older houses. They grow in damp areas like basements, ceilings, and walls. They grow well on paper and wood products as well as under carpets and inside damp upholstery. The best thing for those with sensitivities to do is remove as much mold from their environment as possible. It may be necessary to have the moldy area professionally treated. Open the windows and doors in good weather to help the spaces dry out and be exposed to sunlight.

In terms of food, mold is found mainly when food begins to decay. Mold then grows on it and produces mycotoxins. Foods that grow mold easily like bread and fruits should be refrigerated, particularly if you live in a warm, humid climate. In such climates, it is wise to keep your baking ingredients like flour in the fridge too. Keep food covered to avoid mold spores in the air from contaminating it. Mold is not always visible to the naked eye, so when in doubt, throw it out! Freshness is key here so buy small quantities and eat them fresh or freeze produce for later use.

Some people are particularly sensitive to mold and develop nasal congestion, sneezing, or asthma when exposed. Studies have linked mold exposure in infancy to the development of childhood asthma.[9] It is believed that for some people, mold can trigger or make an inflammatory condition worse. If a person is already immuno-compromised, exposure to molds may very well worsen their condition.

3. Aflatoxins

Following on from molds, we need to discuss aflatoxins. Aflatoxins are a group of poisonous substances that some fungi produce, especially those found in hot, humid regions. When food is stored improperly, it is likely to be contaminated by mold and, therefore, aflatoxins. Crops such as sunflower seeds and rice may become contaminated by the fungi while still growing in the field, while being harvested and transported, or when being stored later.

Human exposure happens in a few ways. The person may consume a contaminated product directly, they may eat the meat or dairy product of an animal that has been exposed to it, or they may inhale the aflatoxin-contaminated dust. This often happens to farmworkers during harvest, for example. There are periodic outbreaks of aflatoxin-caused illness, especially in developing countries where regulations are not always enforced. For instance, there was an outbreak of hepatitis in India in 1974 that caused 105 deaths, which was linked to eating contaminated maize.[10]

The US CDC (Centers for Disease Control and Prevention) has reported several aflatoxicosis outbreaks since 2004, many occurring in rural Africa when people consumed contaminated maize.[11]

Aflatoxins specifically target the liver and exposure to them has been associated with a higher risk of developing liver cancer.[12] [13] In hepatitis and cirrhosis patients, tests normally always reveal these toxins. Tests show that these toxins are usually always present in cancer patients' bodies.[14] They can also harm the growing fetus and cause an autoimmune response. Toxicity is rarely acute but is usually chronic.[15] Aflatoxins also have immunosuppressive effects. In children, they reduce the effectiveness of vaccinations, leading to an increased susceptibility to infection.[16]

Aflatoxins are not destroyed by cooking, so preventing contamination in the first place is essential. Again, freshness and correct storage is the answer here rather than trying to avoid every food that may become contaminated. If possible, purchase freshly milled flour or grind your own in a home grain milling machine. Check the sell-by dates on goods such as pasta, nuts, and seeds. Once you get them home, store them in the fridge or freezer, particularly if you live in a hot climate.

4. Bisphenol A (BPA)

Bisphenol A (BPA) is an industrial chemical that is produced in massive quantities. It is used mainly to manufacture plastics and epoxy resins and is commonly found in household plastics such as food containers and water bottles. It is used to harden plastics such as beverage bottles, storage containers, plastic eating utensils, and toys. Epoxy resins are used to line the inside of metal food cans, bottle lids, and water supply piping. Certain dental products and medical devices may also contain BPA.

BPA can easily leach into our drinking water and food — especially when the plastic is exposed to heat. It appears to cause several immune reactions that contribute to the development of autoimmune disease.[17] BPA is thought to trigger autoimmune degeneration of the sheaths that line nerves leading to autism spectrum disorders, multiple sclerosis (MS), neuropathy, and neurodegenerative disorders such as Parkinson's disease.

The amount one is exposed to doesn't seem to be as significant as an individual's sensitivity to it. A person may have low blood levels of BPA, yet it may still trigger an autoimmune reaction.

Most people get exposed to BPAs via their diet when it seeps into the food or beverage from the container. More BPA leaches out if the container is heated, such as when we warm up a baby's bottle in the microwave or leave a drinking water bottle in a hot vehicle.

The concern is that exposure to this chemical is becoming more and more widespread. Animal studies show that babies and children may be the most susceptible to BPA's toxic effects. BPA is found throughout our environment and can be detected in the blood of nearly everyone tested.

While it is not possible to totally avoid BPA, you can decrease your exposure to it by following these suggestions:

- Use glass, ceramic, or stainless steel water bottles and food storage containers.
- Never microwave food or beverages in plastic containers.
- Use as few canned products as possible. Look for glass jars of beans, spaghetti sauce, etc.
- Buy BPA-free baby bottles.
- Don't cover food with plastic wrap or store it in plastic bags.
- Ask your dentist to use BPA-free composites on your teeth.
- Follow an anti-inflammatory diet.
- Use supplements that support immune health.

5. Monosodium Glutamate (MSG)

MSG is a type of excitotoxin. Excitotoxins are a category of chemicals (commonly amino acids) that overstimulate our neuron receptors and taste buds.

Many chicken products contain MSG. This excitatory neurotoxin works by overstimulating neuron receptors in the brain. These receptors aid communication between brain cells. Excitotoxins cause them to fire more quickly than usual. If this process goes on for too long, such as if someone consumes large amounts of fast foods containing MSG, the neurons can become exhausted and even die. The over-excited brain cells affect mood, behavior, and can cause headaches. A study published in *The Journal of Headaches and Pain* showed that headaches occurred in 8 out of 14 people after ingesting MSG, as opposed to just 2 out of 14 people after ingesting a placebo.[18]

Manufacturers add MSG to food to intensify that savory umami flavor that's so popular. Despite pressure from various groups, MSG is still approved by the FDA in the US. The Standard American Diet — appropriately referred to as SAD — is full of processed foods loaded with additives, including glutamate. Look out for MSG in bottled sauces and salad dressings, processed chicken products, crackers, crisps, and canned food.

There is strong evidence that over-exciting our nerve receptors is harmful to the neurons and certain parts of the brain. Researchers have long suspected that some people's fibromyalgia symptoms are worsened by the use of flavor enhancers and sweeteners containing excitotoxins. In 2001, a study published in *Annals of Pharmacotherapy* reported that the fibromyalgia subjects were mostly free of symptoms after eliminating MSG and aspartame from their diets.[19] When they consumed MSG later, their symptoms reappeared. The action of these excitotoxins may in extreme cases trigger an autoimmune disease such as multiple sclerosis.[20]

Since most processed foods contain excitotoxins, including baby food, eating a whole-food plant-based diet is your answer to avoiding these harmful chemicals. Preliminary studies have been done on the importance of vitamin D in this connection.[21] This vitamin appears to aid neurons in lowering glutamate toxicity in cells. Make sure you get a little sunshine every day or take a supplement.

6. Aspartame

Aspartame is another type of excitotoxin that is often added to food and beverages. It is a very popular, pervasive additive, particularly in the diet-food industry. That is because it acts as a zero-calorie sweetener. (It is about 200 times sweeter than regular sugar.) It is used in many "sugar-free" medicines too such as cough syrups and chewable tablets.

The body doesn't process this type of artificial ingredient very well, and it may trigger an immune reaction leading to inflammation and ultimately to autoimmune issues

In the last ten years or so, many studies have shown aspartame's adverse health effects. The FDA, however, has continued to approve the substance, citing over a hundred studies that say it is safe under certain conditions. However, for every study saying that aspartame is safe, there are many more that show it is not. An article in *MDLinx* recently reported many of aspartame's negative effects on mood and headaches — particularly for those suffering from migraines.[22] It has also been linked to stroke and cardiovascular issues, as well as an increased risk of dementia and epilepsy.[23]

When aspartame is broken down in the body, some of it produces methanol. In recent years, aspartame has become the biggest source of methanol in the American diet.[24] Small amounts are harmless and are even produced when we eat fruit and vegetables, but larger amounts are toxic because methanol degrades into formaldehyde, which is a carcinogen and neurotoxin.

