

Zinc and its importance for organisms

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Received: 30.1.2015 / Accepted: 9.3.2015 / Published: 1.4.2015

ABSTRACT

Zinc (Zn) is essential element, which plays important role in biosynthesis and stabilization of fundamental proteins and DNA. Further, it was revealed that Zn is connected with more than 300 enzymatic reactions. Insufficient amount of Zn in food leads to alterations of neuronal functions, and alterations in physical and psychological development. Into cell, Zn is transported mostly through ZiP1 transporter and intracellularly is further utilized into proteins structure. The control of Zn equilibrium is carried out by metallothionein proteins, which contain cystein residues that exhibit high affinity towards metals, and thus can maintain the redox state.

One of the most crucial utilization of Zn in organism is its incorporation into protein structure to form zinc finger motif. Zn finger motif (ZnF) plays substantial role in stabilization of molecular structure and proper functions of transcription factors. Zn finger is formed by simple amino acid sequence, using duo of histidines and cysteines for zinc stabilization (Fig. 1).

ZnF motifs are highly stable structures which rarely undergo conformational changes, which can be used in the design and preparation of artificial ZnF proteins with high affinity to a specific sequence for use in the treatment of a wide spectrum of diseases.

Keywords: Metals; Transcription factor; Signalling; Zinc finger;

Acknowledgments

Financial support from CEITEC CZ.1.05/1.1.00/02.0068, is highly acknowledged.

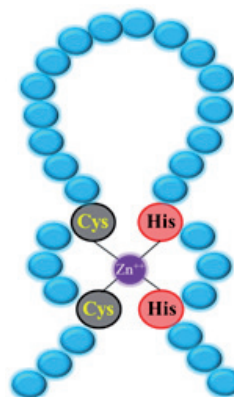


Figure 1.: Schematic drawing of secondary structural motif - ZnF



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