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Leaky Gut?

By Glenn King, PhD, C.D.N., C.N.

Intestinal permeability (leaky gut) is a huge issue for many people, usually without their knowledge or their doctor's knowledge. Understanding the basics about zonulin and Tight Junctions or TJs will help understand more about a number of diseases, especially autoimmune ones like Type 1 diabetes, celiac disease, multiple sclerosis, rheumatoid arthritis, and others.

Zonulin is a protein that participates in tight junctions between cells of the wall of the digestive tract and is a potential modulator of intestinal TJs (Tight Junctions).

Initially zonulin was discovered in 2000 as the target of zonula occludens toxin, which is secreted by a cholera pathogen *Vibrio Cholerae*. It has been implicated in the pathogenesis of celiac disease and diabetes mellitus Type 1.

Medically, it is being studied as a target for vaccine adjuvants. Currently ALBA Therapeutics is developing a zonulin receptor antagonist, AT-1001, which is currently in phase 2 clinical trials.

As you know, I prefer the natural or supplemental way of addressing disorders and this is not an exception. There are supplemental companies which are on the fast track to provide assistance - and

promote their products. Perque is one such company that is researching and providing quality supplements to help this disorder.

A Role of TJs and Zonulin in the Gut

The primary functions of the gastrointestinal tract have conventionally known to be limited to digestion and absorption of nutrients, electrolytes and water homeostasis. Zonulin's ability to regulate the trafficking of macromolecules through a barrier mechanism is now being recognized. This brings a greater understanding of many wide spread diseases, especially the autoimmune disorders now associated with leaky gut syndrome.

These disorders are shown to involve alterations in intestinal permeability related to changes in Tight Junction competency. The intestinal TJs allow the passage of antigens from inside the intestinal environment into the blood, challenging the immune system to produce an immune response that can target any organ or tissue, especially in genetically predisposed individuals.

One of the causes can be as simple as not chewing food well enough in the mouth before swal-

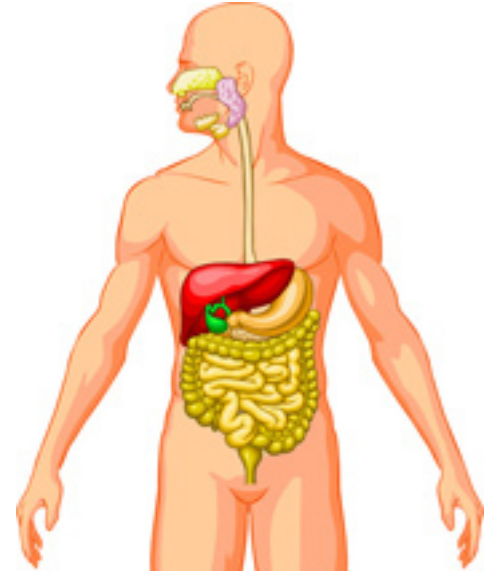


Illustration courtesy of Fotolia

-lowing. The larger unprepared food particles descend into the stomach and on through the intestines and a breakdown of the system happens where larger than normal food particles (macromolecules) leak or pass through an abnormally-permeable intestinal wall into the blood and causing an immune response and targeted by antibodies as foreign matter.

The blood stream can carry these targeted macromolecules to distant sites throughout the body where they can stimulate the release of cytokines.

Cytokines are a small protein released by cells that has a specific effect on the interactions between cells, on communications between cells or on the behavior of cells.

The cytokines includes the interleukins, lymphokines and cell signal molecules, such as tumor necrosis factor and the interferons, which trigger inflammation and respond to infections.

This can result in low grade fever, transient gut pain, and a sense of inability to absorb nutrients, as a few of the common symptoms.

Zonulin's recent discovery has been observed to be directly involved in intestinal immunity and a growing number of autoimmune diseases in which TJ dysfunction seems to be the primary defect. In short, a healthy gut = healthy zonulin dependent barrier = healthy immune system!