There is a dangerous link between aspartame and autoimmune disease. While causes of auto-immune diseases are many and multi-faceted, studies such as this one have found a link between diet soda (containing aspartame), metabolic syndrome, and type 2 diabetes.[25] In fact, daily consumption of diet soda has been associated with a 36% higher risk of developing metabolic syndrome and a 67% higher risk of developing type 2 diabetes.

In animal studies, aspartame has been shown to lead to Hashimoto's thyroiditis, an autoimmune disease where the immune system systematically destroys the thyroid gland, causing it to eventually fail.[26] There was even a case of a woman whose disease was brought on by excessive consumption of artificially sweetened beverages.[27] Once the sugar substitutes were eliminated from her diet, her antibodies returned to normal levels and the thyroiditis resolved.

7. Phenylalanine

Phenylalanine naturally occurs in many protein-rich foods like milk, eggs, and meat. It is also sold as a dietary supplement and is a component of aspartame. It is an amino acid and, therefore, is one of the building blocks of proteins. Because phenylalanine can be found in so many food products and medications, the risks of excess consumption and toxicity are high, which can be especially dangerous for people with phenylketonuria (PKU). Individuals with PKU are unable to process phenylalanine properly. Phenylalanine can cause intellectual disabilities, brain damage, and seizures in people with PKU. There is a blood test available for newborns to detect this if you want to check.

"[P]eople with a rare hereditary disease known as [PKU] have a difficult time metabolizing phenylalanine, a component of aspartame, and should control their intake of phenylalanine from all sources, including aspartame. Labels of aspartame-containing foods and beverages must include a statement that informs individuals with PKU that the product contains phenylalanine," notes the FDA.[28]

For the rest of us, even healthy people should be aware that large amounts of aspartame can cause a rapid increase in phenylalanine levels in the brain. Any foods that contain aspartame — discussed in point 6 above — also contain phenylalanine. For instance, artificial sweeteners, including Equal and NutraSweet. It really is best to avoid these altogether and focus on naturally sweetened foods like fruit.

In the US, it is mandatory for any food or drink that contains this chemical to show a warning on the label. Remember to be especially careful to avoid these foods if you are taking medications that have levodopa in them such as monoamine oxidase inhibitors. Also, if you experience sleep disorders or anxiety symptoms, phenylalanine may make you feel more jittery and "wound up".

The chemical can trigger allergic responses, inducing itching, swelling of the face, difficulty breathing, and a tingling sensation in the mouth. In some people, the side effects of phenylalanine may include gastric disturbances like nausea, constipation, and heartburn, as well as neurological symptoms like dizziness, headaches, and anxiety. In doses of more than 5000mg a day (as in people who consume large quantities of diet soda), nerve damage can be caused.[29]

8. Pesticides

There are over 1000 pesticides in use around the world. Each pesticide is unique in its composition and toxicological effects.

Agricultural pesticides have been mainly linked with two autoimmune diseases: rheumatoid arthritis and lupus. Pesticides may be stored in the fatty tissue of obese individuals, making it more difficult to lose excess weight.

According to the National Institutes of Health, a specific link between pesticides and rheumatoid arthritis and lupus was established as far back as 2001.[30] A common feature of all chronic disorders is a dysfunction in cellular homeostasis. This can be brought on by the pesticides' primary mode of action, leading to genetic damage, endocrine disruptors, and epigenetic changes.

Lupus, an autoimmune disease that impacts the skin, joints, and internal organs, primarily affects women in their childbearing years. Several studies have found a link between lupus and estrogens. Many pesticides — namely pyrethroids, that are commonly used to control insects in household insecticides and pet sprays and shampoos — are known to have estrogenic activity and may provoke an autoimmune response due to their ability to create oxidative stress.

Parkinson's disease has been shown to be partly autoimmune in nature.[31] Some studies have shown a link between chronic exposure to pesticides and neurological disorders like Parkinson's. An ecological study showed that rates of Alzheimer's, Parkinson's, multiple sclerosis, and others were higher in districts of Andalusia that had higher pesticide use.[32]

To limit your exposure to pesticides, buy organically grown fruit and vegetables whenever possible and wash all fresh produce before consumption. Remember, even if it has been organically grown in your own garden, it has still been exposed to pollution and dust in the atmosphere. Even your neighbor spraying his garden with pesticides may cause a fallout into your yard. Thoroughly dry the produce after washing to remove any remaining residue. Once that's been done, cook and enjoy it!

Also, be aware of which types of produce are more likely to have been sprayed and which ones absorb chemicals more easily. Commercially grown thin-skinned fruits like apples, pears, and plums are often farmed with a lot of chemical sprays. Thin-skinned produce is often more of a problem. Don't avoid these delicious fruits, just remember to wash and dry them thoroughly first. Discard the outer leaves of green leafy vegetables like cabbage and lettuces. The Environmental Working Group produces an annual *Shopper's Guide to Pesticides in Produce*™ that is very helpful. Also, consider growing your own produce at home. A container garden is perfect for growing food in small spaces and is a fun way to get your kids to eat more veg.

9. Phthalates

Phthalates are the chemicals used to make plastics flexible and soft. They're also used as lubricants in cosmetics. They can be found in food containers, beauty products, pharmaceuticals, toys, paint, and shower curtains, for example. They can easily leach from the plastics and contaminate our drinking water supply, food, and even the air we breathe —especially if the plastic is heated. Diet is also a way of being exposed to these chemicals. Studies have shown that diets high in dairy and meat products showed a two-fold amount of exposure.[33]

A study conducted in Sweden found that children absorb airborne phthalates emanating from plastic floor material by way of their skin and respiratory tract.[34] A Chinese study found that samples collected from greenhouses and markets were all contaminated with PAEs.[35]

Phthalates have been shown to be a factor in the onset of lupus[36] as they are endocrine disruptors, and may also cause abnormal sexual development and fertility issues.[37] As a result, they've been linked to infertility and pregnancy problems. They have also been linked to diabetes, obesity, and cancer.

While it is not possible to avoid phthalates altogether, you can certainly limit your exposure to them. One way is to avoid fragranced products. Go for "fragrance-free" or those that are perfumed with natural essential oils. Avoid old plastic toys. Newer ones tend to comply with current regulations and are largely phthalate-free. Also, NEVER heat your food in plastic containers. If you're microwaving it, transfer your food to a glass container to heat. Eat organic produce as much as possible and filter your drinking water.

Avoid takeout food as much as possible. Aside from the obvious health issues such as too much fat, fast foods contain large amounts of phthalates. This is partly due to the packaging in which they are served. People who ate out regularly were shown in one study to have as much as 40% higher phthalate levels than people who ate home-cooked meals.[38] Grain-based takeout meals such as those consisting of mainly bread, pasta, pizza, noodles, and rice were shown to contain the most phthalates.

10. Dioxins

Dioxins are pollutants found in the environment. They are part of the so-called "dirty dozen" — a cluster of dangerous chemicals identified as persistent organic pollutants (POPs). The highly toxic potential of dioxins makes them a particular concern.

Experiments have shown that they affect a number of bodily organs and systems. Short-term exposure to dioxins in humans may cause skin lesions, like chloracne, irregular darkening of the skin, and changed liver function.[39] Long-term exposure has been linked to malfunctions of the immune system.[40] They not only have an immunosuppressive action, but they also seem to influence autoimmune diseases.[41] Dioxins can excite the immune system, making it hypersensitive and leading to autoimmune diseases and allergies.

