

# Leaky Gut – The Syndrome Linked to Many Autoimmune Diseases

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## "Leaky Gut" Syndrome

Hyperpermeability or "leaky gut" syndrome is the name given to a very common disorder in which the cells lining the intestines become "leaky" due to inflammation. The abnormally large spaces present between the cells of the gut wall allow the entry of toxic material into the bloodstream that would normally be eliminated.

The gut becomes leaky in the sense that bacteria, fungi, parasites, undigested protein, fat and toxic waste normally not absorbed into the bloodstream in the healthy state, pass through a damaged, hyperpermeable gut membrane. This can be verified by special gut permeability urine tests or microscopic examination of the lining of the intestinal wall.

## Common Causes of Leaky Gut

- Infections – fungal overgrowth, parasitic infections
- Drugs like
- NSAIDs, chemotherapeutic agents
- Crohn's disease or Ulcerative Colitis
- Celiac disease
- Chronic alcoholism
- Strenuous exercise
- Food allergies

## Leaky Gut and the Connection to Autoimmune Disease

Leaky gut syndrome is almost always associated with autoimmune disease. In fact, reversing symptoms of autoimmune disease depends on healing the lining of the gastrointestinal tract. Any other treatment is just symptom suppression. An autoimmune disease is defined as one in which the immune system makes antibodies against its own tissues. Diseases in this category include lupus, alopecia areata, rheumatoid arthritis, polymyalgia rheumatica, multiple sclerosis, fibromyalgia, chronic fatigue syndrome, Sjogren's syndrome, vitiligo, thyroiditis, vasculitis, Crohn's disease, ulcerative colitis, urticaria (hives), type 1 diabetes and Raynaud's syndrome. Fortunately doctors are beginning to realize the essential role that the gut plays in these disease. Understanding the leaky gut phenomenon helps us see why allergies and autoimmune diseases develop and how to design therapies to restore intestinal integrity and reverse leaky gut.

## Inflammation is a key trigger for leaky gut



Inflammation causes the spaces between the cells of the gut wall to become larger than usual. Then protein molecules are absorbed before they have a chance to be completely broken down. The immune system starts making antibodies against these larger molecules because it recognizes them as foreign, invading substances. Antibodies are made against these proteins derived from previously harmless foods. The immune system becomes hyperstimulated and over-reactive to substances that are not necessarily supposed to be dangerous.

Human tissues have proteins & antigens very similar to those on foods, bacteria, parasites, candida or fungi. The antibodies created by the leaky gut phenomenon against these antigens can get into various tissues and trigger an inflammatory reaction in that tissue when the corresponding food is consumed or the microbe is encountered. Autoantibodies are thus created and inflammation becomes chronic. If this inflammation occurs in a joint, autoimmune arthritis (rheumatoid arthritis) develops. If it occurs in the brain, myalgic encephalomyelitis (chronic fatigue syndrome) may be the result. If it occurs in the blood vessels, vasculitis (inflammation of the blood vessels) is the resulting autoimmune problem... and so on.

If the antibodies end up attacking the lining of the gut itself, the result may be colitis or Crohn's disease. If it occurs in the lungs, asthma is triggered on a delayed basis every time the individual consumes the food which triggered the production of the antibodies in the first place. It is easy to see that practically any organ or body tissue can become affected by food allergies created by the leaky gut. Because the foods can trigger delayed reactions, it can often be very hard to pinpoint the triggering entity.

Leaky gut may cause increase risk of infection and sensitivity to environmental chemicals. This ongoing inflammation also damages the protective coating of antibodies normally present in a healthy gut called IgA. Since IgA helps us ward off infections we become less resistant to viruses, bacteria, parasites and candida. These microbes are then able to invade the bloodstream and colonize almost any body tissue or organ. In the clinic we often find patients with leaky gut or autoimmune disease also have microbial infections ongoing in the gut.

Not only can leaky gut create food allergies as the proteins we consume are activating antibodies, but the microbes in the gut can cross over into the blood stream creating a toxic burden that overwhelms the liver's ability to detoxify. Often in severe cases of leaky gut, patients will develop sensitivities to perfume, cigarette smoke or other environmental chemicals. Common complaints are also "brain fog", confusion, poor focus/concentration, or memory loss.

## **Leaky gut also causes malabsorption and nutritional deficiencies**

Finally, leaky gut may contribute to a long list of mineral deficiencies because of the ongoing inflammation and damage to carrier proteins. The most common are iron deficiency, vitamin B12 deficiency, magnesium deficiency which can lead to fatigue, neuropathies or muscle pain. Zinc deficiency due to malabsorption can result in hair loss or baldness as occurs in alopecia areata. Copper deficiency can occur in an identical way leading to high blood cholesterol levels and osteoarthritis. Further, bone problems develop as a result of the malabsorption of calcium, boron, silicon and manganese.

