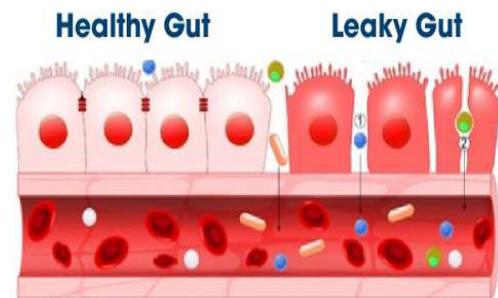


Our digestive tract is one of the primary places where our bodies interact with the ‘outside’ world. The lining of the small intestine is an important barrier, letting nutrients in and preventing bacteria, viruses, toxins, and other unwelcome substances from entering the body. In the process of digestion, we absorb nutrients from food while eliminating various toxins and other by-products produced in the digestion process.

A special layer of cells line the small intestine and are responsible for absorbing nutrients and protecting the body from harmful substances. This cell lining, if stretched out, would cover more than 300 square feet, or about the size of a studio apartment. Between each cell is a space called a “tight junction.” The health of the cells that line the small intestine, and the health of these tight junctions, are key to what is absorbed in the digestive tract and what is not.

What Is Intestinal Permeability?

Intestinal permeability is defined as how porous or leaky the small intestine lining is. A leaky lining occurs when the protective barrier of cells are damaged and no longer are tightly connected. While some intestinal permeability is normal, increased intestinal permeability (also referred to as a “leaky gut”) allows harmful substances, and partially digested food, to enter the bloodstream at higher levels than our bodies can often manage. Intestinal permeability can reduce the absorption of essential nutrients important for health.



When leaky gut occurs, the immune system can become activated and lead to inflammation, food reactions, and the increased likelihood of a variety of diseases. Some studies show that increased intestinal permeability may be an underlying cause of migraines, depression, and various autoimmune diseases, such as Celiac disease and rheumatoid arthritis.

What Causes Increased Intestinal Permeability?

There are many possible causes of increased intestinal permeability. Viral and bacterial infections, antibiotics and other medications, toxins, stress, inflammation, food intolerances, and imbalances in gut bacteria all have been suggested as causes. There are a variety of ways to address this, and your functional medicine provider may recommend dietary and other lifestyle changes as well as specific nutritional supplements to re-establish your intestinal barrier’s protective function.

References

1. König J, Wells J. Intestinal barrier function in health and disease. *Clin Transl Gastroenterol.* 2016 Oct 20;7(10):e196. doi: 10.1038/ctg.2016.54.
2. Farré R, Fiorani M. Intestinal permeability, inflammation and the role of nutrients. *Nutrients.* 2020;12(4):1185. doi:10.3390/nu12041185
3. Helander HF, Fändriks L. Surface area of the digestive tract – revisited. *Scand J Gastroenterol.* 2014 Jun;49(6):681–9. doi: 10.3109/00365521.2014.898326.
4. Turner JR. Molecular basis of epithelial barrier regulation: from basic mechanisms to clinical application. *Am J Pathol.* 2006;169(6):1901–1909. doi:10.2353/ajpath.2006.060681
5. Visser J, Rozing J. Tight junctions, intestinal permeability, and autoimmunity: celiac disease and type 1 diabetes paradigms. *Ann NY Acad Sci.* 2009;1165:195–205. doi:10.1111/j.1749-6632.2009.04037.
6. Bischoff SC, Barbara G. Intestinal permeability- a new target for disease prevention and therapy. *BMC Gastroenterol.* 2014;14:189. doi:10.1186/s12876-014-0189-7.
7. Karl JP, Margolis LM. Changes in intestinal microbiota composition and metabolism coincide with increased intestinal permeability in young adults under prolonged physiological stress. *Am J Physiol Gastrointest Liver Physiol.* 2017 Jun 1;312(6):G559–G571. doi: 10.1152/ajpgi.00066.2017.