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The role of probiotics in the pathogenesis of metabolic disorders

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Metabolic disorders present an increasing public health concern and can significantly undermine an individual's quality of life. Over the last decade, dynamic changes in dietary nutrient ingestion have rapidly increased the prevalence of metabolic disorders. Recently, scientists have proposed that metabolic disorders might result from an alteration in gut microbiota composition. The term "probiotic" originates from the Greek word meaning "for life". In 1989, Fuller defined the term probiotic as "a live microbial feed supplement which beneficially affects the host animal by improving its intestinal balance". It is well established that five bacterial phyla, firmicutes, bacteroidetes, actinobacteria, proteobacteria, and verrucomicrobia, are dominant components of the gut microbiota. More than 90% of the bacterial populations are gram-negative anaerobes and include the predominant genera bacteroides, eubacterium, bifidobacterium, and fusobacterium. Diet controls the composition of these bacteria, which are crucial in the development of metabolic disorders. Accumulating evidence suggests that supplementation of probiotics and prebiotics could have preventative and therapeutic effects on CVD due to a reduction in total serum cholesterol, low-density lipoprotein (LDL-cholesterol), and inflammation. In particular, changes of gut microbiota composition are strongly associated with increased adiposity, cell dysfunction, metabolic endotoxemia, systemic inflammation]. The change in intestinal microbiota and the reduced bacterial diversity were also observed in obese conditions. The change of these bacteria compositions increases susceptibility to infections, immune disorders, inflammation, oxidative stress and insulin resistance, events that are mediated by metabolic endotoxemia, which involves exposure to noxious intestinal products, particularly lipopolysaccharides. Consequently, the present review aimed to provide an objective perspective of the current knowledge regarding the impacts of food constituents on gut microbiota and health.

Biography

Gulay Ciftci is an Expert in Molecular Biochemistry and Proteomics. She finished PhD at Ankara University, and now she works as an associate professor at Ondokuz Mayıs University, Samsun, Turkey. She focuses on working hormones, proteins and genes.

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