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TABLE OF CONTENTS

What is an Autoimmune Disease?	L
What Are the Common Autoimmune Diseases?	L
The Nature vs Nurture Debate	2
The Root Causes of Autoimmune Disease	2
Heavy Metals	2
Molds and Mycotoxins	5
Parasites	3
Pesticides)
Sugar1	L
Factory Farming and Mass Food Production	3
Dairy and Gluten: Inflammatory Agents14	1
GMO Foods	õ
Conclusion	7
About Jonathan Otto	3
Sources	£

WHAT IS AN AUTOIMMUNE DISEASE?

We need to first understand what the normal and abnormal functioning of the immune system looks like before we can understand what an autoimmune disease is. Let's start by defining the immune system's function. We need our immune system to protect us from injuries and diseases. By diseases, we mean any harmful change to the body's normal functioning that causes signs or symptoms and is not related to an injury¹. So, it is our immune system's job to fight off pathogens, like viruses, bacteria, and parasites, and to notice the difference between these pathogens and our own healthy tissue.

This is where autoimmune disease comes in. Here, our immune system malfunctions and attacks our healthy tissue including our healthy cells and organs². Statistics show that approximately 23.5* million Americans are currently living with an autoimmune disease and these numbers are predicted to rise³. There are also more than 80 different autoimmune diseases to date and at least 14 of these are considered common⁴.



WHAT ARE THE COMMON AUTOIMMUNE DISEASES?

Here is a list of the 14 most common autoimmune diseases⁵ – most people have heard about some of these or know someone who may have one.

- 1. **Diabetes:** When the pancreas cannot produce enough insulin to lower the sugar levels in the blood.
- 2. Rheumatoid arthritis (RA): When the immune system attacks the joints⁶.
- 3. **Psoriasis/psoriatic arthritis:** This happens when the skin cells build up instead of shedding when they need to, forming red, inflamed patches⁷.
- 4. **Multiple sclerosis:** This is a motor neuron disease that damages the myelin sheath which coats the nerve cells for protection and helps the nervous system to transmit messages⁸. When this substance is damaged, the messages that are transmitted slow down.
- 5. Lupus: An autoimmune disease that attacks healthy tissue and organs due to the Inflammation caused by lupus⁹.
- 6. Inflammatory bowel disease (IBS): This includes Crohn's disease and ulcerative colitis which affects the gastrointestinal system and causes inflammation¹⁰.
- 7. Addison's disease: An autoimmune disease whereby the adrenal cortex is damaged and does not make enough of the hormones cortisol and aldosterone¹¹.
- 8. **Graves' disease:** This happens when the thyroid produces too much of the hormones that control the body's energy levels. This revs up your body's activities¹².
- 9. Sjögren's syndrome: This disease leads to dry eyes and mouth because the glands that provide lubrication are attacked¹³.
- 10. Hashimoto's thyroiditis: The immune system attacks the thyroid gland causing it to become underactive (hypothyroidism)¹⁴.
- 11. **Myasthenia gravis:** This autoimmune disease affects nerve impulses that control the contracting and relaxing of muscles, leading to muscle weakness¹⁵.
- 12. Autoimmune vasculitis: The blood vessels are attacked which narrows the arteries and veins¹⁶.
- 13. Pernicious anemia: This condition leads to a vitamin B12 deficiency and this leads to the blood being low in normal red blood cells¹⁷.
- 14. **Celiac disease:** An autoimmune disease that leads to gluten intolerance. The immune system attacks the small intestine when it contains gluten¹⁸.

THE NATURE VS NURTURE DEBATE

Two factors contribute to autoimmune diseases: environmental and genetic. Genetic factors are related to biology and refer to a person's genes or biological make-up. A weakness in one of these contributes to an autoimmune disease like a poorly functioning thyroid, for example. Scientists know that genetics play a part in autoimmune diseases for three reasons: they seem to be hereditary, they are ethnic-specific, and research has revealed a genetic mutation in people with autoimmune disease¹⁹.

Environmental factors also play a big role in autoimmune disease. In a case where someone is born with a poorly functioning thyroid, they may end up with an autoimmune disease like Grave's disease due to their habits, like what they eat, their sleeping patterns, and their exercise routines.

Environmental causes of autoimmune disease are described as being related to one of three things: infections, toxins, and dietary factors²⁰. Here, we will focus on the following root causes of autoimmune disease: heavy metals, molds and mycotoxins, parasites, pesticides, sugar, factory farming, gluten, dairy hormones, and GMOs (genetically modified organisms).

THE ROOT CAUSES OF AUTOIMMUNE DISEASE

We will now analyze the root causes of autoimmune disease related to environmental factors and look at some of the ways to remove these from your body.

1. HEAVY METALS

Like all things in life, most heavy metals are necessary and beneficial in moderation. However, when we consume or are exposed to food, water, chemicals, or other sources containing too many heavy metals, we run the risk of heavy metal poisoning. The resulting poisoning can cause serious health problems, like autoimmune diseases²¹. For example, studies have shown that heavy metal poisoning due to the metals cadmium and mercury has been linked to the autoimmune diseases lupus, multiple sclerosis, Hashimoto's thyroiditis, Graves' disease, rheumatoid arthritis, pernicious anemia, type 1 diabetes, and more²².

