



# IMAGE AWARENESS WELLNESS INSTITUTE

## *Autoimmunity*

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## WHAT IS AUTOIMMUNITY?

Autoimmunity is a situation in which the immune system attacks one's own tissues. We generally think of the immune system as a single entity, however, immune activity takes place in at least four places in the body. The bulk of the immune system comprising about three-fourths of immune activity takes place in the gut. We also have immune cells protecting the brain (glial cells), the liver (kupffer cells), and the white blood cells.

The earliest symptoms of autoimmune problems include joint pain, weight gain, brain fog and confusion, depression, mood changes, digestive problems, allergies, and fatigue.

Doris Rapp noted that intolerance to different substances which is often a trigger for autoimmunity could be observed by looking for the following changes: Changes in *brain function* included depression, confusion, or inability to concentrate. *Mood* changes such as anger or irritability reflected changes in brain and nerve function. She often observed changes in *behavior* such as anger, withdrawal, or violence. She also noted changes in the *ability to communicate* as indicated by changes in handwriting and speech. There were also many physical changes such as

increase in pulse rate, circles, puffiness or darkness under the eyes, congestion and irritation of the sinuses, allergic wrinkles on the nose and under the eyes, redness of the cheeks or ear lobes, and skin changes. These are some of the earliest changes on the road to autoimmunity and are often seen in children.

Autoimmune conditions rarely develop rapidly. Melissa Arbuckle reported in 2003 that veterans who developed lupus had autoantibodies for years before symptoms of the disease or the disease itself appeared. She concluded, "Autoantibodies are typically present many years before the diagnosis of SLE. Furthermore, the appearance of autoantibodies in patients with SLE tends to follow a predictable course, with a progressive accumulation of specific autoantibodies before the onset of SLE, while patients are still asymptomatic."

There are over 150 full blown autoimmune diseases and conditions. These include Alzheimer's, ALS, diabetes, inflammatory bowel diseases, MS, kidney and nerve degenerative conditions, osteo and rheumatoid arthritis, Parkinson's, thyroid disease, and psoriasis. Autoantibodies leading to these conditions gradually accumulate over a period of years. Early detection and addressing of this problem holds a promise for avoiding or delaying the onset of

these conditions.

### **Benign and Pathological**

There are two types of autoimmune activity: benign and pathological. The body replaces most of its cells within a period of about 7 years. The gut lining is replaced about every week. Red blood cells about every 90 days. The immune system plays an important role in cleaning up debris from damaged and dying cells. There is always a baseline of immune activity because of this renewal process and it is a good thing.

Pathological autoimmunity results when the immune system is overactive leading to collateral damage to healthy cells and tissues. Pathological autoimmunity is driven by *inflammation* in the tissues and *oxidative damage*. Part of the solution to autoimmune conditions is therefore to address the problems of oxidative damage in the tissues and the reduction or resolution of inflammatory conditions.

Attack against one's own tissues can result from microbes that mimic our own tissues. This is called molecular mimicry. This can tie up the immune cells so that the microbe can evade the immune system.

Another factor that can lead to autoimmunity is if some factor alters our tissues so that the immune system no longer recognizes them as self. This can happen when sugar alters the structure of a protein by

binding with it (called glycosylation) or when a toxic substance like fluoride binds to thyroid tissue or hormone, or when a toxic metal like mercury attaches to tissue structures).

The presence of pathological autoimmunity rests upon three pillars: genetic predisposition, environmental triggers, and a leaky gut or the loss of the integrity of the intestinal lining.

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## GENETIC PREDISPOSITION

We are all dealt a deck of cards when we inherit 23,000 genes. These can make a person prone to inflammatory conditions or be protective. They can have a robust antioxidant protective system or one which does not work as well. We can not change the genes we have inherited, but we can alter the manner in which they express themselves.