## **So now you may be wondering if you have leaky gut...**

Food allergies, toxins, sugar, antibiotics, parasites and stress can wreak havoc with your gastrointestinal system, upsetting the balance in your intestine as well as allowing harmful substances to enter the system. Gas, bloating, diarrhea, constipation or abdominal discomfort may be the first clue that something is wrong with the digestive tract, but did you know allergies or even lack of energy and fatigue can often be traced to digestive problems as well?

Normally the gastrointestinal epithelium provides a semi-permeable barrier with allows nutrients to be absorbed while preventing larger molecules from crossing into the bloodstream. When this lining becomes inflamed or damaged, then the barrier becomes “leaky”. The fallout results in larger, undigested food molecules and other “bad stuff” (yeast, toxins, and all other forms of waste) that your body normally doesn’t allow through, to flow freely into your bloodstream.

## **Causes of increased intestinal hyperpermeability or “leaky gut”:**

1. Medications (NSAIDS) like ibuprofen and Motrin
2. Microbial overgrowth or infection
3. Parasite infections
4. Fungal overgrowth (Candida)
5. Ingestion of allergenic foods
6. Maldigestion/malabsorption (pancreatic insufficiency or low stomach acid)
7. Radiation therapy or chemotherapy
8. Stress
9. Aging
10. IgA deficiency
11. Chronic alcohol intake
12. Excessive or strenuous exercise
13. Inflammatory bowel disease – Crohn’s or Ulcerative colitis

The small and large intestines contains numerous dietary and bacterial products with toxic properties. These include bacteria, bacterial cell wall (LPS), peptides, and bacterial antigens capable of inducing antibodies which may cross-react with human tissues... when these antibodies react, they may form systemic immune complexes which can circulate and deposit in tissues far away from the gut.

Abnormalities of the gut lining barrier lead to increased uptake of inflammatory molecules and pathogenic bacteria. With inflammation & injury to the gut lining, mucosal absorption of normally-excluded substances increases dramatically. Intestinal inflammation enhances the uptake and distribution of potentially injurious bacteria and proteins.

## **“Leaky Gut” is seen in disorders such as:**

- Inflammatory bowel disease (Crohn’s & Colitis)
- Inflammatory joint disease
- Food allergy
- Celiac disease
- Rheumatoid arthritis
- Ankylosing spondylitis
- Reiter’s syndrome
- Eczema & psoriasis
- Bipolar & Depression
- Allergies and asthma
- Autoimmune thyroiditis
- Multiple sclerosis
- Autoimmune liver & gallbladder disease

## So how do we test for “Leaky Gut”?

Small molecules (glucose or mannitol) readily penetrate cells and passively diffuse through them. Larger molecules such as lactulose are normally not able to diffuse through the cell. If the tight junctions between the cells are functioning properly, they will prevent the lactulose from leaking through. The Intestinal Permeability Test directly measures the ability these two sugar molecules—mannitol and lactulose—to permeate the intestinal mucosa.

Mannitol is readily absorbed and serves as a marker of transcellular uptake. Lactulose is only slightly absorbed and serves as a marker for mucosal integrity (ability of those “tight junctions” to keep out the bad stuff). The test is a 6 hour urine test that compares ratios of the two substances.

### For more info:

Genova Diagnostics [Intestinal Permeability Assessment](#)

You will need to contact your functional medicine physician in order to order the test.

## Now for some treatment options for this leaky gut!

### Nutritional Support

1. **Glutamine**, an amino acid, has been shown to reverse intestinal mucosal damage from various insults. Glutamine is the principle fuel used by the upper intestinal tract to repair and heal.
2. Agents that stimulate protective mucus secretion may also help with the healing. Some common ones I use are **marshmallow root** extract and **deglycyrrhized licorice (DGL)** extract.
3. **Probiotics** are essential! *Lactobacillus casei*, *bifidobacter* species, and *saccharomyces boulardii*, a beneficial type of yeast are all important to restore gut health.
4. **Fish oil** can be very helpful in the treatment of intestinal inflammation by decreasing inflammatory prostaglandins. EPA and DHA should be used in the range of 2-4gm daily
5. **Quercetin** functions as a natural mast cell stabilizer and decrease release of histamine which contributes to inflammation & injury. To be effective, quercetin should be used in powder form and taken 3-6gm daily.
6. **Vitamins A and D** are critical to supporting secretory IgA function and restoring the mucosal immune system. Ask your doctor for specific doses...

### To Decrease Toxic Load:

1. Eliminate all known foods that you are sensitive to. This can be determined through a comprehensive elimination diet or IgG/IgE food tests on the blood.
2. Avoid alcohol, NSAIDS (ibuprofen, Motrin, Alleve), and minimize other medications.
3. Bentonite clay is a well-known intestinal adsorbent which absorbs numerous toxins, endotoxins and bacteria. Its value in permeability alterations may result from lowering the toxin load in the lumen, thus facilitating repair. I also frequently recommend [Upgraded charcoal tabs](#) for the same purpose.
4. HCl and digestive enzymes such as plant enzymes, pepsin and pancreatin might help to lessen the antigenic load or toxic molecules being presented on the intestinal lining.