

## **Effect of Low Temperature on Structure and RNA Binding of E.coli CspA: A Molecular Dynamics Based Study**

**Authors :** Amit Chaudhary, B. S. Yadav, P. K. Maurya, A. M., S. Srivastava, S. Singh, A. Mani

**Abstract :** Cold shock protein A (CspA) is major cold inducible protein present in Escherichia coli. The protein is involved in stabilizing secondary structure of RNA by working as chaperone during cold temperature. Two RNA binding motifs play key role in the stabilizing activity. This study aimed to investigate implications of low temperature on structure and RNA binding activity of E. coli CspA. Molecular dynamics simulations were performed to compare the stability of the protein at 37°C and 10 °C. The protein was mutated at RNA binding motifs and docked with RNA to assess the stability of both complexes. Results suggest that CspA as well as CspA-RNA complex is more stable at low temperature. It was also confirmed that RNP1 and RNP2 play key role in RNA binding.

**Keywords :** CspA, homology modelling, mutation, molecular dynamics simulation

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