Once dioxins gain access into the body, they persist for a very long time (between 7-11 years) due to their chemical stability and absorbability into fatty tissue where the body then stores them. Dioxins are particularly concentrated in the fatty tissue of animals.

Humans come into contact with dioxins mainly through the food they eat that gets contaminated during the farming process. The foods most packed with dioxins are meat, fish, shellfish, and dairy products. Shall we say it again? Plant-based is best!

Animals higher up in the food chain have a higher concentration of dioxins. In many cases, dioxin contamination gets introduced through contaminated animal feed. For example, incidences of increased levels of dioxin in milk traced their roots back to citrus pulp pellets or fat utilized in the making of the animal feed.

A lot of dioxin exposure also occurs through atmospheric pollution via medical waste incineration.

Due to this high prevalence, many countries now actively monitor their food channels for dioxin. This has very often stopped widespread contamination in its tracks because of early detection.

These chemicals cannot be totally avoided but like with the others, we can reduce our level of exposure to them. Firstly, avoid using bleached coffee filters. More than half of the dioxins contained in them get into your coffee. Avoid animal products as far as you can and base your diet on grains, vegetables, and fruits. Also avoid any bleached paper products like tea bags, paper towels, and disposable baby diapers.

11. Glyphosate

Glyphosate is a broad-spectrum herbicide that is applied to food crops to kill weeds and grasses. It has become one of the most widely used herbicides since its introduction in 1974. It is not only used in farming, but also in forestry and gardens. "Broad-spectrum" means that the chemical is non-selective and will kill most plants. Roundup, made by the company Monsanto (now Bayer), is one of the better-known (some say notorious) glyphosate herbicides.

Exposure occurs when the spray is inhaled or when it gets onto a person's skin from where it may be absorbed. In the time that this chemical has been in wide use, the incidence of autoimmune diseases such as multiple sclerosis, type 1 diabetes, and inflammatory bowel disease has increased too. Some studies suggest that there may be a link.[42]

Glyphosate is said to interrupt the functioning of the gut bacteria. This is a common feature of all autoimmune diseases, especially celiac disease. Celiac disease and gluten intolerance are a growing problem worldwide and research suggests that glyphosate may be the culprit.[43] It has been shown to disrupt the gut bacteria in animals by killing beneficial bacteria and allowing pathogens to proliferate. In fact, all celiac disease symptoms can be explained by glyphosate's known properties. This is because glyphosate may interrupt the breakdown of protein in the gut — leaving large fragments that the immune system will identify as foreign and attack — which, in turn, would lead to the immune system launching its own attack.

Glyphosate may also damage the delicate walls of the small intestine causing what is known as "leaky gut."[44] The intestinal wall is covered with a protective mucus membrane that absorbs nutrients and at the same time prevents harmful substances from accessing the bloodstream. When the gut is leaky, it has openings in the lining of the gut wall that allow bacteria and toxins to seep through. This causes an allergic reaction and may trigger autoimmune reactions. It has been established that leaky gut is a major step in the progression of most autoimmune diseases and it is present in most patients with autoimmune conditions.[45] Glyphosate, being a strong antibiotic, also causes havoc on the gut bacteria, leaving the gut and body susceptible to infections and autoimmune conditions.
A paper published in 2013 suggested that glyphosate may be contributing to the rise in autism, Alzheimer's, Parkinson's, and more.[46]

Now that you've read the bad news, here's something positive for you: changing to an organic diet as far as possible can rapidly lower the levels of glyphosate in your body. A new study published in Environmental Research showed reduced levels in just a week when subjects switched to an organic diet.[47]

12. Silica

Silicon occurs naturally as silica and silicates, which are used in agriculture to enhance crop growth and yield. However, there are concerns over whether silicon and its derivatives are safe.

Silica exposure has been well established as a cause of silicosis (a lung disease) and a causal factor in autoimmune diseases such as systemic lupus erythematosus (lupus), rheumatoid arthritis, and systemic sclerosis.[48] The exact mechanism by which exposure to silica causes autoimmune diseases is not known. However, we do know that when the silica particles are inhaled, macrophages in the alveoli ingest them, which brings about an inflammatory reaction. The silica particles are then encased in collagen, causing fibrosis. It is unknown if the inflammation, the fibrosis, or both cause the autoimmune response.[49]

People are often exposed to silica in their work environment. For instance, stone cutting, sandblasting, and well drilling. Farmworkers may be exposed to silica dust in the soil and agricultural products.[50] Wearing protective equipment, particularly masks, is strongly recommended in such environments. Also, using wet methods when cutting rocks can help reduce dust. Workers should wash their face and hands before eating and work in well-ventilated environments to avoid inhaling or consuming it on their food.

Silicon dioxide is used as a food additive to stop powders, such as spices and milk powder, from clumping together. It is also used in food supplements for the same purpose. While the FDA recognizes it as a safe additive that gets excreted via the kidneys, there has been some concern in the last couple of years. The European Food Safety Agency has suggested that the EU impose more stringent guidelines for silicon dioxide as particles smaller than 100nm may not be safe in food.[51] Also, because no long-term exposure studies have been done, it cannot be given the all-clear. Plus, when evaluated in a study published in the *Journal of Applied Toxicology*, it was shown that at higher concentrations over a longer time span, silicone dioxide interferes with cell growth in the GI tract.[52]

13. Iodine

Iodine is an essential part of our diet, but too much or too little can lead to autoimmune issues. Our thyroid gland contains most of the body's iodine as it needs this micronutrient to make the thyroid hormones thyroxine and triiodothyronine, which have multiple functions in energy growth and metabolism, help transmit nervous stimuli, and aid in brain development.

The range between the requirements and upper level is very small for humans. Consuming too much iodine can cause the thyroid gland to overproduce its hormones, leading to hyperthyroidism and its accompanying symptoms. This is why it is good to consume small amounts of seaweed for its iodine content but not too much. A guide is to use it no more than once or twice a week as part of a meal. Seaweed is versatile and goes with many different foods. For instance, add a little to soups, use it in stir fries or add a tablespoonful of dried seaweed to smoothies. Remember though, too much iodine can be toxic to the thyroid gland.

There is growing evidence that too little iodine can be linked to autoimmune thyroid disease.[53] However, high iodine content in the diet has been associated with thyroid disorders such as Hashimoto's thyroiditis. Some researchers are concerned that the addition of iodine to table salt in some countries has led to an increased incidence of autoimmune thyroiditis, especially in the elderly and the unborn.[54] There is increasing evidence that iodine supplements can be linked to autoimmune thyroiditis.

Iodine occurs naturally in seawater. In coastal regions, small amounts of iodine enter the atmosphere, the rainwater, and thereby the groundwater. Although iodine excess is uncommon, in countries such as Japan where the inhabitants live near the sea and eat a lot of shellfish and seaweed, iodine overdose is sometimes seen.

In cultures where milk and other dairy products form a staple part of the diet, studies have shown that the risk of excessive iodine intake is high.[55] In industrialized nations, milk and dairy products are major sources of iodine, yet consumption varies hugely. Factors that affect the quantity of iodine in milk are iodine intake by the cows from their food source, the season, disinfection of the animal's teats with iodine-based disinfectants, and the type of farm management implemented. The wide variations in milk iodine levels need to be addressed and managed to prevent excess intake.[56] As we've emphasized throughout this book, a plant-based diet prevents many of these issues.

So, in case you're confused about how to get the balance right, bear in mind that in the West, an iodine deficiency is rare. That's because most salt is iodized. It's best to only take an iodine supplement under a doctor's supervision. The recommended total daily intake for people over the age of 14 years is 150mcg and up to a maximum of 290mcg when pregnant or breastfeeding. If you're concerned about getting too much iodine, it's best to cut out the iodized salt and get the small amount of iodine needed in your diet from seaweed.