Historical events or antecedents have the ability to alter gene expression. This is called epigenetics, literally on top of the genes. Factors which alter the ways in which genes express themselves include exposure to diseases, use of pharmaceutical or recreational drugs, exposure to toxins, exposure to sunlight, dietary choices, and intake of vitamins. Prolonged exposure to deficiency of a nutrient like vitamin B3 can lead to acquired dependency for a larger amount of the nutrient to be well than would otherwise be necessary. Inadequate intake of vitamin D3 can be particularly detrimental where autoimmunity is concerned.

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## EXPOSURE OR SENSITIZATION

Without a trigger the gun of autoimmunity can not go off. We must be exposed to a substance which is poorly tolerated beyond a tolerance threshold before sensitization can take place. Symptoms begin to manifest at this point.

The ability of the body to tolerate insults is like a barrel of finite capacity. Once environmental insults breach the coping capacity of the barrel symptoms and disease begin to manifest themselves.

Responses to poorly tolerated exposures can be immediate or delayed. Anaphylactic shock after exposure to peanuts or penicillin is an immediate response. Delayed responses can take place many hours or even days after exposure. Many food exposures are delayed until foods move their way through the digestive tract.

The most common food triggers of immune activity are wheat, dairy, corn, peanuts, soy, shellfish, strawberries, eggs, chocolate and sugar. People often react to their favorite or their most commonly consumed foods.

Some substances frequently lead to immune activation. Here are a few:

#### **Wheat**

Historically wheat had a lower gluten content than it does today. Hybridization has increased the gluten content. Gluten is a very difficult to digest protein and historically wheat was fermented with bacteria which improved the ability to digest the protein.

Wheat proteins are very similar to the tissues that line the gut. Immune activation by wheat often results in immune attack against one's own digestive tract leading to celiac

disease, but wheat can also contribute to colitis, irritable bowel and other digestive problems.

It is known that wheat knocks out what is called the tight junction in the lining of the digestive tract. This is a gateway which keeps undigested foods and bacteria out of the bloodstream.

The herbicide glyphosate is often sprayed on wheat as a desiccant prior to harvest. Drying the wheat prevents mold growth. Glyphosate interferes with the functioning of vitamin D and zinc, both of which are necessary for healthy functioning of the tight junction in the lining of the intestine.

Gluten appears to be particularly toxic to nerve tissue. Thus exposure may contribute to brain damage and damage to the nervous tissues which govern the functioning of the digestive tract.

Wheat also activates opiate receptors which can lead to addiction to wheat leading to excess consumption.

#### **Dairy Products**

Dairy products often create problems as well. The caseomorphins in dairy bind to opiate receptors contributing to addiction. The dairy protein casein can be difficult to digest.

Type 1 diabetes is an autoimmune condition in which the immune system attacks and destroys its own insulin producing cells. Cow's milk in the first year of life has been implicated as a sensitizing agent.

Traditionally dairy products were consumed as cheeses or fermented dairy products like yogurt or buttermilk. These are easier to digest.

Modern milk is homogenized an pasteurized or ultra-pasteurized. The animals are often given bovine growth hormone to increase milk production. Cattle are often given antibiotics and fed GMO corn which increases the inflammatory omega-6

fats in the milk.

Many individuals have lactase deficiency. This is the enzyme that makes it possible to digest milk sugars.

All of these factors are reasons why dairy products are often contributors to autoimmune diseases.

### **Sugar**

Sugars are a big problem in autoimmune conditions. Studies have shown that sugar interacts with the opiate receptors and is highly addictive. In addition, sugar dramatically increases food consumption of laboratory animals. Rabbits will eat twice the normal amount of food when sugar is added.

Sugar in excess also depresses immune function and large quantities of fructose can inhibit liver function. Sugar appears to be a major contributor to insulin resistance which is a key factor in weight gain and obesity, type 2 diabetes, and type 3 diabetes (Alzheimer's disease).

When sugar accumulates in the blood, it begins to bind with normal tissues changing their structure. This is called glycation and fructosylation. These abnormal structures then invite immune attack because the body no longer recognizes them as "self".

