

Stability and thermodynamics of Zn(II)-cysteinemethylester and histidinemethylester system – Relevance to zinc core in transcription factor IIIA

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Recently, much attention has been paid to a novel property of zinc in the putative formation of 'zinc fingers'. The requirements for zinc in the regulation of gene expression is exemplified by transcription factor IIIA (TF IIIA). TF IIIA is a zinc-cysteine protein, which contains 'zinc fingers' that bind to DNA. 'Zinc fingers' are regions of protein containing four residues of histidine and/or cysteine that are coordinated to zinc in a tetrahedral configuration and form a loop that can take part in protein nucleic acid interactions^{1,2}. Thus the zinc-core, consisting of Zn-cysteine-histidine residues, has an important role in the stabilization of these 'zinc fingers'. Given the ubiquitous occurrence of 'zinc fingers' in biological function, the stability and thermodynamic parameters associated with the interaction of zinc with cysteinemethylester and histidinemethylester as a model for zinc core were assessed. The various factors responsible for the formation and stabilization of the core were identified.

References

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