Gut Microbiota and Dietary interventions on TD2M

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Abstract

In recent years, mounting scientific and academic evidence has highlighted the influence of gut bacterial communities on human health. Microorganisms (bacteria, viruses, fungi, and other life forms) are collectively known as the microbiome. Dysbiosis, alteration in the amount and function of the intestinal microorganisms is correlated with the etiology of chronic non-communicable disease Type 2 Diabetes Mellitus (T2DM).

Over the years, evidence has been collected on the involvement of dysbiosis in the occurrence of insulin resistance and the development of a chronic inflammatory process. Disruption of the structure of the microbiota is commonly observed in disease conditions. Concerning diabetes, changes in the Bacteroidetes/ Firmicutes ratio were found to correlate with plasma glucose concentration.

Microbial genes, proteins, and metabolites influence host metabolism by altering gluconeogenesis, glycogenolysis, lipogenesis, inflammation, and hormone action. It has been consistently observed that expression of proinflammatory cytokines is subsequently commonly followed by insulin resistance as well, hence making cytokines an important area of investigation when considering T2DM risk, onset, and disease management. Based on this approach, the microbiome and inflammation have been a focus of study when looking for causes and treatments regarding obesity and T2DM. This review aims to examine the present literature and to relieve the correlation between the gut microbiota composition and the insurgence or progression of chronic T2DM and to examine the effects of dietary interventions on disease.

Image



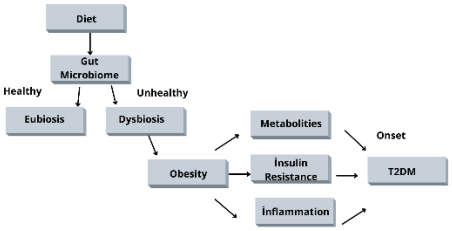


Figure 1: Chart illustrating the effect of diet on the microbiome and the relationship leading to increased risk for the development of type 2 diabetes mellitus (T2DM).

Recent Publications

1. Noce A., Marrone G., Di Daniele F., Ottaviani E., Jones G.W., Bernini R., Romani A. and Rovella V. (2019) Impact of Gut Microbiota Composition on Onset and Progression of Chronic Non-Communicable Diseases, Nutrients, 11, 1073;
2. Velmurugan, G., Ramprasath, T., Gilles, M., Swaminathan, K., Ramasamy, S. (2017) Gut Microbiota, Endocrine Disrupting Chemicals, and the Diabetes Epidemic, Review Trends in Endocrinology & Metabolism, 28(8):612-625;
3. Sharma, S. And Tripathi, P. (2018) Gut microbiome and type 2 diabetes: where we are and where to go? J Nutr Biochem 63: 101-108.
4. Finlay, B.B. and CIFAR Humans and the Microbiome (2020) Are noncommunicable diseases communicable? Science 367 (6475), 250-251
5. Hills, R. D., Pontefract, B. A., Mishcon, H. R., Black, C. A., Sutton, S. C., Theberge, C. R. (2019) Gut Microbiome: Profound Implications for Diet and Disease, Nutrients 11(5):1013

Biography

Leila Yusufoglu has the stimuli and believes that functional nutrition is the key point of improved health and wellbeing. After graduating from Bahcesehir University bachelor's degree she began her career by assisting RD Emel Unutmaz Duman. There she had the opportunity to work with individuals with chronic non-communicable diseases, IBS, metabolic syndrome, etc. Now she aims to apply for a master's degree and get specialized in her biggest passion: nutrition and gastroenterology field and continue her researches on human-associated microbiota as she believes that the gut-brain axis is the future itself.

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Notes/Comments: