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The Interaction between Metabolome and Microbiome in Nutrition

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Message from the Guest Editor

The human gastrointestinal tract is host to trillions of microbes with a combined genetic potential ten times that of their human host. These gut-resident microbes orchestrate a multitude of activities, resulting in an array of specialized metabolites and bioactive molecules. Diet plays a significant role in shaping this microbial community, while simultaneously serving as a substrate for the generation of microbially produced metabolites. This diet–microbe–metabolite interaction exerts a far-reaching influence on human health and susceptibility to disease. Although the gut microbiome has been implicated in metabolic diseases, defining the specific mechanisms that are altered has proven challenging. Recognizing the pivotal metabolic role played by the gut microbiome in preserving host health or predisposing individuals to disease underscores the need for a deeper understanding of how this complex, dynamic and personalized system interacts with host physiology. This involves an elucidation of diet-responsive microbes, their metabolic outputs, and an understanding of how these bioactive molecules interact with the host's metabolic processes.



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