



Cosolvents Induced Unfolding and Aggregation of Keyhole Limpet Hemocyanin.

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Abstract:

The objective of this study was to examine the effects of 2,2,2 trifluoroethanol (TFE) and acetonitrile (ACN) on the stability, behavior, and structural characteristics of giant multimeric protein Keyhole Limpet hemocyanin (KLH) by combining the circular dichroism (CD) and fluorescence measurements of KLH solution. In concentration range 20-50 % (v/v) TFE, protein at pH 7.4 shows visible aggregation while no aggregation was observed in the entire concentration range of TFE at molten globule (MG) state (pH 2.8) and resulted in stable α -helix. Our result shows that in the presence of 80 % (v/v) and 40 % (v/v) TFE, at native (pH 7.4) and MG state (pH 2.8) occurred in a highly helical state referred to as TFE denatured state I and II, respectively. However, in case of ACN, aggregation starts above 40 % (v/v) for pH 7.4 and at 80 % (v/v) for acid-induced MG (pH 2.8) state, which was dominated by β -sheet structure and referred to as ACN denatured state III and IV. An important object of our investigation is to get more detail study of efficiency of cosolvents in inducing structural changes in KLH. The dependence of scattering intensity and the R h on alcohol concentrations was investigated at 25 °C.

Published In:

Cell Biochemistry and Biophysics , ,