Common Heavy Metals and Symptoms of Exposure

The most common heavy metals that cause toxicity are lead, mercury, arsenic, and cadmium. Some of the complications associated with these are as follows²³:



Lead Poisoning

Lead poisoning can cause problems relating to high blood pressure and can damage the nervous system, reproductive system, kidneys, liver, and brain²⁴. Lead poisoning is the result of having a short or long term exposure to contaminants. There are specific foods that put individuals at risk of lead poisoning.

The EDF (Environmental Defence Fund) analyzed 11 years' worth of data from the Food and Drug Administration (FDA) to determine which of our foods are most often contaminated by lead²⁵. Their study was focused on baby foods. Their results showed that 20% of baby food samples they tested contained lead²⁶. Their study concluded that more than 1 million children consume more than the lead limit set by the FDA²⁷. This is concerning because it means that children are being predisposed to autoimmune diseases from a young age.

Apart from the FDA's study of baby food, other surprising foods have been linked to lead exposure. These are fruit juices, root vegetables, leafy green vegetables, chocolate and cocoa powder, organic food, spices, and candy. Here are some disturbing facts:

- Studies have shown that candy contained traces of lead. These were so high that the FDA began regulating children's favorite candies²⁸.
- In 2019, Consumer Reports found that most of the fruit juices sold contain unsafe levels of cadmium, lead, mercury, and inorganic arsenic²⁹.
- Spices were found to have higher than recommended levels of lead 30% of the time, particularly when it is produced in countries without strict food regulations³⁰.

The symptoms of lead poisoning differ between children and adults³¹.

The symptoms in children are:

- Delays in development
- Learning challenges
- Irritability
- Weight loss
- Tiredness
- Hearing loss
- Constipation
- Vomiting
- Abdominal pain

Mercury Poisoning

The symptoms in adults are:

- Concentration problems
- High blood pressure
- Joint pain
- Abdominal pain
- Mood disorders
- Reduced sperm count in men
- Fertility issues in women

Mercury is a heavy metal that is naturally found in our environment and is released by the earth's crust through human activity. Bacteria in our environment transform this mercury into methylmercury. A process of bioaccumulation then occurs whereby an organism contains higher concentrations of the substance than the surroundings. The main element of our diet that leads to mercury poisoning is the consumption of fish and shellfish. This is because fish and shellfish are highly susceptible to bioaccumulation.

Most research has shown that there are two groups that are more sensitive to the effects of mercury. These are babies in the womb and people who are exposed to high levels, particularly those who live in areas that rely on subsistence fishing.

An example of such a population can be seen in research that was done in Minamata, Japan, between 1932 and 1968, a bay that provided the locals with tons of fish and shellfish. Researchers called what they discovered Minamata disease. It is an unexplained disease that causes strange symptoms. There were more than 2000 confirmed cases at the time, some of these experienced severe neurological symptoms like brain damage, paralysis, incoherent speech, and delirium.

In the case of developing fetuses, pregnant mothers are advised to avoid eating fish and shellfish as high mercury levels can negatively affect the baby's growing brain and nervous system. Children who were exposed to high levels of mercury in the womb are likely to have problems relating to their cognitive thinking, memory, attention, language, and fine motor and visual-spatial skills³².

The symptoms suggestive of mercury poisoning are³³:

- Anxiety and depression
- Irritability
- Memory impairment
- Numbness
- Tremors
- Neurological impairment (severe cases)

Arsenic Poisoning

Arsenic poisoning is also known as arsenicosis. Arsenic is extremely poisonous to humans³⁴. Apart from in water, arsenic is commonly found in rice. This is because it is known to accumulate in rice at higher levels compared to other grains like wheat and maize. Rice bran appears to have the highest levels of arsenic.

There are two types of arsenic: organic and inorganic. It is the latter that is considered dangerous. Arsenic can also be found in foods like fruit and vegetables, and seafood in small traces. Just as in the case of lead poisoning, children seem to be more susceptible to arsenic ingestion. When exposure in children was analyzed, it was estimated to be on average 2- to 3-fold that of adults³⁵.

The symptoms of arsenic poisoning are³⁶:

- Metallic or garlic taste in the mouth
- Headache
- Vomiting (can contain blood)
- Watery diarrhea
- Abdominal pain
- Recurring diarrhea
- Thickening and discoloration of the skin
- Small corns or warts on the palms, soles, and torso
- Nausea
- Abnormal heart rhythm
- Numbness in hands and feet
- Partial paralysis
- Blindness
- Drowsiness
- Seizures

Cadmium Poisoning

Cadmium poisoning can occur from food or water that came from a contaminated source. Apart from cigarettes or industrial exposure, foodstuffs are the main source of cadmium exposure for non-smokers. The foods most likely to lead to cadmium exposure are cereals, vegetables, nuts and pulses, chocolate and cocoa, starchy roots or potatoes, and meat products.

Exposure to high levels of cadmium can affect the kidneys and can cause renal failure and bone demineralization, which means that the bones lose their calcium. It is also suggested that having a nutritional deficiency in calcium, iron, protein, and/or zinc is a risk factor³⁷.

The symptoms of eating food contaminated by cadmium are³⁸:

- Nausea and vomiting
- Stomach pain
- Diarrhea
- Kidney damage
- Frail bones
- Death

How to Test for Heavy Metal Poisoning

Heavy metal poisoning is a serious concern and can lead to a variety of autoimmune diseases. If one suspected heavy metal poisoning, they could get tested with a simple blood test. Thanks to research and testing measures, people and food organizations are becoming more aware of the effects these have on our bodies. Research has shown that over the last 20 years, harmful levels of lead in children have dropped by 80%³⁹. This is partly due to the ban on the use of lead paints.

Testing for heavy metal exposure can be done as follows:

- Blood testing
- Hair/nail samples
- Urine



How to Remove Heavy Metals From Your Body

The evidence so far has shown the serious effects of heavy metal poisoning. When heavy metals build up in our bodies over years, they slow us down mentally and physically⁴⁰. There are two mechanisms used to remove heavy metals from the body. The first is through a process called chelation therapy, a medical process where medicine that binds to metals in your blood is given through an IV (intravenous) line⁴¹. This medicine, together with the bound heavy metals, then passes out of your body through your urine.

The second method involves ingesting cilantro and chlorella. These two act as a perfect tool for body detoxification. Some studies suggest that this method can remove as much as 87% of lead and 91% of mercury in 45 days⁴².

You can also include heavy metal detox foods in your diet such as⁴³:

- Garlic
- Wild blueberries
- Lemon juice in water
- Spirulina
- Barley grass juice powder
- Atlantic dulse
- Curry
- Green tea
- Tomatoes
- Probiotics

Finally, vitamin deficiencies make you more susceptible to heavy metal poisoning. In particular, vitamin B, B-6, and C deficiencies. Thus, ensuring you get enough of these vitamins, eat the right foods, and avoid eating too much of the wrong ones can help remove heavy metals from your body⁴⁴.

2. MOLDS AND MYCOTOXINS

When certain types of molds make toxic compounds, they produce mycotoxins. These are harmful to humans and livestock⁴⁵. Mycotoxins are concerning because they cannot be identified by 25% of American people's immune systems⁴⁶. This means that mycotoxins can stay in the body for years. Additionally, some studies suggest that 20-30% of people do not respond well to mold exposure through food and their environment⁴⁷.

Research is starting to find a link between mycotoxins and autoimmune diseases like rheumatoid arthritis, scleroderma, and neuro-autoimmunity⁴⁸. Some other autoimmune diseases related to exposure to molds and mycotoxins are systemic lupus erythematosus (SLE), autoimmune diabetes, Sjogren's syndrome, and psoriasis.

Additionally, it's estimated that 9 out of 10 people who are suffering from chronic tiredness have toxicity as the root cause⁴⁹. This includes toxicity from molds and mycotoxins.



Apart from living in an area infected by dangerous molds, a person can be exposed to mycotoxins when they directly eat moldy food or consume products from animals that have been fed contaminated feed, like milk, for example⁵⁰.

Common Molds and Mycotoxins and Symptoms of Exposure

There are some common molds causing mycotoxins that are very poisonous to humans and animals. Let's discuss these, which foods they are likely to contaminate, and the symptoms of contamination.

Aflatoxins: Aspergillus flavus and Aspergillus parasiticus

Aflatoxins can be divided into two types. These are Aspergillus flavus and Aspergillus parasiticus and they are amongst the most poisonous mycotoxins that have been identified. Research has shown that aflatoxins can cause liver and DNA damage. They can also cause cancer in animals and liver cancer in humans⁵¹.

Aflatoxins are a family of toxins produced by certain fungi that can be found in crops like cereals such as corn, sorghum, wheat, and rice⁵²; oilseeds like soybean, peanut, sunflower, and cotton seeds; spices, particularly chili peppers, black pepper, coriander, turmeric, and ginger; and tree nuts such as pistachio, almond, walnut, coconut, and Brazil nuts⁵³. They can also be found in milk from an animal that has eaten contaminated crops.

The symptoms of aflatoxin exposure are⁵⁴:

- Nausea and vomiting
- Yellowing of skin and sclera (icterus)
- Itching
- Bleeding
- Stomach ache
- Tiredness
- Edema (swelling)
- Convulsions
- Coma
- Death

The symptoms of chronic (repeated) exposure are⁵⁵:

- Slowed growth and development in children
- Liver cancer

Ochratoxin A: Penicillium

Aspergillus and Penicillium are two mold species that commonly produce a mycotoxin called ochratoxin A. The most common means of infection is by consuming food or drinks that have been contaminated. Usually, contamination is caused by poor storage of commodities and improper practices during the drying stage of crop production⁵⁶.

