Intermittent fasting and gut health: Effects on microbiota and obesity.

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Introduction

Intermittent fasting (IF) has gained significant attention as a dietary strategy for weight management, metabolic health, and overall well-being [1]. Among its many potential benefits, its impact on gut health, particularly the gut microbiota, has become a topic of interest. Gut microbiota, the diverse population of microorganisms living in the gastrointestinal tract, plays a crucial role in various physiological processes, including digestion, immune function, and metabolism [2]. Recent research suggests that intermittent fasting may influence gut microbiota composition and activity, which in turn could affect body weight and obesity-related outcomes [3].

Intermittent fasting involves alternating periods of eating and fasting, with various approaches such as time-restricted feeding (e.g., eating only within an 8-hour window) or alternate-day fasting [4]. This eating pattern has been shown to impact the gut microbiota in unique ways, primarily by altering the availability of nutrients during fasting periods. Studies have demonstrated that the gut microbiota is highly sensitive to dietary patterns, and the periods of fasting associated with IF can lead to changes in microbial composition, diversity, and function [5].

One of the most notable effects of intermittent fasting on gut health is the promotion of microbial diversity. A more diverse gut microbiota is generally considered beneficial for health, as it is associated with enhanced resilience against diseases, including obesity [6]. Fasting periods may provide an environment in which certain beneficial microbes, such as Bacteroidetes, can thrive [7]. These bacteria are known for their ability to break down complex carbohydrates and produce short-chain fatty acids (SCFAs), which are critical for maintaining gut health and regulating energy balance. SCFAs, particularly butyrate, acetate, and propionate, play a role in reducing inflammation, improving intestinal barrier function, and influencing the metabolism of fats and sugars [8].

Intermittent fasting's impact on obesity is closely linked to its effects on the gut microbiota. The gut microbiota influences how the body processes and stores fat, and imbalances in microbial composition can lead to weight gain and increased fat deposition [9]. By promoting a healthier gut environment, intermittent fasting may enhance the body's ability to manage weight. Additionally, intermittent fasting can lead to reduced calorie intake and improved insulin sensitivity, both of which are important factors in preventing obesity [10].

Conclusion

Intermittent fasting shows promise as an effective dietary strategy for improving gut health by influencing the composition and diversity of the microbiota. Through fasting periods, the gut environment can shift to favor beneficial bacteria, such as Bacteroidetes, while reducing harmful ones linked to obesity, like Firmicutes. These changes contribute to better metabolic regulation, enhanced intestinal barrier function, and reduced inflammation, which are crucial factors in managing weight and preventing obesity.

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