Add this here: It may be helpful to know how much iodine the various types of seaweed contains in each gram:

- Nori: 37 mcg (25% of the RDI)
- Wakame: 139 mcg (93% of the RDI)
- Kombu: 2523 mcg (1,682% of the RDI)

This means that there is a risk to those who eat seaweed every day, as 1,100 mcg of iodine is the upper limit for adults. To be safe, do as they do in Asian nations where they usually eat seaweed with foods that hinder the uptake of iodine by the thyroid gland. These foods are called goitrogens and found in foods like broccoli, cabbage, and bok choy.

Also, remember that seaweed is water-soluble so cooking it alters its iodine content. For instance, when kelp is boiled for 15 minutes, it loses up to 90% of its iodine content.

14. Organic Solvents

Organic solvents are described as liquids that dissolve a liquid, solid, or gas and are carbon-based. In agriculture, solvents are commonly used in the isolation and preparation of active ingredients for various agricultural products and pesticides, which allow for slow, uniform drying of the product so that adequate penetration and high spraying efficiency can occur.

Solvents play a major role in the conveyance and efficiency of insecticides, pesticides, and herbicides, both commercially and at home. There are enormous hazards associated with solvents, and they are almost all toxic if swallowed, inhaled, or are in contact with the skin.[57] Constant exposure affects the central nervous system's functioning, creating side effects such as headaches, dizziness, blurred vision, and mood changes. Some common organic solvents are acetone, ethyl acetate, heptane, methanol, ethanol, and toluene.

Newer studies have shown a link between organic solvents and autoimmune conditions such as multiple sclerosis (MS) and autoimmune hepatitis.[58] The mechanism seems to be that organic solvents can alter cellular proliferation, apoptosis, and tissue-specific functions. The amount and duration of exposure directly influence the causation of disease. Long-term exposure leads to solvent deposits forming in organs. This sets in motion an immune reaction, inflammatory response, and tissue injury.[59]

In agriculture, solvents can contaminate soil, water, and food crops. People are advised to thoroughly wash fresh produce in cold, running water before eating it to avoid consuming solvent residue. Organic solvents such as hexane are also used in the food industry to extract soluble components. For instance, they're used on coffee beans to decaffeinate the coffee and also to make soluble instant coffee. We'd recommend purchasing whole coffee beans and grinding them yourself for your daily cuppa.

15. Perfluorooctanoic Acid (PFOA)

Perfluorooctanoic acid (PFOA) is a synthetic compound used in many food-related items. Because of its unique properties of being chemically and thermally inert, having low surface energy and high surface-active properties, it is used for many consumer applications. A well-known one is as a component of non-stick cookware manufactured with Teflon. It is also found in microwave popcorn packaging. It can also be found in other everyday items such as food wrappers, pots and pans, textiles, and grease. It is a health concern because it can remain in the environment and the body for a long time.

PFOA is easily absorbed into the GI tract and is excreted via the urine and feces. It has a half-life in humans of up to 4 years. Studies show that globally it can be found in almost the entire population's blood. In fact, 98% of Americans tested positive for it. Higher blood levels are found in regions where water supplies are contaminated. PFOA is also found in certain foods.

Perfluorinated chemicals (PFAOSs or PFOCs) have been linked to several diseases in humans, such as thyroid disorders, low birth weight, and chronic kidney disease.[60] The chemicals have also been linked to autoimmune diseases such as lupus, colitis, multiple sclerosis, Crohn's disease, diabetes type 1, and rheumatoid arthritis.[61] Women and children are especially vulnerable to the chemicals' effects. The most critical effect in humans is an increase in blood cholesterol levels.

The European Commission in 2018 asked for a scientific evaluation of the risks to human health related to the presence of perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) in food. The investigation found that the main sources of chronic exposure to PFOA were seafood, dairy products, and drinking water.[62] You can avoid the first two by following a delicious, healthy plant-based diet and the third one by investing in a good water filter.

There are several other ways to avoid these chemicals. Don't use Teflon non-stick cookware but rather use ceramic or cast-iron cookware. Avoid food wrappings that have been coated with greaseproof coatings such as the takeout boxes at fast-food stores.

16. Triclosan

Triclosan is a substance found in hand sanitizer and many other household substances such as dishwashing liquid. In the wake of the Covid-19 pandemic, sanitizer has become an essential item in every household because it is marketed as being effective against many pathogens. What many people don't know is that good old soap and water are just as effective for cleansing the hands![63]

Besides being widely used as a disinfectant, triclosan is also used as a preservative in many cosmetic products, toys, paints, and textiles. It makes its way into the food supply because it is used as a surface biocide on kitchen items where it is put onto the outside of things like chopping boards, food storage containers, and dishwashing sponges to prevent the growth of bacteria. It is even used on the inside of refrigerators to prevent bacterial build-up.

In some areas, such as Barcelona, Spain, it has even been found in the drinking water.[64] This has led to concerns that triclosan may act as an antibiotic and lead to the development of resistant strains of bacteria.[65] There has also been concern that its use in dishwashing detergents may lead to the release of toxic chlorine fumes when used in chlorinated water. Food detergents are another problem. People use triclosan-containing detergents to wash their fresh produce and rid it of pesticides. However, if not rinsed properly, residues of triclosan may remain on the food and be ingested.

The CDC conducted a study between 2003-2004 that found that 75% of Americans had concentrations of triclosan in their urine.[66] In individuals under 18 years old, higher urinary concentrations of triclosan were associated with a higher incidence of allergies.

In terms of immunity, the thinking is that the developing immune system needs to be exposed to microorganisms to develop immunity. Resulting T-cell imbalances from the use of too many disinfectants may lead to autoimmune responses.

Animal studies have shown that as an endocrine-disrupting compound, triclosan can interfere with thyroid function, therefore, affecting metabolism which could lead to diabetes and autoimmune conditions triggered by thyroid dysfunction.[67] It accumulates in the body's fatty tissues and has been found in human urine, breastmilk, blood, and nails.[68] Human studies show that triclosan negatively alters immune function over a lifetime and poses a threat to endocrine and reproductive functions.[69]

Triclosan has been banned in the EU in materials coming into contact with food. It is also banned as a food disinfectant and food preservative. In Germany, its use on food contact plastics has been banned since 2009.

17. Benzophenones

Benzophenones are chemicals that block UV light. They are widely used in cosmetics, food-related items, personal care products, inks, textiles, and numerous other consumer products. They are also added to food as a flavoring. They may be found in food packaging materials because UV resistant inks and varnishes are used for printing on the packaging.[70] This especially becomes a problem if the carton is made from recycled printed materials as the chemical can seep into the food.

In 2018, the US Food and Drug Administration banned benzophenones along with six other food additives.[71] The ban resulted from lobbying by several concerned groups, such as the Breast Cancer Fund, for tighter regulation.

Many consumers will not even recognize the name because it doesn't usually appear on ingredient labels. It is simply printed as "artificial flavors". Benzophenone has a distinctive rose-like, aromatic smell and flavor so it is widely used to flavor candy and packaged desserts.

Several health concerns surround this substance. In animal studies, benzophenones are known to be endocrine-disrupting chemicals that imitate the action of steroids.[72] They lead to weight gain and also affect the activation and survival of immune system cells. This may lead to hyperactivity of the immune response and thus, autoimmune diseases like type 1 diabetes. Other studies have linked it to the formation of various kinds of tumors.[73] It has been shown to cause cancer in rodents.

The European Food Safety Authority has listed it as a known toxin because it causes liver hypertrophy in rats. It can be absorbed through the skin (hence its danger in cosmetics) and can accumulate in the blood, liver, and kidneys.