The intestinal epithelium is the largest mucosal surface in the body. A healthy, mature gut mucosa serves as the main barrier to the passage of macromolecules. When the integrity of the TJ system is compromised, as is seen during prematurity or exposure to radiation, chemotherapy, and/or toxins, or simply a habit of not chewing your food well before swallowing, an immune response to environmental antigens may develop. However, these processes can be arrested by reestablishing the zonulin-dependent intestinal barrier function.

It is very important for those desiring health to create a healthy immune environment that stems right from the gut. This is best accomplished as preventative medicine, but can usually be accomplished even once disease has begun.

I'll start by reiterating that chewing all food well before swallowing is very important. Healthy enzyme action and digestive acids are part of the solution, as well as knowing that a healthy gut terrain is also dependant upon a healthy balance of good flora in the gut. Proper

pH in the gut and proper hydration keep the system moving correctly and promotes chemical balance in the gut. Regular bowel movements are essential, and only once a day equals constipation.

If one is toxic, as most people are, then proper measures need to be taken to detoxify the body and build up the entire system for health, youthfulness, energy, strength and vitality.

Suggestions: As we age, we do not produce as much needed enzymes (blood and digestive) as we did in our youth. Therefore "quality" supplemental digestive enzymes are a wise habit.

In TKM applications there are important procedures that help this process naturally, such as the Stomach and Spleen sequences, supported by the #1 and #23-25 sequences.

For detoxification, one needs to see a nutritionist with a good reputation for detoxification without side effects.

TKM applications can be very helpful, like the Large Intestine, Liver, Kidney, #24-26, #26 sequences, and the one step procedure called palming calves or the Special Dermis application.

Of course, some good natural food fibers to clean your system should always be a daily part of one's diet, like raw carrots, celery, greens, and other raw vegetables, especially those with fiber. About three days of adding the raw vegetables to your diet and you'll start to see the difference.

We also have some products that we include for our serious clients which are very effective, and usually in a reasonably short time period. Although we only recommend such products once we've tested a person to see what will work best for that individual.

We do our best to keep up the latest testing technology available internationally, due to most of our clients coming to us with critical diagnoses and need effective help quick.

So, eat good natural food, include some raw veggies, and chew well before swallowing each bite, and drink plenty of clean Berkey water between meals, and have a bowel movement per meal at best, so you'll live a longer healthier life!

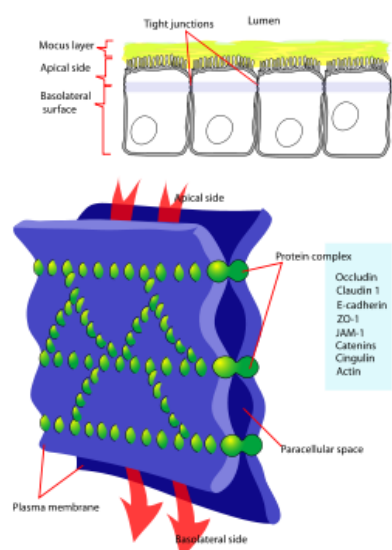
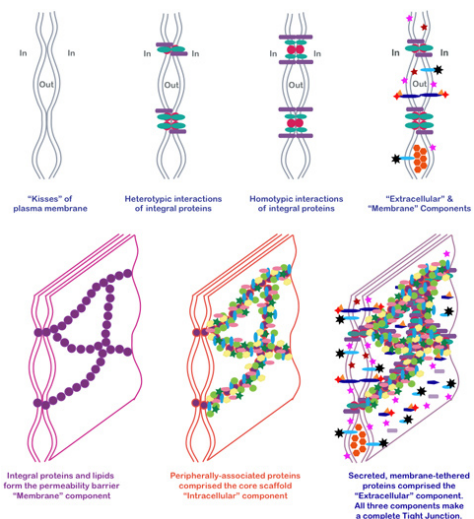


Diagram of Tight Junction



Complexity of Tight junction Structure

Diagrams courtesy of Wikipedia