

Skinny on the Outside, Fat on the Inside: How the Microbiome Can Tackle Asia's Hidden Health Challenge

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At first glance, Asia looks leaner and healthier than many parts of the world. Yet, beneath this appearance lies a paradox: many people who seem fit are quietly developing metabolic diseases.

Known as the “skinny-fat”^[1] phenomenon, or more precisely, being “thin on the outside, fat on the inside” (TOFI), many Asian adults carry higher levels of visceral fat, even at a normal body mass index (BMI). This hidden fat wraps around internal organs, compared to their Western counterparts^[2], puts them at a far greater risk of developing metabolic diseases such as type 2 diabetes, heart disease, and fatty liver – often without any outward signs.

This silent challenge has deep cultural and dietary roots. From steaming bowls of white rice to fragrant noodles, traditional Asian staples are often high on the glycaemic index (GI)[\[3\]](#). Over time, these fast-digesting carbohydrates can lead to glucose spikes, insulin resistance, and the gradual build-up of visceral fat.

But what if the solution to this regional health crisis isn't just about counting calories or eating less simple carbohydrates such as rice and noodles? The real key may lie in something microscopic yet profoundly powerful: the gut microbiome, a community of trillions of microorganisms. Addressing Asia's growing metabolic challenge requires a shift in how foods are formulated – moving beyond calorie reduction alone to supporting the body's underlying metabolic processes. Emerging science points to the gut microbiome as a crucial[\[4\]](#), and until recently underappreciated, ally in this mission.

The Gut Microbiome: The Missing Piece in Metabolic Health

The gut microbiome, acts as a command hub for many of the body's vital functions. It helps regulate digestion, nutrient absorption, fat storage, and even hormone production. In short, the state of our gut microbiota can directly shape our metabolic health.

A balanced and diverse microbiome supports better blood sugar control and helps the body respond more effectively to insulin [\[5\]](#). Conversely, when the microbiome becomes imbalanced, often due to poor quality diets, it can set off a cascade of metabolic disturbances, leading to inflammation and fat accumulation.

Prebiotic chicory root fibres, namely inulin and oligofructose, offer a natural and scientifically validated way to nurture this microbial ecosystem[\[6\]](#). These fibres selectively feed beneficial bacteria like Bifidobacteria and Lactobacilli, promoting a healthier gut environment that, in turn, supports better metabolic outcomes.

Clinical studies have shown that daily intake of chicory root fibre (from 3g/day already) significantly increases Bifidobacteria populations and improves intestinal regularity and comfort, while also supporting beneficial changes in appetite regulation and energy metabolism. These findings reinforce a powerful insight: supporting gut health from within is one of the most effective, evidence-backed ways to strengthen metabolic resilience.

From Gut to Brain: The Science of Feeling Full

Weight management has long been seen as a matter of discipline. But biology tells a different story – one that begins deep in the gut.

When prebiotic fibres are fermented by beneficial gut bacteria, they produce short-chain fatty acids (SCFAs) such as acetate, propionate, and butyrate. These SCFAs act as key metabolic messengers, stimulating the release of body-own hormones like GLP-1 (glucagon-like peptide 1) and PYY (peptide YY), which send satiety signals to the brain and help regulate appetite naturally. GLP-1, now widely recognised for its role in appetite control and weight management, underscores how deeply metabolism is influenced by the gut. This gut-brain signalling helps the body feel full for longer, reducing overeating and supporting calorie control in a natural, sustainable way. Unlike fad diets or restrictive regimens, this mechanism works with the body's own biology.

A systematic review of randomised controlled trials has confirmed that consumption of prebiotic chicory root fibre can significantly reduce body weight, BMI, and total body fat[\[7\]](#). These results demonstrate how microbiome support through prebiotics can form a practical, evidence-based tool for managing Asia's rising rates of metabolic syndrome.

Beyond Weight: Balancing Blood Sugar for a Healthier Future

The International Diabetes Federation projects that by 2050, one in eight adults globally will be living with diabetes – a figure heavily influenced by our carbohydrate-rich diets and urbanised lifestyles. While maintaining a healthy weight is one part of the equation, managing blood glucose is equally vital especially in Asia, where the prevalence of diabetes continues to climb.

