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Phytonutrients on Epigenetic Regulation for Longevity

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. Plant foods contain thousands of natural chemicals, these are called phytonutrients or phytochemicals. "Phyto" refers to the Greek word for plant, these chemicals help protect plants from germs, fungi, bugs and other threats. Epidemiological studies highlight the potential benefits of diets rich in phytonutrients for disease prevention. Emergent evidence suggests that the health benefits from plants are attributed to their bioactive compounds such as Polyphenols, Terpenoids and Alkaloids which have several physiological effects on the human body. In recent years, there has been a great deal of attention toward the molecular machinery relevant to age-related progression controlled through the external intervention of polyphenols- an epigenetic-modulating diet. Natural products modulate cellular longevity through histone post-translational modification. A better understanding of the mechanisms of action of phytochemicals may provide important insights to delay aging and prevent chronic diseases. The aim of this presentation is to outline the epigenetic mechanisms of phytonutrients in longevity process.

Biography

Rita Castro is a nutritionist and has completed M.Sc degree at University of Sao Paulo. She is the scientific director of Epigenes, an educational company in Brazil about Personalized Nutrition, Nutritional Epigenomics, Nutrigenomics/Nutrigenetics with the focus on clinical practice. She is a co-author of the books (only in Portuguese), published in Brazil: "Genetic and Epigenetic Targets: Effective Nutrition Strategies" (2017); "Reprogramming their genes for food" (2018); "Reprogramming Your Gut" (2019).