The effects of ochratoxin A in humans are still being determined. Many studies have shown, however, that contamination in animals may cause kidney damage and may have negative effects on the immune system⁵⁷.

Penicillium, however, has been shown to have adverse effects on humans, apart from when it is used in medicine. It is the consumption of contaminated foods that is risky because many species of penicillium produce highly toxic mycotoxins. Especially in stored foods like seeds and grains and unlike other molds, penicillium can thrive even in relatively low humidity⁵⁸.

Additionally, studies have concluded that penicillium does alter human DNA and can cause permanent neurological, pathological, immunological, and psychological damage⁵⁹. Again, exposure to penicillium can be through the consumption of contaminated foods and drinks or inhalation.

The most common foods and drinks to become contaminated are cereals, coffee beans, dry vine fruits, wine and grape juice, and spices⁶⁰.

The symptoms of exposure to penicillium mycotoxins are^{61 62}:

- Headache
- Itching and watery eyes
- Runny nose
- Congestion
- Coughing and sneezing
- Rashes
- Asthma
- Inflammation
- Immune suppression
- Cognitive impairment
- Digestive issues
- Arthritis
- Thyroid issues

Patulin

Aspergillus, Penicillium, and Byssochlamys are molds that commonly produce the mycotoxin known as patulin. It is often found in rotting apples and apple juice. However, it may also contaminate other fruits, grains, and stored foods⁶³.

Acute symptoms of exposure to patulin include immune toxicity, neurotoxicity, and possible damage to the liver, spleen, and kidney⁶⁴. Rodent studies have reported gastrointestinal lesions, distension, and hemorrhage in the stomach and small intestine when patulin was ingested⁶⁵.

Other symptoms of patulin exposure in humans include⁶⁶:

- Nausea
- Gastrointestinal disturbances
- Vomiting

How to Test for Mold and Mycotoxin Exposure

Testing for exposure to molds and mycotoxins in humans is simple. It usually involves only a urine sample. Nasal secretions, sputum, blood tests, or tissue biopsy may also be collected by a physician as possible testing methods⁶⁷. Finally, testing for genetic susceptibility is possible using an HLA DR/DQ test⁶⁸.

How to Remove Molds and Mycotoxins From Your Body

Like any other toxin, there are ways to remove molds and mycotoxins from your system. People who have been exposed to them in damp buildings usually find relief after a long period by moving to another building that is free from molds.

Exposure can also occur from eating foods that have been contaminated, as we mentioned earlier. Before discussing ways to remove molds and mycotoxins from your body, we will provide some tips on how to avoid mold toxicity through food consumption.

If you want to stay on the safe side, you can use these guidelines when it comes to food preparation and storage to avoid mold and mycotoxin toxicity⁶⁹.

- Always ensure that storage conditions are cool and dry.
- Don't use cereals, grains, and nuts past their expiry date.
- Inspect all your food before consumption, particularly fruit, vegetables, nuts, and grains.
- When serving food, keep it covered to prevent exposure to mold spores in the air.



Now, we will discuss some of the detoxing methods used for mold and mycotoxin exposure and toxicity⁷⁰.

- 1. Using binders like clay, charcoal, chlorella, zeolite, cilantro, citrus pectin, and cholestyramine or welchol
- 2. Focusing on liver detox support

Some remedies that are recommended for people with allergic and asthmatic symptoms are⁷¹:

- Nasal rinses
- Antihistamines
- Decongestant nasal sprays
- Nasal corticosteroids
- Immunotherapy

3. PARASITES

Let's start by discussing what parasites are. We commonly refer to parasites as intestinal worms. Commonly found intestinal parasites are flatworms, which include tapeworms and flukes, roundworms, pinworms, and hookworms⁷². There is ongoing debate about intestinal worms being used to treat diseases. These studies are mixed, however. In one study conducted in 2013, two large clinical trials on irritable bowel disease using pig whipworm failed to show any benefit⁷³.

It is children who are particularly susceptible to parasites like intestinal worms because they are likely to play in environments that are contaminated, like sand and soil⁷⁴. The most common way that adults become infected with intestinal worms and parasites, however, is through the consumption of undercooked meat sources like beef, pork, or fish⁷⁵.

Various studies have shown that infections caused by parasites can affect the immune system. Autoimmune diseases like celiac disease and IBD (inflammatory bowel disease) have been linked to parasites⁷⁶. Multiple studies show that infections from bacteria, viruses, and parasites can trigger autoimmune diseases⁷⁷.

Many scientists believe that autoimmune diseases can be triggered by viruses, bacteria, and parasites in one of two ways. These are through either molecular mimicry, where the parasite looks similar to the body's own cells or through sustained immune activation, where a chronic infection causing long term inflammation triggers an autoimmune response⁷⁸.

There are other parasites, however, that can cause infections and lead to autoimmune disease. Some of the common parasites are Cryptosporidium, Giardia intestinalis, Cyclospora cayetanensis, and Toxoplasma gondii⁷⁹.

