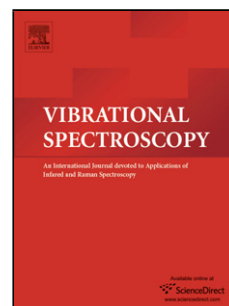


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Volume exclusion influences in spectral characteristics of DNA-amino acids complexes.

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ABSTRACT

Living cells contain a variety of bio molecules including nucleic acids, proteins, polysaccharides, and metabolites as well as other soluble and insoluble components. These bio molecules occupy a significant fraction (20–40%) of the cellular volume. The total concentration of biomolecules reaches 400 g l^{-1} , leading to a crowded intracellular environment referred to as molecular crowding. This causes changes in chemical potential strongly affecting the physicochemical properties in the cell environment. Hence understanding the effects of molecular crowding conditions on biomolecules and biomolecular complexes is of utmost importance. In the present study, interaction of DNA with various amino acids has been observed under the influence of molecular crowding agents of various molecular sizes to understand the changes in DNA characteristics with reference to binding parameters to various amino acids using fluorescence and FTIR spectra. These studies are expected to indicate the changes in the DNA-amino acid complexes with particular significance of effects of molecular crowding in response to volume exclusion effects.

Keywords: macromolecular crowding, DNA-amino acid interactions, fluorescence spectra, FTIR, PEG, Dextran

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