### **Lipopolysaccharides (LPS)**

LPS are what is known as endotoxins or a toxins produced within the body. They are from the cell walls of harmful or infectious bacteria which have died or been killed. LPS trigger a powerful inflammatory response. These substances are normally produced within the gut but diets high in corn or palm oil are known to greatly increase their absorption, presenting them to the immune system.

LPS causes a leaky gut and these toxins can readily travel throughout the body. There is no drug to deal with this exposure, but dietary

changes can alter LPS exposure. Vitamin A supplementation can counteract many of the damaging effects of LPS.

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## **INTESTINAL PERMEABILITY**

The digestive tract is a beautifully designed system to allow the body to take in nutrients and keep harmful substances like undigested foods and LPS out.

Absorption of undigested foods or large molecules which are often harmful is called macromolecular absorption. This results in powerful activation of the immune system. Since over 2/3 of the immune system is in the digestive tract this is the most frequent source of unhealthy immune activation.

Leaky gut can have many causes. Here are a few:

### **Lack of Digestive Enzymes**

Lack of hydrochloric acid and pancreatic enzymes have long been known to contribute to macro-

molecular absorption. Inadequate chewing of food and its mixture with saliva can also contribute to inadequate breakdown of foods. Emotional stress or physical trauma can impair secretion of digestive substances contributing to a leaky gut.

### **Overeating**

Overeating can lead to faulty digestion as an individual can consume more food than his body has the capacity to digest. Undigested food becomes the playground for harmful bacteria. Heavily processed foods are designed so you "can't eat just one." Food processors know that you will overeat of their foods if they are loaded with sugar, salt, or hydrogenated oils.

### **Undigestible Foods**

Some foods are just difficult to digest like lactose, gluten, and casein. Other foods can be so highly processed that they digest poorly.

Cooking protein foods changes the nature of the protein. Raw eggs blend with water. A cooked egg changes from a water loving protein to a water fearing protein. It becomes more difficult to digest.

If foods are heated more they become browned and form what are called Maillard molecules. We see this in crackers and common breakfast cereals. The body had no enzyme to handle browned proteins so they contribute to leaky gut.

Blackened foods are even more difficult to digest. They place a major stress on the digestive tract.

### **Nutrient Deficiency**

Lack of nutrient intake can lower production of hydrochloric acid and pancreatic enzymes. Protein intake is very important for the production of the digestive substances found in the stomach and small intestine.

Vitamin D and zinc are direct regulators of the tight junction. Deficiencies of vitamin D are so common that lack of this nutrient is a common cause of leaky gut.



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### Toxic Exposures

Overgrowth of harmful microbes in the gut is a major cause of leaky gut. Glyphosate or roundup not only interferes with vitamin D utilization, but it acts as an antibiotic. German studies have shown that residues of glyphosate on the food of animals leads to destruction of beneficial bacteria and overgrowth of resistant organisms like botulism. Glyphosate also has the ability to damage the blood-brain barrier.

Ingestion of antibiotics can promote the growth of biofilms as the bacteria protect themselves by clustering in protective shells. Biofilm formation increases resistance to antibiotics as much as 100-fold. Spore based pathogens, viruses, and fungi are resistant to antibiotics and tend to overgrow with frequent use.

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### RESOLUTION

Resolution of autoimmune conditions involves considering the epigenetic and inflammatory effects of foods and environmental exposures, avoidance of sensitizing agents, and addressing the issue of intestinal permeability.

Food sensitivity testing can be ordered through [Directlabs.com](http://Directlabs.com). (1-800-809-0000). Oftentimes just avoiding commonly eaten foods will reduce the total load on the immune system. Avoidance of common triggers like sugar, gluten and dairy is often helpful.

Supplementation can make a huge difference in autoimmune conditions. A multiple which includes quality fats is an excellent foundation. Omega-3 fats reduce the inflammatory responses of the body. Vitamins A and D are essential for gut integrity. Antioxidants such as vitamin C, E, polyphenols and carotenoids prevent the spread of free radical damage. Polyphenols and fibers provide nourishment for the beneficial bacteria in the gut.

Probiotic supplementation helps to restore delicate beneficial bacteria to the microbiome.

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