

Does Microbiota of the Gut have a Role in Obesity Treatment?

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Obesity and its complications are now considered global health problems. The main reason behind the incidence of obesity is the altered balance in energy between energy intake and energy expenditure due to unhealthy food choices and sedentary lifestyle. Other factors such as: environmental, genetic, neural hormonal functions and inflammation. It has been suggested that another cause of obesity is the changes in gut microbiota, and unhealthy diet with the influence of genetic makeup. They can play roles in obesity etiology which if we understand; they can be used as therapeutic approaches to treatment of obesity. Probiotics or microbiota are live microorganisms found in the gut which have health benefits on the host. They have many beneficial functions including of reduction of hypertension, improvement lipid profile and enhancement of the immune system. There is a general agreement that the gut microbiota is involved in the occurrence obesity through dietary carbohydrate fermentation, lipogenesis, and an increase in energy storage. Also, disruptions in hormones and neurotransmitters secretions can affect control food intake and the regulation of energy balance.

Recent studies have reported the possible effect of different probiotics on over-weight and obesity as well as other comorbidities. Probiotics or gut microbiota have shown that they can play an important role in treatment of obesity by affecting energy utilization and nutrient absorption in the gut. It has been also demonstrated that there are differences in intestinal microbiota with regard to strains of the microorganisms and their concentrations in obese, when compared to lean persons. The gut microbiota represents the sum of all bacteria that are present in the gastrointestinal tract starting from the oral cavity and increasing in its density along the small and large intestines. Increase of some gut bacterial strains such as the genera *Bacillus*, *Escherichia*, and *Propionibacterium* and decrease of the other gut bacterial genus including *Bifidobacterium* have been shown to be associated with obesity.

In another study, it has demonstrated that the composition and diversity of the gut microbiota is altered in obese rodents and humans when compared to lean counterparts.

That restoration of the strains of the micro-organisms and their concentrations in the gut may result in corrections the obese phenotype and associated metabolic defects. The best way to achieve this is through the use of prebiotics, probiotics, and synbiotics.

More studies revealed have the effect of probiotics supplementation on obesity-associated consequences in vitro, in vivo, and in human clinical studies through treatment of underlying causes of obesity especially those with interaction between microbiome and obesity. Anti-obesity action of probiotics might be associated with their ability to alter the intestinal microbiota, remodeling of energy metabolism, alter the expression of genes related to thermogenesis, glucose metabolism, and lipid metabolism, and change the parasympathetic nerve activity and mechanisms implicated in the modulation of gut microbiota and its subsequent impact on obesity development.

Further studies are needed to further discover the important role and the mechanism of microbiota in treatment of obesity before they can be rationally prescribed for the prevention or treatment of obesity. These studies must also include the best strains of probiotics to be

used and their dosages. Playing on the main causes of obesity such as selecting the healthy diet and modifying life-style factors will be the best approach to the obesity problem.

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