

Gut Microbiome and IBD

This information sheet is for people who want to learn about the relationship between gut health and inflammatory bowel disease (IBD).

Key points

- The gut microbiome includes hundreds of different species of microbes that live in the gastrointestinal tract
- There are both beneficial and potentially harmful microbes in the gut. It's important to have a healthy balance to support the immune system
- A healthy diet and active lifestyle can support a healthy gut microbiome

What is the microbiome and why is it important?

The microbiome is a collective term that refers to the community of all microbes (e.g. bacteria, fungi) that naturally live on and inside the human body. It also encompasses the genetic material of the microbes (i.e., their DNA) and the byproducts they produce (e.g., short-chain fatty acids). Each person's microbiome is unique to them.

The gut microbiome includes hundreds of different species of microbes that live in the gastrointestinal tract, mainly in the large intestine (colon). The gut microbiome can change in response to diet, medications, illness, and other lifestyle factors. Many of the microbes are beneficial for our health and work together to support our health. Having many different microbial species is important to maintain good health.

In the gut, microbes are responsible for: helping to digest food and absorb nutrients, regulating the immune system, protecting against harmful microbes (e.g. viruses), and producing compounds that are essential to our health, like vitamins and short-chain fatty acids.

The connection between the gut microbiome and IBD

People living with IBD typically have a lower variety of microbes in their gut microbiome. It's possible that this is because of inflammation caused by the disease. Normally, the gut is a low oxygen (anaerobic) environment. This environment supports a wide range of microbes that thrive without oxygen and prevents oxygen-tolerant microbes from taking over. This ensures there is a delicate and healthy balance of microbiota that can fight off harmful microbes (e.g., viruses).

However, when the gut is inflamed (such as in an IBD flare up), immune cell activity and tissue damage cause oxygen levels in the gut to increase. This oxygen-rich

environment allows oxygen-tolerant microbes to grow and multiply, creating an imbalance of microbes. This imbalance, known as dysbiosis, can make inflammation worse and reduce the gut's ability to fight off invasions from harmful microbes.

Another cause of dysbiosis for people living with IBD is related to the intestinal lining. The intestinal lining normally acts as a protective wall, keeping bacteria and other harmful substances from entering deeper layers of the gut. However, people living with IBD can often have inflammation that damages the intestinal lining. This impairs barrier function, allowing harmful bacteria to cross into the deeper gut tissue. The harmful bacteria trigger an inflammatory immune response, making it harder for the intestinal lining to heal. The result of barrier damage and dysbiosis is a chronic inflammatory cycle that is hard to get under control. It's unclear if dysbiosis is a cause or consequence of the inflammation in IBD, it's most likely a bit of both.

How can I keep my gut microbiome healthy?

In adulthood, the gut microbiome is relatively stable but can shift in response to changes in diet, lifestyle, medications, and disease. Consuming a healthy diet is one of the most important ways to keep your microbiome healthy. Gut microbes use nutrients from your diet to grow and carry out functions that support your health.

Eating a large variety of plant-based foods each week is essential to support a diverse range of microbes to grow in the gut that are resilient to harmful bacteria. A high fibre diet (25-30g a day) helps the growth of good bacteria in the gut and reduces the risk of constipation, bowel cancer, and other diseases. Fibre is a type of carbohydrate that is abundantly found in whole grains, fruit, vegetables, legumes (e.g., lentils), nuts, and seeds. You can also support your gut health by consuming probiotic foods such as yoghurt, sauerkraut, and tempeh, which contain live beneficial microbes.

For more detailed information, or to learn more about the factors that impact the microbiome and the microbiome treatments being researched for IBD, scan the QR code below to visit the Crohn's & Colitis Australia website.

For help or information

Scan QR code for website:



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