Abstract

Introduction: Advances in tools for molecular investigations have allowed deeper understanding of how microbes can influence host physiology. A very interesting field of research that has gained attention recently is the possible role of gut microbiota in the development of obesity and metabolic disorders. Objective: The aim of this review is to discuss mechanisms that explain the influence of gut microbiota on host metabolism. Results and discussion: The gut microbiota is important for normal physiology of the host. However, differences in their composition may have different impacts on host metabolism. It has been shown that obese and lean subjects present different microbiota composition profile. These differences in microbiota composition may contribute to weight imbalance and impaired metabolism. The evidences from animal models suggest that it is possible that the microbiota of obese subjects has higher capacity to harvest energy from the diet providing substrates that can activate lipogenic pathways. In addition, microorganisms can also influence the activity of lipoprotein lipase interfering in the accumulation of triglycerides in the adipose tissue. The interaction of gut microbiota with the endocannabinoid system provides a route through which intestinal permeability can be altered. Increased intestinal permeability allows the entrance of endotoxins to the circulation, which are related to the induction of inflammation and insulin resistance in mice. The impact of the proposed mechanisms for humans still needs further investigations. However, the fact that gut microbiota can be modulated through dietary components highlights the importance to study how fatty acids, carbohydrates, micronutrients, prebiotics, and probiotics can influence gut microbiota composition and the management of obesity. Gut microbiota seems to be an important and promising target in the prevention and treatment of obesity and its related metabolic disturbances in future studies and in clinical practice.

Keywords

Gut microbiota, Obesity, Intestinal permeability, Inflammation, Endocannabinoid system.