To avoid it, read labels carefully. Be aware that it is not always listed as "benzophenone", but may be called simply BP2, oxybenzone, or sulisobenzone. Avoid lip balms with artificial flavors and rather use natural beeswax balm or coconut oil. Packaged desserts and candies should be avoided anyway, for many reasons apart from just this one chemical. (For instance, sweeteners, refined sugars, anti-caking agents, artificial colorings...need we go on?)

18. Perchlorate

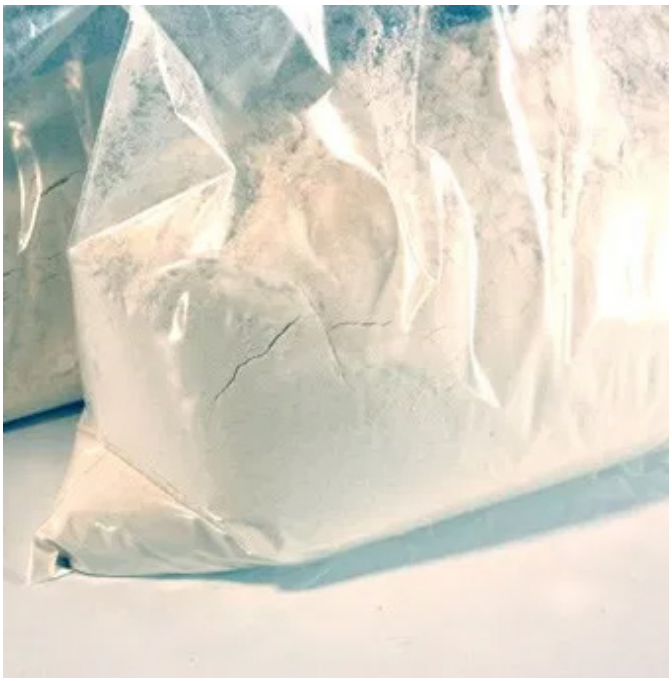
Perchlorate is a chemical with many and varied applications. It occurs as an environmental contaminant from the use of nitrate fertilizers. It also enters the environment from rocket propellants, explosives, fireworks, and flares. Sodium perchlorate is used in water purification processes, and when it degrades, perchlorates are released, potentially contaminating the water supply.

All this means that perchlorates in the water, soil, and fertilizers can contaminate the food supply. For instance, when green, leafy vegetables are irrigated with water containing perchlorates, the water evaporates from the leaves, leaving the perchlorates behind. Always remember to rinse your fresh produce under clean running water.

Perchlorate is also used directly in food and food packaging, as well as in the pharmaceutical industry. It has been approved by the FDA for use in the plastic packaging of foods like flour, cereal, and spices where it helps to minimize static electricity in the dry products. This chemical can leach from the plastic packaging into the food. It can also contaminate food when bleach is used to disinfect food manufacturing equipment and to wash fresh produce.

The European Union found perchlorate in fresh produce and began more extensive monitoring.[74] They found that the chemical is more prevalent than first suspected. They asked a scientific panel for their recommendations and it was concluded that chronic dietary exposure is of potential concern, especially in individuals with iodine deficiencies.[75] Perchlorate has been shown to hinder the thyroid gland's ability to take up dietary iodine and make thyroid hormone T4, which is necessary for brain development. In pregnant women, perchlorate in the diet can harm the unborn child's neurological development.

The FDA published a study in 2016 showing that almost all food contains traces of this chemical, particularly in infant and toddler foods.[76] Chronic exposure has been shown to result in an increased risk of autoimmune thyroid disease.[77]



While it is not possible to avoid perchlorate entirely, you can counter its effects by making sure that your diet contains enough iodine.[78] Remember that many westeners get enough iodine so ask your doctor to do a simple test for iodine levels. If you're deficient, add a little seaweed, lima beans or prunes to your diet or use a supplement.

Once again, it is recommended that you filter your drinking water. It's important to use a reverse osmosis filter as this is one of the only ways to remove perchlorates.

19. Volatile Organic Compounds (VOCs)

VOCs are compounds that have a high vapor pressure and low water solubility. Many of them are man-made chemicals that are commonly found in processed food and its packaging — and some VOCs pose a serious health risk.

Volatile organic compounds include various types of chemicals found in gasoline, solvents, benzene, formaldehyde, synthetic musk scents, and fragrance ingredients. They are widespread in the environment because of evaporation and the incomplete combustion of fuels.[79] They can accumulate in various foodstuffs and may also form during the processing and preparation of food. They can seep into food from its packaging materials. VOCs have been found in microwaved popcorn and this has been raised as a health concern for consumers and production workers alike.[80] Bronchiolitis obliterans is an inflammatory condition affecting the lungs' smallest airways. One of the causes is the inhalation of chemical fumes such as volatile organic compounds.[81]

Many have raised concerns about petroleum and chemical contamination of seafood after oil spills are cleaned up. This is a potential source of VOCs in our food. They also contaminate drinking water and leach into food from commercial food packaging additives. A five-year study analyzed seventy different foods for these chemicals.[82] They were found in at least one sample of all the foods, ranging from ground beef, cola, bananas, and cheese. Does this mean that we shouldn't eat bananas? Not at all! Just try to avoid those in styrofoam or plastic packaging and rather buy organic produce whenever you can.

VOCs have been found to interfere with cellular membranes and cause diverse neurological effects.[83] Studies have also found a significant association between volatile organic compound exposure and the increased risk of developing an autoimmune problem.[84] These chemicals alter cell proliferation and tissue-specific function. The pathological effects are more pronounced if exposure occurs over a longer period of time. Chronic exposure results in deposits of the chemicals in organs and then exaggerated immune system responses.

It is extremely difficult to avoid VOCs in our food because almost every food product that is available today is contained in, and protected by, some form of packaging. The trick is to avoid packaging. Try to purchase fresh produce in paper bags rather than plastic. Avoid any kind of styrofoam or plastic and make sure you never heat food in these. Use glass or ceramic containers in the microwave. Avoid take-out food in plastic-lined boxes — or better yet, avoid fast food altogether.

20. Food Additives

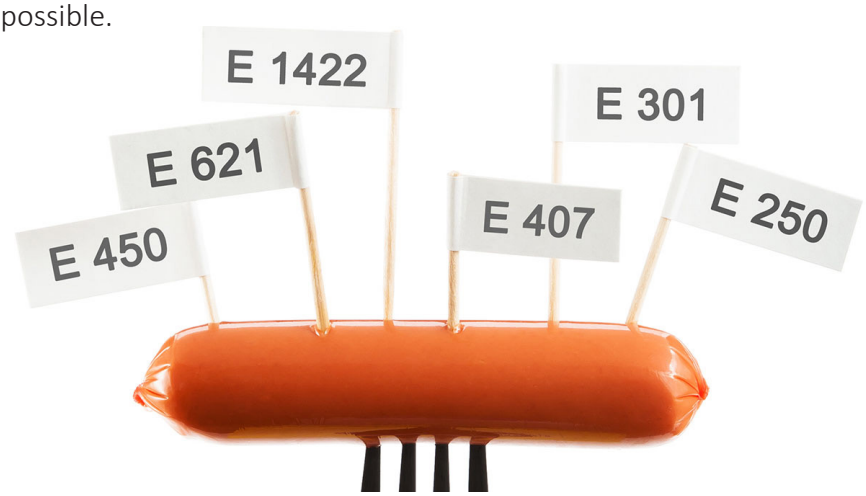
When food is produced in bulk, it has to be delivered to the consumer looking, feeling, and tasting "fresh". This is especially tricky when handling easily perishable products such as meats. Additives like preservatives, chemicals, fillers, artificial colors, and fillers are employed to achieve the desired results. Thus, food additives are substances, usually man-made chemicals, that are added to food to enhance their shelf life, improve their color, or boost their taste. They may be added at any point during the manufacturing process. They may even be added to whole-foods, for instance, sprayed onto fruit to delay the ripening process during transport or hasten the ripening process on the shelf.