Common Parasites and Symptoms of Exposure

Here we will discuss some of the most common parasites and intestinal worms that cause infections, triggering autoimmune diseases.

Cryptosporidium spp

Cryptosporidium is a parasite that causes diarrheal disease in many people. It is a parasite that causes severe infection in those who are immunocompromised, such as those with HIV/AIDS, congenital immunodeficiencies, and transplant recipients. Those who are immunocompromised may also experience infection in their lungs and pancreas⁸⁰.

The common symptoms of infection include⁸¹:

- Watery diarrhea
- Dehydration
- Lack of appetite
- Weight loss
- Stomach cramps or pain
- Fever
- Nausea and vomiting

Infection can occur after consuming contaminated foods such as unwashed raw vegetables and uncooked meats.

Plasmodium

This is the broad name for the five parasites that cause malaria. Plasmodium falciparum and Plasmodium vivax are the two most deadly ones. Malaria is caused by parasites that are transmitted to people through the bites of infected female Anopheles mosquitoes⁸². These parasites have been shown to cause autoimmune responses. Research has shown that a common autoimmune response after a malarial infection is severe anemia⁸³. This study shows how parasites can lead to autoimmune diseases.

Helminths: roundworms, tapeworms, and flukes

Much of the research done about the link between intestinal parasites and autoimmune disease have shown mixed results. The concern, however, is about autoimmune responses in individuals who were infected by parasites. One of these studies from Argentina followed 12 patients with multiple sclerosis (MS). They had all had gastrointestinal infections caused by helminths⁸⁴.

How to Test For Parasites

Testing can be done in the following ways⁸⁵:

- Stool samples before taking any treatments
- The "Scotch tape" test
- For more severe infections, the doctor may do x-rays with a barium solution

How to Remove Parasites From Your Body

There are different methods to remove parasites from your body. The most commonly used method is drug therapy. Your doctor may prescribe one dose or many, depending on the type of parasite⁸⁶.

The next treatment is to focus on nutrition and supplements. These are usually used along with drug therapy. These include avoiding carbohydrates, eating raw garlic, pumpkin seeds, pomegranates, beets, and carrots. Including more fiber in your diet is also beneficial⁸⁷.

Probiotics are recommended to help keep your digestive tract healthy for those who are not immunocompromised. Then zinc and vitamin C are used to boost the immune system. Finally, certain herbs may be used too. The following are the most commonly suggested ones⁸⁸:

- Garlic
- Barberry
- Goldenseal
- Oregon grape
- Anise
- Wormwood
- Curled mint
- Black walnuts

4. PESTICIDES

There is a strong link between pesticides and autoimmune diseases. Studies have shown that farming with agricultural pesticides has been known to cause rheumatoid arthritis (RA) and systemic lupus erythematosus (SLE). A pilot study was done to determine the relationship between persistent organic pollutant exposure and celiac disease and concluded that there is more ground for research to determine how environmental chemicals may affect autoimmunity in people with susceptible genetics⁸⁹.

Children are more likely to be affected by pesticides due to their increased contact with contaminated areas during play. Additionally, adults who have asthma may have very severe reactions⁹⁰. People can experience immediate or long term effects.

Exposure comes from inhaling these pesticides or eating contaminated foods, most commonly, fatty food such as meat, fish, poultry, and dairy products serve as the main causes⁹¹.



The symptoms of immediate effects are⁹²:

- Irritation of the nose, throat, and skin
- Burning, stinging, and itching
- Rashes and blisters
- Nausea
- Dizziness
- Diarrhea

The symptoms of long term effects are⁹³:

- Cancer and other tumors
- Damage to the brain and nervous system
- Birth defects
- Infertility and other reproductive problems
- Damage to the liver, kidneys, lungs, and other body organs



Some of the common pesticides that are used have been shown to have a toxic effect on humans. These include organophosphates and carbamates, fumigants, organochlorines, pyrethroids and Chlorpyrifos. We will look at the effects that each has⁹⁴.

Organophosphates and carbamates

These pesticides are toxic to animals and humans. Both are common causes of poisoning and poison-related deaths worldwide⁹⁵. Aldicarb and methomyl are the most common causes of human poisoning from carbamates. The most common organophosphates are chlorpyrifos, diazinon, dursban, fenthion, malathion, and parathion.

These pesticides are known to affect the nervous system and exposure to them may cause convulsions, difficulty breathing, involuntary urination, coma, and death⁹⁶.

Fumigants

These are pesticides that are often used to kill insects that infest stored food⁹⁷. Fumigation should only be done by a licensed professional because of its toxicity to animals and humans. The most commonly used fumigants are hydrogen cyanide, naphthalene, nicotine, and methyl bromide⁹⁸.

Organochlorines

These are another commonly used type of pesticide. They have been used in the past to control malaria and typhus. These pesticides are the most commonly used in developing countries, particularly in Asia. It has had detrimental effects on the environment because it is highly toxic to bees, fish, animals, and other living organisms. Human exposure is also considered dangerous as it has been known to cause symptoms of neurological damage and endocrine (hormonal) disorders⁹⁹.