Here too, the microbiome plays a pivotal role. GLP-1, the same hormone linked to satiety, also supports glucose control by enhancing insulin secretion (which lowers blood sugar) and reducing glucagon release (which raises blood sugar). This slows gastric emptying and prevents sharp post-meal glucose spikes. By naturally stimulating GLP-1, prebiotic chicory root fibres can therefore contribute to healthier blood sugar regulation[\[8\]](#).

There's also a direct formulation benefit. Chicory root fibres can partially replace sugar in recipes thanks to its mild, natural sweetness, maintaining texture and taste while reducing total sugar and calorie content. Clinical data from human trials show a clear dose-dependent relationship: the more sugar replaced with chicory root fibre, the lower the post-meal blood glucose

and insulin levels[9].

For Asian consumers, who are increasingly reading nutrition labels and seeking functional benefits in their food choices[10], these are meaningful differentiators. They align with a growing global trend toward foods that do more than simply nourish; they actively support long-term wellness.

A Smarter Future for Asian Food Innovation

Asia's "skinny-fat" paradox is more than a medical statistic; it's a defining challenge for the region's food industry. Health-conscious consumers are no longer satisfied with lower-calorie or less-sugar claims, they are seeking foods that support digestion, energy, and metabolic balance from within.

Prebiotic chicory root fibres, such as inulin and oligofructose, are at the forefront of this shift. They offer manufacturers the functionality to reduce sugar and calories while enhancing taste and mouthfeel, as well as the scientific credibility to deliver proven metabolic benefits.

From dairy alternatives and beverages to snacks and baked goods, the applications are broad, and the impact can be significant. Every product that integrates prebiotic fibres brings the potential to make a tangible difference in public health – one that addresses not just what consumers see in the mirror, but what happens deep within their biology.

The future of food innovation for Asia lies in this intersection of taste, science, and wellbeing. By leveraging the power of the microbiome, manufacturers can help reshape the region's metabolic health landscape one gut-friendly, fibre-enriched product at a time.

[1] <https://blog.beneo.com/find-out-what-skinny-fat-body-composition-means>

[2] Lim U, Ernst T, Buchthal SD, Latch M, Albright CL, Wilkens LR, et al. Asian women have greater abdominal and visceral adiposity than Caucasian women with similar body mass index. *Nutr Diabetes*. 2011;1:e6. doi: 10.1038/nutd.2011.2.

[3] <https://annals.edu.sg/high-glycaemic-index-gi-of-asian-diet-what-are-the-clinical-implications/>

[4] <https://www.nature.com/articles/s44324-025-00066-1>

[5] Menafrà D, Proitano M, Tecce N, Pivonello R, et al. Diet and gut microbiome: Impact of each factor and mutual interactions on prevention and treatment of type 1, type 2, and gestational diabetes mellitus. *Human Nutrition & Metabolism*. 2024;38. <https://doi.org/10.1016/j.hnm.2024.200286>

[6] Jackson PPJ, Wijeyesekera A, Theis S, Van Harsselaar J, Rastall RA (2023) Effects of food matrix on the prebiotic efficacy of inulin-type fructans: a randomised trial. *Beneficial microbes*. Published 29 August 2023: <https://brill.com/view/journals/bm/aop/article-10.1163-18762891-20220120/article-10.1163-18762891-20220120.xml>

[7] Reimer RA, Theis S, Zanger YC. The effects of chicory inulin-type fructans supplementation on weight management outcomes: systematic review, meta-analysis and meta-regression of randomized controlled trials. *Am J Clin Nutr*. 2024 Sep 21:S0002-9165(24)00751-2. doi: 10.1016/j.ajcnut.2024.09.019. Epub ahead of print. PMID: 39313030.

[8] <https://blog.beneo.com/what-is-glp-1/>

[9] Lightowler, Helen & Thondre, Sangeetha & Holz, Anja & Theis, Stephan. (2018). Replacement of glycaemic carbohydrates by inulin-type fructans from chicory (oligofructose, inulin) reduces the postprandial blood glucose and insulin response to foods: report of two double-blind, randomized, controlled trials. *European Journal of Nutrition*. 57. 10.1007/s00394-017-1409-z.

[10] <https://www.innovamarketinsights.com/trends/functional-health-trends-in-asia-pacific/>