While many food additives are considered safe, others have known potential health risks. Many of the substances on the FDA-approved list are GRAS (generally regarded as safe) but have never been tested or the testing is ignored.[85] An example of this is BHA (butylated hydroxyanisole) It is used as a food stabilizer and antioxidant. It causes cancer in rats. The FDA allows it, despite acknowledging that it is "reasonably anticipated" to cause cancer in humans.[86] The food industry often recommends to the FDA what it considers safe without ever submitting proof.

Some commonly used additives are tartrazine (E102), sunset yellow (E110), Allura red (E129), quinoline yellow (E104), and carmoisine (E122) to name just a few. Researchers in Germany and Israel say that their increased use may heighten the risk of autoimmune diseases. Their findings also confirm what the World Health Organization has said about processed meat consumption causing cancer. These researchers believe that the rise in autoimmune diseases in the last thirty years such as type 1 diabetes, inflammatory bowel diseases, lupus, rheumatic diseases, and many others can be directly linked to the consumption of food additives.

If we were to compile a list of the top-worst food additives in terms of health, they would be nitrites and nitrates, trans fats, potassium bromate, and the preservative propyl gallate.

It is recommended that individuals, particularly those with a history of family autoimmune disease, should decrease their exposure to food additives to minimize their risk. However, we'd all do well to eat fresh, unprocessed, plant-based food as much as possible.



21. Endocrine Disruptor Compounds (EDCs)

EDCs are substances in the environment, our food, and common household products that interfere with hormone production, metabolism, and function in the body. Because they disrupt hormones — and hormones control almost every bodily function — they have been linked to reproductive disorders, breast development and cancer, prostate cancer, and thyroid function, which affects obesity and overall metabolism.[87] EDCs are known to mimic the action of steroid hormones. Accumulating evidence points to EDCs as being a significant concern for public health.

In the past thirty years or so, thousands of new chemicals have been introduced into the environment as common agricultural and consumer products. These chemicals are ingredients commonly found in agricultural and household insecticides, fungicides, and herbicides.

Out of these, endocrine-disrupting compounds are especially concerning, because they have been shown to be toxic in animal studies and negatively impact human health. A large range of compounds is thought to cause endocrine disruption, for example, dioxin, DDT, BPA, phthalates, perchlorate, parabens, and certain pharmaceuticals. EDCs can be found in many items we use on a daily basis such as plastic water containers, food tins, food additives, and detergents.

They have been linked to several autoimmune conditions such as rheumatoid arthritis, type 1 diabetes, thyroiditis, and systemic lupus erythematosus (SLE). The existing literature proves that EDCs have a role in the cause of obesity, diabetes, and cardiovascular problems.[88]

In terms of our food supply, PCBs and dioxins have been banned since the 1980s, yet still linger in the environment and the food chain. Dioxins, another EDC, are found mainly in meat —so eating a plant-based diet offers protection from these.

While it is difficult to completely avoid EDCs, it is possible to reduce your exposure. Avoid as many harmful household chemicals as possible, and look for eco-friendly, “green” alternatives. Eat the highest quality, freshest organic food you can find. Help your body to detox itself by hydrating with filtered water, exercising, and eating a high-fiber diet. Use glass, steel, bamboo, and ceramic food containers and utensils.

22. Additives in Pharma Foods

More and more consumers are looking for "healthier" yet more convenient food options. Pharma foods are a fast-growing and lucrative trend, but many people have never heard of them.

They're a relatively new creation that is blurring the lines between pharmaceuticals and food. Examples of the earliest of such foods are cereals with added fiber, vitamins, and minerals. Baby formulas could be put into this category too. However, concerns have been raised such as in the case of the melamine-tainted baby formula in China, where 54,000 children were hospitalized.[89]

The intention of true pharma foods is that they are used as part of the management of a specific medical condition. This all sounds good, but there is concern about the safety of such substances. True "pharma foods" are bioengineered and take things a step further. The latest ones cannot be bought off the shelf, but require a physician's prescription and supervision to be used. The idea is that pharma foods will allow individualized diets to fit genetic profiles and allow physicians to tailor food and drug combinations to suit individual needs.

The list of pharma foods includes probiotics, prebiotics, functional foods, clinical foods, and nutraceuticals. **What we must not forget is that pharma foods are just another type of processed food.** Some would argue whether they can even be classified as "food". Many studies highlight the unquestionable link between such foods and autoimmune diseases like type 1 diabetes, lupus, multiple sclerosis, and more.[90] Processed foods, including pharma foods, weaken the gut's resistance to bacteria and toxins, increasing the chances of an autoimmune response. While vitamins, minerals, prebiotics and probiotics are all undoubtably good for us, there is growing evidence to suggest that it is better to obtain these, as far as possible, from food sources rather than artificial sources. [91] [92]

The next generation of pharma foods will be produced from genetically modified crops or animals.[93] Their supposed aim is to provide higher than usual amounts of various nutrients and will be marketed as being engineered to provide specific health benefits. For instance, transgenic fish tailored to provide embedded drugs and proteins for human consumption.

There has been an unprecedented increase in the use of chemical and pharmaceutical food additives in recent years. Sure, the aim is to improve shelf-life, nutritional quality, taste, and smell, but at what cost? Those with a family history of autoimmune disease or who have an existing condition are advised to consider avoiding such foods and stick to a fresh wholefood, preferably an organic, plant-based diet.

23. Veterinary Drugs in our Food Supply

Modern agriculture relies heavily on the use of veterinary drugs to raise animals for food. These include antimicrobials, growth promoters, NSAIDs, and tranquilizers. While the use of drugs in food animals is intended to improve animal health,[94] they have been associated with negative effects on consumers' health. Veterinary drugs keep animals disease- and parasite-free; however, residues of the medications in the food can cause health issues when they're consumed. Residues may remain in all foods of animal origin such as meat, poultry, milk, dairy products, eggs, seafood, and honey.

A prime example is the use of antibiotics for raising food animals, which has become a major concern because of the emergence of antibiotic-resistant pathogens. It has been shown that 80% of all antibiotics administered to food animals are used as growth promoters and not to treat disease.[95] Antibiotic-resistant microorganisms gain entrance into humans via animal products.

Drugs are routinely used in animal rearing, including ionophores to alter gut microbes, hormone production enhancers such as anabolic hormones in dairy cattle, and antiparasitic drugs. This results in the deposition in the animals' muscles and organs.

Consumption of these has known health risks because studies have shown that some of these drugs can be passed on to humans through the consumption of animal-based foods.[96][97] Sensitized people may develop allergies or immune-mediated responses to the drugs. Other health risks are carcinogenic effects and the disruption of normal intestinal flora.[98]

As a result of the concerns about the excessive use of these drugs and their possible detrimental effects on human health, many countries have set maximum residue limits (MRLs) for these residues in food.[99] Veterinary medications like clenbuterol, ractopamine, and phenylbutazone can have serious implications for human health if consumed in quantities exceeding these recommended safe MRLs. These could cause many issues including leaky gut syndrome and the subsequent triggering of autoimmune conditions like lupus.

The most sensible solution for consumers seems to be, once again, the adoption of an organic, whole foods plant-based diet.

BEST NATURAL REMEDIES FOR GETTING RID OF TOXINS CONTRIBUTING TO AUTOIMMUNE DISEASE

An autoimmune disease diagnosis can come as a shock and you may feel as if your life has changed forever. However, try to view it as an invitation for you to make positive changes to your lifestyle — not only to arrest or reverse that particular condition — but also to prevent other future autoimmune and chronic conditions.

It is very apparent that toxicity is a contributing factor in autoimmune disease, yet conventional treatments do not often take this into account. Instead, powerful drugs are used to try and shut down the immune response and leave the body susceptible to other diseases. They provide temporary relief by masking the symptoms, but they do not heal the root cause of the disease.

