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Probiotics and Prebiotics on Epigenetic Regulation for Clinical Practice

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Epigenetics is generally referred to as the study of mechanisms that alter gene expression without altering the primary DNA sequence. Epigenetic mechanisms are heritable and reversible and involve changes in DNA methylation, histone modifications and small noncoding microRNAs (miRNAs). Interestingly, epigenetic alterations are reversible, but they have the potential to alter the transcriptome profile. Probiotics and their metabolites can alter the population composition of gut bacterial species that can, in turn, alter the fermentation metabolites, particularly SCFAs. Several lines of evidence indicate that SCFAs may serve as epigenetic drugs or HDAC inhibitors that play an important role as gut modulator. Numerous bioactive dietary components, namely curcumin (turmeric), genistein (some pulses and soybean), gallic acid, ellagic acid and epigallocatechin-3-gallate, polyphenols and resveratrol (e.g. tea, some vegetables and fruits) and their gut metabolites interact with the cellular genome and metabolome of the host. The aim of this presentation is to outline the epigenetic mechanisms of prebiotics and probiotics, microbiota composition and other environmental factors in determining epigenetic changes and their short- and long-term effects in clinical practice.

Biography

Rita Castro is a Nutritionist and Co-founder at EPIGENES; Author and speaker: Personalized Nutrition, Nutritional Epigenomics, Nutrigenomics/Nutrigenetics with the focus on clinical practice. Co-author of the books (only in Portuguese), published in Brazil: "Alvos Genéticos e Epigenéticos: Estratégias Nutricionais Eficientes" (2017); "Reprogramando seus genes pela alimentação" (2018); "Reprogramando seu intestino" (2019).

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