Pyrethroids

This class of organic pesticides comes from the flowers of pyrethrins. It works by targeting the sodium channels in the organisms it aims to remove. This causes giddiness, headache, vomiting, muscle twitching, low energy, convulsions and loss of consciousness in those who have been exposed¹⁰⁰. Toxicity from this pesticide may come from exposure to contaminated air, food or water sources.

Chlorpyrifos

This pesticide is one of the most commonly used for agricultural purposes. It is particularly used on crops like corn, soybeans, broccoli, and apples. Other foods that often test positive for pesticide residue are peaches, peppers, nectarines, and cilantro. This pesticide has been shown to impair children's brain development¹⁰¹.

How to Test For Pesticide Poisoning or Exposure

The test depends on the type of pesticide that caused the poisoning. The most commonly used testing procedures are environmental testing such as soil, water, air, and surface swabs¹⁰². For human contamination, testing includes the history of exposure to insecticides and characteristic symptoms, and biological testing such as blood tests, urine tests, and even fat biopsies¹⁰³.

How to Remove Pesticides From Your Body

Before we discuss how to remove pesticides from your body we will mention some of the preventative measures you can take to prevent pesticide poisoning and exposure.

- Use non-chemical pesticides¹⁰⁴.
- Peel or wash fruit and vegetables¹⁰⁵.
- Make sure you buy food that complies with pesticide regulations¹⁰⁶.
- Only allow children and pets to play in safe areas.

In case of exposure and toxicity, the following tips can be used to remove pesticides and pesticide residue exposure from your body.

If the exposure is severe and causes life-threatening symptoms, you would need medical attention immediately. Treatment involves removing contaminated clothes, offering breathing and heart function support, and administering atropine through the vein¹⁰⁷.

If you would like to detox your body from pesticide residues you can do the following¹⁰⁸:

- Consider using selenium to boost your body's glutathione
- Milk thistle
- Essiac tea
- Saunas and detox baths
- Clay baths using calcium montmorillonite
- Pantethine
- Activated charcoal
- Citrus pectin
- Eat alkaline foods
- Grapefruit to burn the fat stored in your liver
- Vitamin C

5. SUGAR

There is no doubt that the western diet is high in sugar, salt, and fat. These have all been linked to an increase in inflammation levels in the body, sugar in particular. A study involving feeding mice sugar water showed that increasing sugar intake increased their levels of an inflammatory immune cell called Th17¹⁰⁹. This worsened the autoimmune diseases of the mice including Crohn's disease and multiple sclerosis.

The main concern about the western diet is the increase in the consumption of refined sugar. Natural sugars are obtained from unprocessed whole fruits. Refined (processed) sugars, on the other hand, are obtained from sources like sugar cane or beets¹¹⁰. Refined sugars have little nutritional value and cause the blood sugar levels to spike due to how quickly the body digests and absorbs them. Additionally, scientists are saying that refined sugars are toxic to the body tissues and increase the occurrence of diseases. A healthy diet should, therefore, only contain natural sugars consumed as wholefoods. Let's look at the common foods in the western diet that are known to contain refined sugars¹¹¹.



Table sugar

Table sugar is commonly referred to as sucrose. It is extracted from sugar cane or sugar beets. The process involves soaking the sugar cane or sliced beets in hot water to extract their sugary liquid¹¹². This liquid is then filtered and made into a syrup. This syrup goes through a process to extract the sugar crystals. These crystals are the table sugar that you buy at the store.

High-fructose corn syrup (HFCS)

This is a refined sugar that comes from corn. The process involves milling the corn to make corn starch then processing it to make corn syrup¹¹³. Enzymes are then added to increase the sugar *fructose* to make the corn syrup sweeter.

Common Foods That Contain Refined Sugars

You may be eating refined sugars without even suspecting it. Let's look at some of the foods that contain refined sugar¹¹⁴:

- Beverages including soft drinks, sports drinks, coffee, vitamin water, and some fruit juices
- Cereals and cereal bars
- Sweets, treats, and candy
- Baked goods
- Canned foods
- Diet foods
- Sauces
- Pre-made meals

The Link Between High Sugar Intake and Diabetes

Diabetes is an autoimmune disease that is commonly associated with a high sugar intake. Refined sugars are dangerous for those with diabetes because they already have high blood sugar levels and often lack insulin – a hormone produced by the pancreas to lower sugar levels in the blood¹¹⁵. A 12-year study also confirmed the link between a high fat diet, the consumption of saturated dietary fat and the development of diabetes.

There are two types of diabetes¹¹⁶:

- Type 1 diabetes happens when the immune system attacks the pancreas, limiting its ability to produce insulin.
- Type 2 diabetes happens when the pancreas ceases to produce insulin or the body no longer responds to the insulin that is produced.

Studies have shown that people who often drink sugary drinks have a 25% greater risk of developing type 2 diabetes^{117 118}. It has also been noted that countries with high sugar intake levels have higher rates of diabetes.

