Special Issue

Role of Dietary Nutrients in the Modulation of Gut Microbiota

Message from the Guest Editors

The interactions between diet, gut microbiota, and host health are intricate and multifaceted. Dietary patterns significantly influence the composition and function of the gut microbiota, which in turn affects host health through the production of various metabolites. These metabolites can have both beneficial and adverse effects on the host. Different components of the diet, such as protein, saturated and unsaturated fats, carbohydrates, and fibre influence the abundance of different types of bacteria in the gut, thereby regulating the gut microbiota's impact on health and disease. Emerging research highlights how gut microbiota also mediate immunomodulation and communicate with distal organs via the lymphatic and circulatory systems. This "common mucosal response" suggests that the gut microbiota and their metabolites influence not only local intestinal immunity but also immune responses in distant tissues, such as the lungs. Although the precise mechanisms remain unclear, systemic propagation of bacterial-derived components, metabolites, and migrating immune cells is implicated in this inter-organ communication.

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