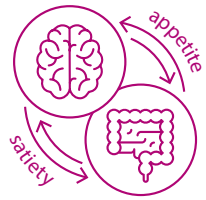




download

# DOES GUT MICROBIOTA INFLUENCE SATIETY?



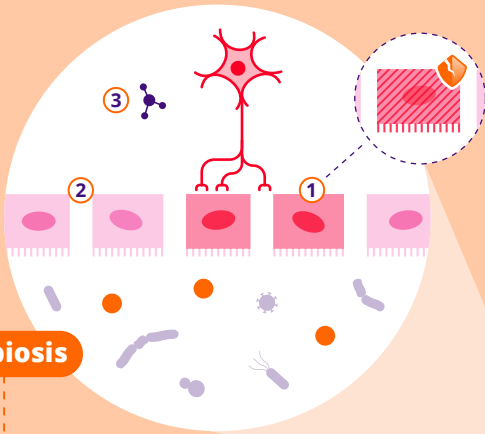
## WHAT IS SATIETY?

It is a state of noneating with an **absence of hunger** at the end of a meal.<sup>1</sup> This physiological process involves **several hormones** (leptin, insulin...) produced by **peripheral organs** (adipose tissue, pancreas...) <sup>2</sup> In the **gut**, intestinal cells sense food and release several hormones (GLP-1, PYY...) that act through the **brain** to **stop food intake** and **produce satiety**.<sup>3,4</sup>

## HOW THE GUT MICROBIOTA AFFECTS SATIETY ? <sup>3,5</sup>

### WHEN THE GUT MICROBIOTA IS IMBALANCED

Altered satiating mechanism, hyperphagia

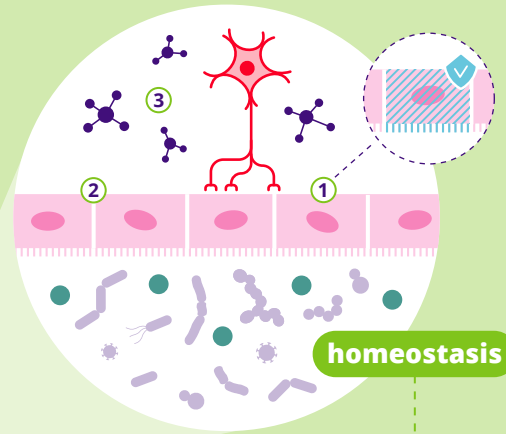


dysbiosis

- 1 inflammation
- 2 gut barrier permeability
- 3 decreased satiety hormone release
- 4 decreased signal sensibility

### WHEN THE GUT MICROBIOTA IS BALANCED

Satiety feeling, reduce food intake



homeostasis

- 1 balance immune system
- 2 gut barrier integrity
- 3 satiety hormone release
- 4 optimal signal sensibility

neurons hormones microbial metabolites\* : endotoxines (LPS) satiety-inducing metabolites (SCFA, ClnB...)

\*LPS: lipopolysaccharides  
SCFA: short-chain fatty acids  
ClpB: caseinolytic peptidase B

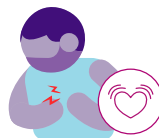
## DID YOU KNOW?

The gut microbiota produces several metabolites that can affect the regulation of satiety through the gut brain axis via multiple pathways.<sup>5</sup>

### ABNORMAL REGULATION OF APPETITE CAN LEAD TO AN INCREASED RISK OF... <sup>2,6</sup>



metabolic diseases  
overweight, obesity, T2D...



cardiovascular diseases

### HOW TO MAINTAIN A HEALTHY MICROBIOTA ?



omega-3 fatty acids <sup>3,7</sup>



prebiotics <sup>3,4</sup>



probiotics <sup>3,8</sup>



high-fiber diet <sup>5,6</sup>



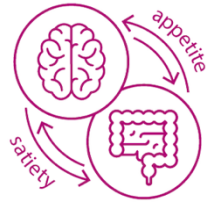
physical activity <sup>9</sup>





download

# DOES GUT MICROBIOTA INFLUENCE SATIETY?



## Sources

1. [Pickering J, and Halford J. "Hunger." Ed. Caballero, Benjamin, Paul Finglas, and Fidel Toldrà. \*Encyclopedia of food and health\*. Academic Press, 2016: 363-368.](#)
2. [Han H, Yi B, Zhong R, et al. From gut microbiota to host appetite: gut microbiota-derived metabolites as key regulators. \*Microbiome\*. 2021;9\(1\):16.](#)
3. [Pizarroso NA, Fuciños P, Gonçalves C, et al. A Review on the Role of Food-Derived Bioactive Molecules and the Microbiota-Gut-Brain Axis in Satiety Regulation. \*Nutrients\*. 2021;13\(2\):632.](#)
4. [Barakat GM, Ramadan W, Assi G, Khoury NBE. Satiety: a gut-brain-relationship. \*J Physiol Sci\*. 2024;74\(1\):11. Published 2024 Feb 17. doi:10.1186/s12576-024-00904-9.](#)
5. [Bastings JAJ, Venema K, Blaak EE, Adam TC. Influence of the gut microbiota on satiety signaling. \*Trends Endocrinol Metab\*. 2023;34\(4\):243-255.](#)
6. [Deehan EC, Mocanu V, Madsen KL. Effects of dietary fibre on metabolic health and obesity. \*Nat Rev Gastroenterol Hepatol\*. 2024;21\(5\):301-318.](#)
7. [Hamamah S, Amin A, Al-Kassir AL, Chuang J, et al. Dietary Fat Modulation of Gut Microbiota and Impact on Regulatory Pathways Controlling Food Intake. \*Nutrients\*. 2023;15\(15\):3365.](#)
8. [Déchelotte P, Breton J, Trotin-Piccolo C, et al. The Probiotic Strain \*H. alvei\* HA4597® Improves Weight Loss in Overweight Subjects under Moderate Hypocaloric Diet: A Proof-of-Concept, Multicenter Randomized, Double-Blind Placebo-Controlled Study. \*Nutrients\*](#)
9. [Ribeiro FM, Silva MA, Lyssa V, et al. The molecular signaling of exercise and obesity in the microbiota-gut-brain axis. \*Front Endocrinol \(Lausanne\)\*. 2022;13:927170.](#)