There is good news though. Once you identify and address the environmental factors that are contributing to your autoimmune disease (including toxic exposure), you can reset your body to its optimal immune function, stop it from attacking itself, and possibly reverse your condition.

Start by taking steps that will help your body detox — naturally.

Nature provides us with solutions for everything, including detoxing ingredients. Below are some methods that will help you to get rid of the toxic buildup in your body, which triggers autoimmune and chronic diseases.

1. Follow a natural detoxification program twice a year

Even though your body is made to constantly detox itself by using the liver, kidneys, and colon, consider doing a more formal detox program every six months. This will ensure you have a full-body cleanse, reset your body for better functioning, and get back into good habits. These programs include all the essentials required to engage all your detoxifying organs and still ensure there is a healthy balance.

Good digestive health enables your body to readily absorb nutrients and assists your liver to effectively eliminate toxins. A six-monthly cleanse is a powerful way of reinvigorating your body and allowing it to heal. The main thing is to ease into any program gradually so that it is not a sudden shock to your system. There are many programs out there that you can follow, but they mostly follow the same principles. Over a week or two, begin with the following changes:

Stop your intake of the obvious toxins such as smoking (including vaping), refined sugars, and alcohol. Next, over a week, eliminate caffeinated drinks such as coffee and tea. Use herbal teas instead, or hot water with slices of lemon or ginger. Avoid saturated fats and animal products as much as possible. Rather, go for plant-based proteins. By the end of a couple of weeks, you should be drinking water and herbal teas only, and eating fresh vegetables, fruits, grains, and legumes. Make sure you drink plenty of filtered water — at least two liters a day.

2. Probiotics/ acidophilus

Most of us know that our gut contains hundreds of types of good bacteria that keep our immune system healthy and aid our digestion. However, our gut flora suffers and becomes depleted because of toxins, antibiotics, and other medications and chemicals that we are exposed to. The gut flora is where our body does a lot of detoxing. Of course, the liver is the main detox organ but it relies on the gut flora to do the main job first. When our gut bacteria are depleted, our liver has to work twice as hard.

So, it is important to consume probiotic-rich foods to maintain a healthy gut flora. Probiotics such as lactobacillus help to filter out heavy metals. If you prefer to use food sources rather than supplements, here are a few of the best:

- Sauerkraut – this delicious, fermented cabbage product can be used as a condiment or as a side salad.
- Kombucha – a fermented, slightly fizzy drink. You can make it at home or buy it ready-made in most supermarkets. Look out though, because some shop-bought varieties contain added sugar and flavorings. Kombucha is a tea-based drink and is very refreshing when served ice-cold.
- Kvass – another fermented drink, kvass is traditionally made from stale rye bread and sometimes beetroot. It is a good way of using up leftover bread and gives you a mildly (<1%) alcoholic drink. The bread is slowly fermented which breaks down the nutrients and encourages the growth of lactobacillus. If you want a touch of sweetness, add a little maple syrup.
- Kefir – this is usually a dairy-based drink that is similar to runny yogurt. However, it can be made with non-dairy milks like coconut milk too. Kefir contains more probiotics than traditional yogurt and some contain over sixty different gut-friendly microorganisms.[100]

3. Liver cleansing and detoxification assistance

Formulas that contain milk thistle, artichoke, dandelion, turmeric, and/or beet leaf will help improve the flow of bile and enhance liver function.[101] [102] [103] [104] Specific supplements also give support to this detox phase where the breakdown of harmful excess steroid hormones like estrogen and testosterone occurs. There are specially-formulated supplements on the market to support your liver in the elimination of these toxins. Alternatively, you can use these fresh foods in your diet. For example:

- Artichoke – these delicious vegetables are readily available in most fresh food outlets. Their liver-cleansing properties have been attributed to the phytonutrient cynarin (aids the liver with bile production) and silymarin (protects the liver cells). On top of this, artichokes are high in fiber to assist with digestive health. Use them as a vegetable or juice them.
- Dandelion – dandelion root contains compounds that cause the liver to increase bile production. This, in turn, aids digestion and ensures the fast removal of toxins. The easiest way to use dandelion root is as a tea. Simply boil a cup of water and infuse a dandelion root tea bag. Some people find that it has a mildly laxative effect, but this is all part of the detox process.

- Turmeric – turmeric is a popular spice used largely in Indian cooking. When fresh, it looks similar to ginger root, except that it has a distinct golden/orange color. Because commercial turmeric supplements vary widely in the amount of curcumin (the liver-aiding ingredient) they contain, it is better to use the fresh root if you can. Simply peel and grate it as you would ginger. Grate it over your salads or vegetable dishes, or use it to make tea. Alternatively, if using the powdered spice, add it to a mixture of other Indian spices like chilli, cumin, and garlic to make a tasty vegetable curry or lentil dish.

4. Support your gut

Gastrointestinal issues are bound to create or worsen a defunct detoxification system. Ensure your digestive system is working properly by removing the toxins that create dysbiosis (gut imbalances) and other issues, but also by consuming the right gut-supporting nutrients and foods.

We've spoken about supporting your gut microbiome with probiotics in various forms. There are other, often overlooked ways to further support gut health. Here are a few:

- Decrease stress. You know the feeling of your stomach being tied up in knots from anxiety? That is because stress affects your gut, influencing what nutrients get absorbed and affecting digestion as a whole. It can also cause us to crave unhealthy "comfort foods". Stress can directly affect the gut's bacterial composition via stress hormones.[105] When detoxing, make a point of creating a peaceful environment for yourself with exercise, yoga, meditation, getting a massage, or other stress-reduction techniques that work for you.
- Get enough sleep. Studies have shown that a lack of sleep or poor sleep quality can have a negative effect on our gut microorganisms.[106] Try to get at least seven hours of sleep a night. If you struggle, make sure that you create a bedtime routine that ensures you go to bed at the same time every night. Ensure that your room is at an optimal temperature. It should be fairly cool (below 19 degrees celsius) and dark. Avoid computer and phone screens for a few hours before bedtime.
- Check for food intolerances. If you suffer from symptoms like bloating or abdominal cramping, diarrhea, or acid reflux, you may have a food intolerance that can directly affect your gut health and therefore your body's detoxing ability. Common foods that people are intolerant to include gluten and dairy products. If you think you may have a problem, try eliminating the food and see if your symptoms improve.

5. Algaes – chlorella and spirulina

These are perhaps some of the most potent detoxifiers around.[107] Chlorella is a fresh-water alga that contains large amounts of chlorophyll. It helps the body to detox by binding to heavy metals such as arsenic. ToxiBinder, by Well of Life, is a safe, natural, and effective supplement that does precisely that.

Spirulina is a blue-green alga found in fresh and seawater. It also contains large amounts of chlorophyll and is high in B-vitamins, minerals, and protein. These are both widely available in supplement form — either powders or capsules.

While a detox routine full of organic fruit and veggies, filtered water, and an exercise regimen are all good ways of eliminating toxins — algae take it to the next level. Spirulina and chlorella both have intensive detox properties and can change toxins into water-soluble molecules that the body can then get rid of by methylation.

To do an algae detox, take ¼ to 1 teaspoon (start gradually) of powdered organic algae every day along with your regular detox program. We recommend taking spirulina and chlorella together to get the benefits of both.[108] Be sure to stay well hydrated to help flush out the toxins quickly. Alternatively, if you prefer capsules, follow the recommended dose on the package.