It is still unclear whether refined sugars cause diabetes but researchers believe that there is a direct and indirect risk associated with refined sugars and the development of diabetes¹¹⁹.

Symptoms Associated With High Sugar Intake

These are the symptoms that are commonly experienced when sugar levels in the blood are too high. They can signal a potentially life-threatening situation for those with diabetes, known as a diabetic coma¹²⁰:

- Increased thirst
- Frequent urination
- Fatigue
- Nausea and vomiting
- Shortness of breath
- Stomach pain
- Fruity breath odor
- A very dry mouth
- A rapid heartbeat



How to Remove Refined Sugar From Your Body

The following are tips on how to detox your body from refined sugar¹²¹:

- Cut back on foods that are high in refined sugars such as cold drinks.
- Increase your water intake to flush the sugar from your body.
- Eat foods that are rich in protein like beans, legumes, nuts, and seeds.
- Eat foods that are high in fiber like vegetables, beans, and legumes.
- Avoid artificial sweeteners.

6. FACTORY FARMING AND MASS FOOD PRODUCTION

Factory farming and mass food production methods are increasingly used to keep up with the growing population and the increasing trend towards more meat and dairy intensive diets. Research is showing that we need to produce 50 to 100% more food by 2050 to keep up with demand¹²². This inevitably leads to inhumane methods of food production. Let's take a look at the methods that are used and their link to the development of autoimmune diseases.

Factory Farming

Let's start by defining factory farming. It is the extreme confinement of livestock for commercial use developed by scientists in the 1960s to maximize production to keep up with the growing population and demand for meat. Despite the negative impact that factory farming has on animals' wellbeing and the environment, it is a continued practice because scientists, economists, and farmers agree that this is the only way to keep up with the growing demand for meat¹²³.

An award-winning food journalist, Andrew Wasley as well as photojournalist, Jo-Anne McArthur, have revealed some of the inhumane conditions inside factory farms and the risk they pose to our health. Andrew Wasley went undercover to investigate a factory farm in northwest Poland after locals became increasingly alarmed about the farm's activity relating to the welfare of the animals and the environment. He



mentions that the conditions were appalling and the nearby lake was filled with plastic syringe casings, intravenous needles, and white clinical gloves along with barely recognizable pig carcasses. He also highlighted the controversial use of antibiotics in factory farming¹²⁴.

This highlights an issue of concern worldwide where factory farmers are abusing antibiotics leading to one of the biggest causes of antibiotics resistance. In fact, in the EU and the US, over 75% of all antibiotics are used in agriculture. Due to the large crowds of animals, factory farms are not administering antibiotics to individual animals but are spraying the entire flock. This means that the antibiotics aren't effectively ingested by the animals causing resistance¹²⁵.

At this point, it is worth noting that the use of antibiotics in themselves has a direct link to the development of autoimmune diseases. The reason for this cause is that antibiotics tamper with the microbiome¹²⁶ – the microorganisms in the body that are responsible for a healthy immune system¹²⁷. Upsetting the microbiome leads to autoimmune responses, thus making individuals more susceptible to autoimmune diseases.

Another factor to consider is the link between farmworkers and autoimmune diseases. One study highlights the increase in the risk of parasitic infections in farmworkers¹²⁸. Additionally, farmworkers are constantly exposed to pesticides. As discussed earlier, both parasites and pesticides can cause autoimmune diseases.

Grains

Part of keeping up with the growing population's food demands is the mass production of crops like corn, wheat, and rice. The problem with the mass production of grains is that farmers rely heavily on the use of pesticides and synthetic fertilizers.

Synthetic fertilizers made their debut at the end of the 19th century and have been widely used since then. These fertilizers contain nitrogen and phosphate, increasing their toxicity. They have been known to react with the hemoglobin in the bloodstream leading to methemoglobinemia¹²⁹.

The residue from both pesticides and synthetic fertilizers increases the risk of human exposure through grains that have been farmed under these conditions. As previously discussed, such toxicity can cause autoimmune diseases.

7. DAIRY AND GLUTEN: INFLAMMATORY AGENTS

There is a clear link between the consumption of dairy and gluten and autoimmune diseases¹³⁰. This is because gluten and dairy are two notorious inflammatory agents. We will take a look at the reasons why dairy and gluten have negative effects on our immunity consecutively.

The Effects of Dairy

Just as meat and other staples like grains, fruit, and vegetables are being mass-produced, so is dairy, since the demand for dairy is increasing. The effects that dairy may have on human health lies in the hormones that it contains such as prolactin, steroids including estrogens, progesterone, corticoids, and androgens¹³¹. These hormones have been directly linked to autoimmune diseases.



Additionally, cows are injected with a growth hormone called bovine somatotropins which increases cows' milk production to keep up with the dairy demands of our population¹³². However, this increase in milk production causes frequent infections in their udders¹³³. This calls for the overuse of antibiotics which can lead to an autoimmune response.

