

The Gut-Brain Connection

By Stacey Machesney

Have you ever felt butterflies in your stomach, been in situations where you have felt nauseous or “gone with your gut”, if so, you’re most likely getting signals from your enteric nervous system, your “second brain”. The gut-brain connection is real. In this article, Stacey Machesney, Head of Health and Wellbeing at Irish Life, explores the Gut-Brain connection and looks at the foods that help gut health and our bodies’ emotional and cognitive functioning.



Communication between Gut and Brain



The gut brain axis (GBA) controls bidirectional communication between the central nervous system (CNS) and the enteric nervous system (ENS), linking emotional and cognitive centres of the brain with peripheral intestinal functions¹. The gastrointestinal tract is sensitive to emotion; anger, anxiety, sadness — these feelings can trigger symptoms in the gut. The health of your gut can have a huge influence on the health of your brain².

The Gut Biome

The “gut microbiome” refers to the trillions of micro-organisms found in the gastrointestinal tract, supporting the digestion and absorption of food. Research has shown many areas of health including, immune system, cardio-metabolic health, and digestive symptoms and conditions such as irritable bowel syndrome, inflammatory bowel disease and digestive cancers are linked to our microbiome³.

The gut microbiome may also affect brain health by producing brain chemicals and communicating with nerves that connect to the brain. For example, serotonin is an antidepressant neurotransmitter that’s mostly made in the gut⁴. Furthermore, the gut is physically connected to the brain through millions of nerves. Therefore, the gut microbiome may also impact brain health by helping control the messages that are sent to the brain through these nerves⁵.

It’s essential that we are feeding the many different species of gut bacteria to support a healthy microbiome.

¹ Carabotti, M., Scirocco, A., Maselli, M. A., & Severi, C. (2015). The gut-brain axis: interactions between enteric microbiota, central and enteric nervous systems. *Annals of gastroenterology*, 28(2), 203–209.

² Harvard Health Publishing (2021), The Gut Brain Connection. Available at: <https://www.health.harvard.edu/diseases-and-conditions/the-gut-brain-connection>

³ Valdes, A. et al. (2018) ‘Role of the gut microbiota in nutrition and health’, *British Medical Journal*, 361, Suppl1.

⁴ O’Mahony SM, Clarke G, Borre YE, Dinan TG, Cryan JF (2015). ‘Serotonin, tryptophan metabolism and the brain-gut-microbiome axis’. *Behavioural Brain Research* January 15; 277:32-48.

⁵ Forsythe P, Bienenstock J, Kunze WA. Vagal (2014). ‘Pathways for microbiome-brain-gut axis communication’. *Advances in Experimental Medicine and Biology* 2014; 817:115-33.

Prebiotics and Probiotics

Prebiotics are non-digestible food substances that come from types of carbohydrates, mostly fibre, that beneficial bacteria in your gut eat. They serve as food for your good bacteria that help growth. Good examples include bananas, onions, or oats.

Probiotics are live bacteria and yeast found in certain foods and supplements to support health benefits; they are good gut bugs. Good examples include natural yogurt, sauerkraut, and miso.

An imbalanced gut can impair your body's ability to absorb nutrients, regulate blood sugar, and store fat. Try to keep a regular intake of natural prebiotics and support our good gut bugs with a steady source of probiotics, ensuring that they survive and multiply at a greater rate than the 'bad bacteria'.



Role of Fibre

Fibre supports gut health by keeping our bowel habits regular, reducing constipation, and helping us to feel fuller for longer as it aids in the control of blood sugar levels. In a previous article [Type 2 Diabetes: A diet low in refined carbohydrates may help](#), I wrote about fibre's role in controlling blood sugar. Here, we are looking at how it helps maintain gut health.

As we know, fibre is split into soluble fibre or fermentable fibre and Insoluble or partially fermented fibre.

Soluble fibre. This type of fibre dissolves in water to form a gel-like material. It can help lower blood cholesterol and glucose levels. Soluble fibre is found in oats, peas, beans, apples, citrus fruits, carrots, barley, and psyllium⁶.



