

Preventive Epigenetic Mechanisms of Functional Foods for Type 2 Diabetes

ABSTRACT

Type 2 diabetes (T2D) is a growing global health problem that requires new and effective prevention and management strategies. Recent research has highlighted the role of epigenetic changes in the development and progression of T2D, and the potential of functional foods as a complementary therapy for the disease. This review aims to provide an overview of the current state of knowledge on the preventive epigenetic mechanisms of functional foods in T2D. We provide background information on T2D and its current treatment approaches, an explanation of the concept of epigenetics, and an overview of the different functional foods with demonstrated preventive epigenetic effects in T2D. We also discuss the epigenetic mechanisms by which these functional foods prevent or manage T2D, and the studies that have investigated their preventive epigenetic effects. In addition, we revisit works on the beneficial influence of functional foods against the programming and complications of parentally-triggered offspring diabetes. We also suggest, albeit based on scarce data, that epigenetic inheritance mechanistically mediates the impacts of functional nutrition against the metabolic risk of diabetes in offspring. Finally, our review highlights the importance of considering the preventive epigenetic mechanisms of functional foods as a potential avenue for the development of new prevention and management strategies for T2D.