

# Nutritional Effects of Zinc on Metabolic Syndrome and Type 2 Diabetes: Mechanisms and Main Findings in Human Studies

Ruz, Manuel

Carrasco, Fernando

Rojas, Pamela

Basfi-fer, Karen

Hernández, Maria Catalina

Pérez, Alvaro

© 2019, Springer Science+Business Media, LLC, part of Springer Nature. Zinc (Zn) plays crucial roles in mammalian metabolism. There is increasing interest about the potential beneficial effects of Zn on the prevention or treatment of non-communicable diseases. This review critically analyzes the information related to the role of Zn on the metabolic syndrome (MetS) as well as type 2 diabetes (T2D), and summarizes the biological basis of these potential effects of Zn. There are several mechanisms by which Zn may help to prevent the development or progression of MetS and T2D, respectively. Zn is involved in both insulin secretion and action in peripheral tissues. Specifically, Zn has insulin-mimetic properties that increase the activity of the insulin signaling pathway. Zn modulates long-chain polyunsaturated fatty acids levels through its action on the absorption of essential fatty acids in the intestine and its subsequent desaturation. Zn is also involved in both the assembly of chylomi