Another reason why dairy affects the health of so many people is the presence of a protein called casein. An autoimmune response may be triggered in those with allergies because their body doesn't recognize this protein and in response attacks it. Symptoms of such an allergy include hives or rashes, wheezing, severe abdominal pain, poor food absorption, vomiting, breathing problems, and anaphylaxis¹³⁴.

How to Test For Dairy Allergy/Intolerance

Dairy allergies or intolerance can be tested for using the following methods¹³⁵:

- Stool tests to check for digestive problems
- Blood tests to check for underlying health issues
- A skin prick allergy test

The Effects of Gluten

Gluten is the protein that can be found in grains, including wheat, rye, spelt, and barley. Gluten acts as a gluey substance in bread dough. Gluten is directly linked to an autoimmune disorder called coeliac disease where the immune system attacks the gut when gluten is present because it sees the gluten as a foreign invader. This disease is difficult to diagnose and research is saying that 80% of people with celiac disease do not realize it¹³⁶.

Other diseases that may be worsened by gluten consumption are irritable bowel syndrome – another autoimmune disease, gluten intolerance, wheat allergies, and gluten sensitivity. Some of the symptoms of any intolerance to gluten include digestive discomfort, tissue damage in the small intestines, stomach ache, gas, bloating and diarrhea or constipation, headache, tiredness, skin rashes, depression, unexplained weight loss, and foul-smelling feces¹³⁷.

How to Test For Coeliac Disease

Testing can be done for anyone experiencing symptoms after consuming gluten products. Testing can be done in the following ways¹³⁸:

- Blood tests
- Biopsy from the small intestine

How to Remove Dairy Hormones and Gluten From Your Body

So, you're worried about the negative effects that dairy may have or have an allergy. If you want to detox your body from dairy, you can do the following¹³⁹:

- Use delicious dairy milk alternatives such as almond and soy milk
- To ensure that you still get enough calcium when you go dairy-free, incorporate almonds, collard greens, sesame seeds into your diet.
- Keep an eye on your protein intake and eat high protein dairy free alternatives like quinoa, tofu, tempeh and edamame

If you want to detox from gluten, you can do the following¹⁴⁰:

- Take a probiotic and eat probiotic-rich foods like sauerkraut, fermented vegetables, miso soup, tempeh, pickles, coconut milk kefir, and dairy-free yogurt.
- Drink lots of water. Coconut water may help with gassiness.
- Avoid foods that contain gluten.
- Exercise may also help with the detox process.





8. GMO FOODS

GMO stands for genetically modified organisms. This means that scientists are altering the genetic makeup of crops by inserting a gene or two into individual cells in a lab¹⁴¹. There are a few reasons why GMOs are linked to the development of autoimmune diseases¹⁴². We'll discuss them here.



Firstly, they contain more pesticides than non-GMOs. This is because GMOs are modified by farmers to use more herbicides without killing the crops¹⁴³. As we know, pesticides can cause toxicity leading to an autoimmune response.

Secondly, many GMOs have been designed to produce their own insecticide. This has negative consequences for those who eat these foods. Evidence shows that it may be damaging the intestines and causing leaky gut, making individuals more susceptible to autoimmune disorders¹⁴⁴. This is because an unhealthy digestive tract may suppress the immune system.

This leads us to the last point. GMOs may contain a herbicide called glyphosate which has been shown to attack the healthy bacteria in the gut. This may lead to leaky gut, bacteria overgrowth, and inflammation – all triggers of autoimmune disease¹⁴⁵. Many GMOs also affect bone density.

The most commonly genetically modified foods are corn, potato, rapeseed, tomato, and soybean¹⁴⁶.

How to Remove GMOs From Your Body

You can use the following tips to detox your body from GMOs¹⁴⁷:

- Include fiber and pectin-rich foods in your diet such as green beans, carrots, potatoes, citrus fruits, green peas, apples, berries, and grapes.
- Exercise regularly.
- Drink water frequently.
- Eat probiotic-rich and fermented foods.
- Eat foods high in sulfur.

CONCLUSION

It may feel like an impossible task to focus on a diet that will completely eliminate your risk of exposure to the health hazards that we've discussed here but it is possible. We can safely say that autoimmune diseases are caused by exposure to heavy metals, molds and mycotoxins, parasites, pesticides, refined sugar, factory farming, gluten and dairy hormones, and GMOs.

They each lead to either toxicity in the body, an imbalance in the gut, increasing inflammation, or a molecular mimicry response. All of these lead to the development of autoimmune diseases.

By eating the right foods and avoiding the ones we've discussed here, you can drastically lower your chances of developing an autoimmune disease. Additionally, those who have already been diagnosed with autoimmune disease can improve their symptoms by following the tips that we have shared.

Finally, remember the importance of checking the labels of the foods you want to consume as well as the manufacturing standards. Being aware of these will help you to better prepare and avoid foods that are not healthy.

To summarise, eating fruit and vegetables; drinking lots of water; avoiding refined sugars, dairy, gluten, and GMOs; and taking probiotics and supplements that encourage detoxing are all the right steps you can take to achieve a healthy body and a balanced gut.



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 doctorformulated, 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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