Insoluble fibre. This type of fibre aids the movement of material through your digestive system and increases stool bulk, so it can be of benefit to those who struggle with constipation. Sources include whole-wheat flour, wheat bran, nuts, beans, and vegetables⁶.



Benefits of Fibre:

- > Aids bowel movement and helps maintain bowel health
- > Lowers cholesterol levels
- > Controls blood sugar
- > Helps achieve and maintain a healthy weight
- > Supports healthy body functioning through the rich supply of micronutrients.
- > Regular dietary fibre intake may reduce the risk of cardiovascular disease and cancers.

Irish dietary guidelines state we should consume between 24-35g of fibre per day, shockingly up to 80% of Irish adults are not consuming enough dietary fibre⁷.

In Closing

It's important that we understand the gut-brain connection as it may contribute to anxiety and digestion problems. The brain has a direct effect on the stomach and intestines and vice versa. An upset tummy can send a signal to the brain, just as an anxious mind can signal the gut. Based on these observations, it's worth considering the role of psychologically based approaches and healthy diet to treat stomach issues, where there's no obvious physical cause, in addition to conventional medical treatments.



⁶ Mayo Clinic (2021), Dietary Fibre: Essential for a Healthy Diet. Available at: <https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/fiber/art-20043983>

⁷ Irish Nutrition and Dietetic Institute (2016). 'Fabulous Fibre.' INDI. Available at: https://www.indi.ie/images/fact_sheets/Fabulous_fibre_fact_sheet_2.pdf

Need ideas for adding more 'gut friendly' foods to your meals?
Check out my recipe for overnight oats:

Overnight Oats

Serves 6.

Ingredients:

- **300g Rolled Oats:** Make sure to use oats with no added sugar.
- **600 ml Coconut Milk:** You can use ordinary milk or other dairy-free milk alternatives – whatever way you like it or 600 ml Yogurt, a simple Greek yogurt, no added sugar, if you like it a bit creamier.
- **1 tbsp Chia Seeds:** Rich in fibre, antioxidants, minerals, and heart-healthy omega-3 fatty acids
- **1 tbsp Gogi Berries:** Loaded with nutrients to support healthy skins, improve mood, eye health and immune function
- **1 tbsp Sunflower Seeds:** Packed full of healthy vitamins and minerals, helping immune function and to reduce cholesterol
- **1 tbsp Honey or Maple Syrup:** Watch your portion size here
- **½ tsp of Cinnamon:** Chosen for additional flavour and its prebiotic properties.



Method:

Place all the ingredients into a bowl. Mix well, cover with clingfilm and leave overnight in the fridge. Mix in more milk to serve if it's too stiff, spoon into bowls and top with more seeds and fruit if you like. Overnight oats can be stored in an airtight container for up to five days in the refrigerator.



Takeaway

5 tips for Maintaining a Healthy Lifestyle

1. Mindful eating. Ensure we watch what we eat and manage our portion sizes
2. Stay Hydrated. Try having 2 litres or 8 glasses a day. Fibre works best when it absorbs water, making your stool soft.
3. Watch your alcohol intake which can irritate the digestive lining
4. Regular physical activity keeps us healthy and our bowel movement regular
5. Sleep is important for the body to rest and build

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Stacey Machesney is Head of Health & Wellbeing at Irish Life, where she leads the delivery of wellbeing solutions for Irish Life's 1.3 million customers. Irish Life Wellbeing helps organisations transform their aspirations for employee wellbeing programmes into a sustainable asset that demonstrates the strategic value of employee wellbeing. The practice draws on the experience of Irish Life's network of science, health, financial and sustainability professionals: combining insights, experience, and methodological rigour to help businesses and their employees maximise their health and wellbeing with improved lifestyle choices to effect long term behavioural change. Prior to her role with Irish Life, Stacey was the Head of Ireland at Spectrum Life, delivering wellness solutions for over 500,000 users across the UK & Ireland. Stacey's extensive experience in public health, HR leadership and health education drive her passion for creating impactful, measurable employee wellbeing solutions that achieve long-term success. To focus on her own health and wellbeing, Stacey enjoys cooking and competes with her mum, a food scientist, to produce the most nutritious recipes, sometimes sacrificing on taste.

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