technique for kinetic and function study of the DNAzyme compared with conventional methods. The optimum pH and thermal conditions for hybridization of restriction DNAzyme and its catalytic activity was also determined. The results are well in accordance with pervious findings reported by R. R Breaker. The extrinsic fluorescence study of the DNAzyme hybridization and its catalytic function by SYBR GOLD show consistency with Uv-visible experiment results, however this technique offers higher sensitivity compared to that of Uv-visible spectroscopy. Fluorescence intensity of DNAzyme-substrate increased upon hybridization, and decreased when the catalytic activity started. Our findings suggest that spectroscopic techniques, particularly extrinsic fluorescence spectroscopy using SYBR GOLD could be a good alternative to conventional methods for studying kinetic and catalytic activity of DNAzyme, being affordable and time saving.

Keywords: DNAzyme, Hybridization, Catalytic activity, Uv-visible, Fluorescence, Spectroscopy.

Abstract No.21

Interactions of β-lactoglobulin with Hexadecyltrimethylammonium bromide and Cetyltrimethylammonium p-Toluenesulfonate

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AbstractThe interactions of β-lactoglobulin AB in the presence of cationic surfactants such as Hexadecyltrimethylammonium bromide and Cetyltrimethylammonium p- Toluenesulfonate have been investigated using various experimental techniques such as conductivity, UV-Vis spectrophotometry and fluorimetry. The conductivity of surfactants aqueous solutions with β-lactoglobulin showed that the cmc of cationic surfactants decreased with the increase of counterion size. The results of UV-Vis and fluorescence studies showed a red shift in wavelength and an increase in absorbance and intensity of the emission maximum of protein during the interactions of surfactants with β-lactoglobulin. The results of UV-Vis also showed two distinct conformational changes (that was corresponding to precipitation and solving the precipitation of β-lactoglobulin) at pHs 6.7 and 8.0 and the cooperative character of binding at pH 2.0. The results of fluorescence studies showed that the binding strength of β-lactoglobulin / surfactant complex decreases with the increase of the pH.

Keywords: -lactoglobulin, Hexadecyltrimethyl ammonium bromide, Cetyltrimethyl ammonium p-toluen sulfonate, Conductivity, UV-Vis spectrophotometry, Fluorimetry.

Abstract No.22

Structural Studies on the Interaction of Urea with Lysozyme

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The effect of urea on the structure of hen egg white lysozyme has been investigated using the method of UV-Visible detection and fluorescence spectroscopic techniques. The thermal denaturation of hen egg white lysozyme has been investigated in the presence and absence of urea over the temperature range (293-373) K in different buffers and pH values, using temperature scanning spectroscopy. The thermal denaturation of small globular proteins closely approaches a two-state, mechanism. Increasing the concentration of urea decreases the stability of lysozyme to thermal denaturation. The presence of urea caused the destabilization of hen egg white lysozyme resulting in a decrease in the temperature of unfolding with an increase in urea concentration. Fluorescence measurements have been extensively used to obtain information about tryptophan environments in proteins. There are six Trp residues in hen egg white lysozyme, but only two of them, Trp62 and Trp108, appear to dominate the fluorescence spectrum. Emission of lysozyme is dominated by tryptophan residue, which absorbs at the longest wavelength and displays the largest extinction coefficient. Energy absorbed by phenylalanine and tyrosine is often transferred to the tryptophan residues in the same protein. The fluorescence intensity of lysozyme decreases sharply with increasing urea. The result of fluorescence spectroscopy indicated that the structure of the Trp residue environments was altered. The environment of the Trp residues becomes more polar due to neighboring water molecules, and the reorientational relaxation of which after fluorescence excitation and emission leads to a Stokes shift of the fluorescence spectrum.

Keywords: Lysozyme, Fluorescence Spectroscopy, Sodium Dodecyl Sulfate (SDS), Sodium Octyl Sulfate (SOS).
