

Information Sheet

Leaky Gut

Our gastrointestinal tract, or digestive system, is a highly co-ordinated, multi-layered system, stretching from our mouth to our anus. It is our first line of defence against potentially infectious substances entering the body. Each layer of our GI tract is populated by thousands of species of bacteria, viruses, and microbes, which together form our microbiota.

Our microbiota play an important role in helping to maintain the physical structure and health of our intestinal wall which plays a vital role in determining which foods and other substances are allowed to enter the body. When the intestinal wall becomes damaged and permeable it is termed intestinal permeability or 'leaky gut'.

Functions of the Digestive System

The first layer is called the mucosal layer (diagram 1), a highly selective permeable layer, which acts as a barrier separating the contents of the digestive tract from the body. It contains antimicrobial products that destroy potentially harmful bacteria and other pathogens and secretes the antibody Immunoglobulin A (IgA) which plays a key role in defending all mucosal surfaces. IgA is found in all mucous membranes of the body mainly in the respiratory and digestive tracts, in saliva, tears and breastmilk.

'Leaky Gut' Syndrome - Damaged

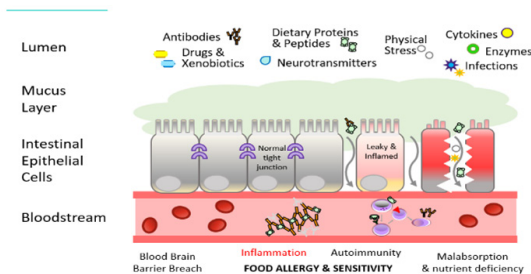


Diagram 1

What are known as intestinal epithelial cells lie beneath the mucosal layer. They regulate the transport of substances, as seen at the top of diagram 1, across and through the cells into and out of the body. They have a variety of functions including protection, secretion, absorption, excretion and sensory reception. Gateways called tight junctions sit between these cells and control substances both entering and leaving the body.

Interspersed within and between the mucosal layer and the epithelial cells are immunosensors called GALT (Gut Associated Lymphoid Tissue) that further contribute to immune defence and immune tolerance. Bile and digestive secretions further influence the overall health of the gut.

Leaky Gut

Any disruption to the complex interplay between the tissues, organs and signalling receptors of the digestive tract will contribute towards leaky gut and directly affect the immune system, the digestion of foods, and the release of nutrients for absorption.












It is important to highlight that leaky gut is a dynamic two-way process as it also permits the movement of fluid from the body back through the epithelial cells and into the gut washing away potentially life-threatening pathogens contained in the foods and liquids we consume. Of relevance to food sensitivity testing is that leaky gut allows poorly digested, large food molecules to access the bloodstream, stimulating the immune system and initiating a loss of immune tolerance. Factors affecting leaky gut are listed below.

The Inflammatory Response and Symptoms

When leaky gut occurs, foods and potentially infectious substances stimulate the production of IgG antibodies, the most abundant antibodies in the body, which are involved in the sampling, break down and elimination of all infectious substances. If IgG antibodies are built up faster than the body can remove them, immune complexes are formed, which are responsible for driving low grade chronic inflammation. This low grade chronic inflammation contributes to an individual's symptoms and the onset or aggravation of disease states.

A person's IgG immune response to foods can be measured using an IgG food sensitivity test. This allows those foods which stimulate an elevated response to be identified and removed or rotated in the diet.

Some of the Symptoms Associated with Leaky Gut

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|  | Abdominal bloating |  | Heartburn |
|  | Abdominal cramps and pain |  | Constipation, diarrhoea or alternating between both |
|  | Excess gas and wind |  | Gastritis and/or ulceration |
|  | Gastric reflux |  | Medical diagnosis of 'irritable bowel' syndrome |
|  | Headaches and migraine |  | Nausea |
|  | Increasing food sensitivities | | |

Factors Contributing Towards Leaky Gut

A diet low in plant fibres: A high fibre diet supports our gut microbiota which feed on the fibre and resistant starch from plant foods that we cannot digest. They ferment these fibres to produce substances called postbiotics which benefit the host, including B vitamins, Vitamin K and neurotransmitters

Gluten: Dietary gliadin, the major protein in gluten, contained in wheat, barley, and rye, directly leads to increased leaky gut by disrupting the tight junctions between the epithelial cells

Dairy: Consuming milk may increase gastrointestinal inflammation.

Stress: Both short- and long-term stressors directly affect leaky gut by altering the composition, function, and metabolic activity of the gut microbiota. These effects may be beneficial or detrimental depending on the type of stressor

Sleep: Both sleep disruption and short sleep duration are associated with gut dysbiosis and may contribute towards leaky gut

Exercise: Intense, vigorous exercise may enact changes to the composition of the gut microbiota contributing to intestinal barrier dysfunction. Moderate physical training with dietary interventions may improve intestinal health and gut microbiota composition

Medications: Medications, including non-steroidal anti-inflammatory drugs and antibiotics may affect microbial composition contributing to leaky gut

Alcohol: Alcohol increases the permeability of the intestinal lining, affecting intestinal immune homeostasis

Hypo or hyperchlorhydria (low or high gastric acid secretion)

Presence of H.Pylori bacteria

Sub-optimal enzyme secretion from the pancreas and/or villi in the small intestine, e.g., lactase

Problems with the synthesis and/or flow of bile

Dysbiosis – an imbalance in the microbiome – including the presence of parasites

Others may include; hormonal fluctuations, pregnancy, menopause, nutrient deficiencies e.g., Vitamin D, zinc, iron, glutamine, and Vitamin A.

Treatment Protocols

Strategies to improve barrier integrity and re-establish functional digestive system will be bespoke to each client and it is suggested that specialist nutritional advice is sought. Food sensitivity testing is one suggested strategy alongside the following:

Supplementation

- Broad spectrum probiotics (gut-beneficial microbial species) including Lactobacilli and Bifidobacterium to populate the GI tract
- L-Glutamine
- Optimal levels of specific vitamins and minerals e.g., vitamin C, vitamin A, zinc and magnesium,
- Digestive enzymes
- Omega 3 essential fatty acids

Stress management

- Coaching
- Counselling
- Meditation and relaxation
- Appropriate levels of exercise

Sleep hygiene

- Reduce exposure to blue light in the evenings
- Keep similar sleeping and waking hours
- Avoiding stimulants before bedtime
- Avoiding caffeine in the afternoon and evening

Dietary Strategies

- A wide range of colourful foods daily, organic where possible
- Unprocessed foods
- Fermented foods
- Low sugar, low saturated fat and low alcohol diets
- Predominantly plant based for high fibre, antioxidant and phytonutrient content
- Functional foods to support the gut such as root vegetables, stewed, unpeeled apples for pectin, and oats for soluble fibre content
- Carotenoid-rich orange, red and yellow fruits and vegetables for gut immune support

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