Review

Nutritional and Methodological Perspectives of Zinc Ions and Complexes - Physiological and Pathological States

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Zinc, an essential element playing crucial roles in numerous physiological, but also pathological processes, is still one of the most studied elements. The main importance of this metal is especially based on the structural role of zinc ions in many proteins including the transcription factors, antioxidant enzymes, and metallothioneins. Due to the role of zinc in many crucial physiological processes, its homeostasis must be intensively controlled. The controlling mechanisms are based especially on the zinc transporters and low-molecular proteins metallothioneins (MT). Zinc deficiency has been related with different state of diseases. Here, we primarily aim our attention to zinc and nutrition reviewing the whole process from intake to determination of this metal. The function of zinc ions in proteins with particular emphasis to oxidative stress is discussed followed by intake mechanisms and the role of zinc ions in both physiological and pathological processes. Finally, we summarized the assays used for detection of zinc in complex biological matrices.

Keywords: Zinc; biomarker; nutrition; health; disease; metallothionein; spectroscopy

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