6. Reduce inflammation

Autoimmune disease and inflammation go hand-in-hand, so it follows that when you have an autoimmune condition, an important management goal is to reduce the inflammation. Here are a few of the most potent natural anti-inflammatories that you could try:

- Curcumin – This is the bioactive anti-inflammatory compound found in turmeric (2%).[109] It safely and effectively blocks the production of inflammatory cells and proteins. Try to get a curcumin supplement, rather than using powdered turmeric because a supplement is the concentrated version. Piperine (black pepper extract) helps the body absorb the curcumin, so look for a supplement that combines them.
- Omega-3 Fatty Acids– This is a very good anti-inflammatory agent that will also help in hormonal balance.[110] However, omega-3's can be sourced from fish oils or plant oils. There has been concern about those manufactured from fish oil being contaminated with mercury. To be on the safe side, you may prefer to take ones from vegetable sources such as flax seeds. Increasing the amount of chia and flax seeds in your diet will also go a long way to giving you enough of these beneficial fatty acids. It will also ensure that you have supple skin with the added potential benefit of weight loss. Omega-3's have also been shown to improve the performance of the immune system and help clear toxic build-up.
- Ginger – This spice contains the antioxidant compound gingerol.[111] Fresh ginger is best as the powder tends to go moldy. Alternatively, look for a ginger root supplement.
- Stephania – This plant is little-known in the West, but it is a staple anti-inflammatory in Chinese medicine.[112] It is usually available as a tincture or powder.
- Boswellia – Also known as Indian frankincense, boswellia is a native Indian tree that is prized for its anti-inflammatory effects.[113] You will find it in capsule or tablet form.

7. Glutathione

Glutathione is an antioxidant produced in the cells of animals, plants, and fungi.[114] It is made up mainly of three amino acids and has been shown to help fight against the oxidative stress caused by chronic inflammation. It eliminates free radicals, thereby protecting cell mitochondria. Glutathione supplements are readily available in capsule form. The intake of vitamin C will also boost the body's natural production of glutathione.

Eating sulfur-rich foods as follows helps to improve glutathione's functioning:

- Broccoli, cauliflower, Brussels sprouts
- Garlic, onions
- Nuts
- Legumes

8. Visit a chiropractor

For most autoimmune diseases, the treatment goals include controlling the body's overactive response and maintaining the ability to fight disease. Chiropractic can help with these goals.[115] The brain stem, which controls immunity, is covered by the upper cervical spine. Adjustments by an experienced chiropractor can relieve any misalignments in this area. This will allow the body to heal itself, by improving nervous system and immune functioning.

9. Drink warm water with lemon juice

This is one of the simplest yet most effective detox practices.[116] Starting your day with a glass of warm water and freshly squeezed lemon juice will aid in flushing out toxins from your body. Even better, add a little bit of grated ginger. Prepare lemon water by simply squeezing the juice of half a lemon into your favorite mug. Top it up with hot (not boiling) filtered water. If the water is too hot, it will destroy the vitamin C in the lemon. Drink it first thing in the morning.

- Lemon juice gives you a good dose of vitamin C which helps your immune system.
- Lemon juice contains pectin fibers which are good for colon health.
- The warm water hydrates you and helps your body to flush out toxins.
- Warm water gets your digestive system working.
- Lemon helps the liver to produce digestive enzymes.
- Lemon is anti-inflammatory.

10. Cut out processed foods

Processed foods and fruit juices may contain preservatives, flavor enhancers, coloring agents, and processed sugar. All these elements can have a negative impact on your overall health and are the toxins you are trying to get rid of! Instead, eat fresh, organic fruit and whole foods that provide your body with much-needed nutrients and fiber.

Avoid anything that is boxed, packaged, or sold ready-made. Instead, take this time during your detox program to prepare simple, fresh foods at home. Focus on keeping it easy and delicious. Here are a few examples to motivate you:

- Cut up some beautiful ripe fruit and make a fresh fruit salad.
- Make a smoothie with some yogurt or kefir (both made from the milk of your choice such as almond milk) and some fresh fruit like mango or berries.
- Steam some vegetables like broccoli, carrots, green beans and toss them together with some finely chopped fresh herbs and a squeeze of lemon juice. Sprinkle with some chopped nuts like almonds.
- Roast some tomatoes with some garlic slivers, red onion, and fresh basil leaves. Sprinkle with some olive oil before roasting. Delicious!

11. Switch to natural cleaning products

Making a conscious decision to choose natural cleaning products over commercial cleaning products can minimize your exposure to toxic chemicals.

- All-purpose cleaner – mix equal parts of white vinegar and water. Add some lemon rind and rosemary sprigs plus a few drops of lemon essential oil.
- Basic kitchen cleaner and deodorizer for the fridge and countertops – make a solution or paste of baking soda and water. Use the paste for cleaning tile grout with a small brush.
- Window cleaner – mix 1 part rubbing alcohol or vodka, 2 parts vinegar, 4 parts water, and a few drops of your favorite essential oil.
- Lemon vinegar – fill a bottle with lemon peels and cover with white vinegar. Leave for a couple of weeks then strain. This makes a great kitchen and bathroom surface cleaner or it can be diluted with water for mopping floors.

12. Do some sessions at the sauna[117]

Sweating is how the body cools down but it is also one of the ways it gets rid of cellular waste. There are many different kinds of sauna to achieve this, but the basic principle is to use dry or moist heat to induce sweating. Here are some of the beneficial mechanisms you will experience at a sauna:

- As the body heats up, the pores open to release the sweat and expel waste that the lymphatic system has brought to the surface.
- The body temperature is temporarily raised, creating a “fever”. This stimulates an immune system response, triggering the release of white blood cells that fight pathogens.
- The circulation is boosted. The sauna increases the heart rate and metabolic rate and dilates the blood vessels. This increases the rate of toxin removal from the body and stimulates the lymphatic system to remove waste faster.

CONCLUSION

The number of toxins we come into contact with every day is astounding! The fact that some of these toxins are stored in our fat cells, wreaking hormonal havoc is very concerning. If you've been feeling lethargic and have headaches, difficulty concentrating, bad breath, psoriasis, joint pain/stiffness, strong body odor, acne, water retention, excess body fat, abdominal bloating, PMS, difficulty losing weight, indigestion, or constipation the hidden culprit might be a toxic build-up.

We need to be continuously aware of the risk of exposing ourselves to toxins, either through the food we eat, the products we use, or the places we go to. In being conscious, we can make active, informed decisions that will definitely set us on the path to wellness and wholeness.

To occasionally help our bodies unburden their toxic load and reset to function optimally, we need to think about detoxing.

The best course of action is to minimize exposure to toxins through continuous, positive decisions on plant-based whole foods and exercise. After all, the best way to deal with any health problem, is to prevent it from happening in the first place.

ABOUT JONATHAN OTTO

Jonathan Otto is an investigative journalist, natural health researcher, documentary filmmaker, and humanitarian.

Throughout his career, Jonathan has turned his attention to seeking truth and exposing the errors in conventional medicine.

He has created and produced several groundbreaking self-hosted docuseries — ***Depression, Anxiety & Dementia Secrets, Autoimmune Secrets, Natural Medicine Secrets, and Women's Health Secrets*** — covering innovative, effective natural remedies for cancer, autoimmune disease, neurodegenerative disease, mental health, and heart disease.

These docuseries represent Jonathan's unceasing quest to discover the true root cause of debilitating diseases by gathering stories and protocols from world-renowned natural medicine doctors, health experts, and their patients.

In response to this life-saving knowledge, Jonathan created **Well of Life**, a line of doctor-formulated, 100% natural supplements specially designed to detox and fortify the body.

Jonathan's greatest reward has been hearing the testimonials from people whose lives have literally been saved with the natural medicines and protocols he discovered.

His work has been featured in international TV broadcasts, print media, national news, and radio broadcasts. He received the awards, *Young Citizen of the Year and International Volunteer of the Year,* from the Australian government for international humanitarian contributions, which he continues to support.

Jonathan and his wife, Lori, welcomed their first son, Asher, in January 2019.

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