



The Influence of Steviol Glycosides on the Human Microbiome

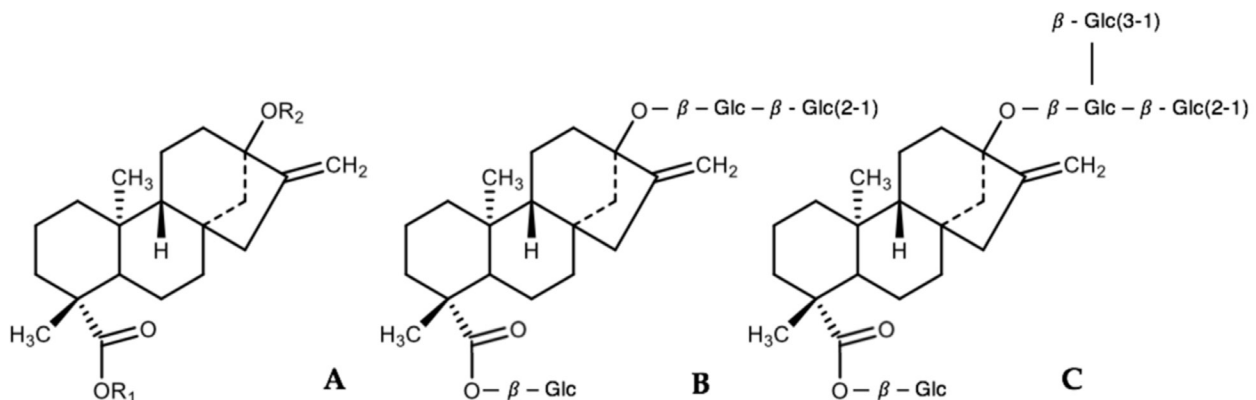
By Thom King – Chief Innovations Officer Icon Foods



Steviol glycosides, which are natural sweet constituents derived from the leaves of the *Stevia Rebaudiana* plant, have garnered considerable velocity as low-calorie sugar substitutes. This paper aims to provide an in-depth examination of the effects of steviol glycosides on the human microbiome, focusing particularly on their influence on microbial diversity, gut health, and potential implications for metabolic health and disease prevention.

The human microbiome, an intricate and diverse ecosystem comprised of trillions of microorganisms inhabiting the gastrointestinal tract, all advocating for you, play a fundamental role in various physiological processes, including digestion, metabolism, and the regulation of the immune system. [Recent scientific investigations](#) have illuminated the minimal impact that steviol glycosides have on the composition and functionality of the microbiomeⁱ where other non-nutritive sweeteners have had a [deleterious effect on the microbiome](#)ⁱⁱ. Steviol glycosides, primarily characterized by compounds such as stevioside, rebaudioside M and rebaudioside A, present a fascinating avenue of research to explore how these non-nutritive sweeteners might, in an adjacent manner, influence gut microbial communities and overall health outcomes.

Steviol Glycosides: Composition and Health Benefits



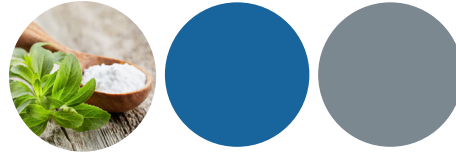
Steviol glycosides are naturally occurring compounds notable for their extraordinary sweetness, being up to 300 times sweeter than sucrose, yet providing negligible caloric content. This unique characteristic positions them as an appealing option for formulators and manufacturers aiming to create products that appeal to consumers looking to reduce their added sugar and caloric intake while still enjoying sweet flavors. Emerging research suggests that steviol glycosides may confer a range of health benefits, including anti-inflammatory effects, potential regulation of blood glucose levels, and support for effective weight management.



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Effects of Steviol Glycosides on the Microbiome



Microbial Diversity [Current studies indicate](#) that the consumption of steviol glycosides may positively influence the diversity of gut microbiotaⁱⁱⁱ. Some investigations reveal that these compounds can stimulate the proliferation of beneficial bacterial species, such as Lactobacillus and Bifidobacterium, which are well-known for their associations with improved gut health and bolstered immune responses.

Prebiotic Potential [Studies have proposed](#) that steviol glycosides may exhibit prebiotic characteristics, acting as substrates for beneficial gut bacteria^v. This action may lead to the production of short-chain fatty acids (SCFAs), which are associated with a wide array of health benefits, such as anti-inflammatory effects and improved gut barrier function, thus contributing to overall gastrointestinal health and stability.

Metabolic Health The microbiome is intricately linked to various metabolic processes. [Preliminary evidence suggests](#) that steviol glycosides may modulate gut microbiota in ways that enhance glucose metabolism and help diminish insulin resistance^{iv}. Such modulation could be particularly advantageous for individuals struggling with metabolic disorders, including obesity and type 2 diabetes, potentially offering new avenues for therapeutic intervention.

Antimicrobial Properties Some research indicates that steviol glycosides may carry antimicrobial effects that could alter the composition of the gut microbiome. By selectively inhibiting the growth of pathogenic bacteria, steviol glycosides may play a role in maintaining a healthier microbial balance within the gastrointestinal tract, potentially reducing the risk of dysbiosis and associated health issues.

Potential Risks and Considerations

While the potential benefits of steviol glycosides are promising, it is essential to consider the possible risks associated with their consumption. Certain individuals may experience gastrointestinal discomfort or adverse reactions when consuming high doses of steviol glycosides. Additionally, [one article asserts](#) that stevia leaves which are not GRAS approved and stevioside and rebaudioside A which are diterpene glycosides and the resulting aglycone moiety^{vi}, steviol aglycon which is the principal metabolite, has been reported to be mutagenic. [Wide use of stevia in Japan for more 30 years](#) did not produce any known deleterious side effects^{vii}.

The interaction between steviol glycosides and the human microbiome represents a promising and rapidly evolving area of research that may yield significant insights into dietary strategies aimed at enhancing health outcomes. Current evidence suggests that steviol glycosides may positively influence microbial diversity and metabolic health. However, comprehensive and longitudinal studies are essential to fully elucidate these effects and their broader implications for human health and well-being.

As stevia technology evolves and the market continues to shift to clean label sugar reduction, it presents significant opportunities for you and Icon Foods, to pave a way for a more health-focused food ingredients.

Reach out to your Icon Foods representative for SteviaSweet RebM, RebA stevia extracts, samples, documentation formulation and usage guidance. Since 1999 Icon Foods has been your reliable supply chain partner for sweeteners, fibers, sweetening systems, inclusions and sweetness modulators. Taste the Icon difference.



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