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β -Lactoglobulin (β -Lg) is a lipocalin, which is the major whey protein of cow milk and the milk of other mammals. However, it is absent from milk of primates. This globular protein of about 18 kDa is folded forming a β -barrel (or calyx) structure. Each monomer contains two disulphide bonds and one cysteine at position 121 (Cys121). This free thiol plays an important role in the heat-induced aggregation of β -Lg, and, possibly, in the maintenance of its conformational stability. β -Lg is one of major allergens in bovine milk. In this study, the expression in the yeast *Pichia pastoris* of a mutant bovine β -Lg, in which Cys121 was changed into Ser (Cys121Ser) was accomplished. Analysis of recombinant proteins by mass spectrometry has confirmed their purity, matching the calculated molecular mass with their mass theoretical, and the lack of post-translational modifications. Circular dichroism (CD) and high performance liquid chromatography (HPLC) experiments showed that the recombinant wild-type (WT) and Cys121Ser mutant retain native-like fold. The far- and near-UV CD spectra of WT and Cys121Ser were very similar to that of the standard, indicating a similar secondary and tertiary structure. The mutation on the position 121 in amino acid chain completely blocks the irreversible aggregation induced by heat treatment according to electrophoresis results. Compared to the recombinant wild-type protein, the mutant is less stable to temperature and disulphide reducing agents, and is much more sensitive to peptic digestion. Binding of IgE from patients with cow milk allergy to native β -Lg, wild-type β -Lg and Cys121Ser mutant β -Lg was also measured by ELISA. The calculated IC50 values for native and recombinant proteins were almost the same and the difference was not significant, indicating that the recognition of β -Lg by IgE from CMA patients is not impaired by recombinant WT and Cys121Ser mutant β -Lgs.

Keywords: β -Lactoglobulin, Allergy, Recombinant Protein, Circular Dichroism, ELISA test.

Abstract No.12

Kinetics and Spectrophotometric Studies on The Interaction of Sodium Dodecyl Sulfate With Chicken Egg White Lysozyme in Aqueous Solution

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The binding of surfactant to protein is a widespread phenomenon and plays a particularly important role in the activity of an enzyme. In this study the turbidimetric assay (activity) of lysozyme followed by the decreased optical density (OD) of a turbid cell suspension (about .3 mg/ml *Micrococcus lysodeikticus*) photometrically at 450 nm. Effect of sodium dodecyl sulfate (SDS) as an anionic surfactant on lysozyme enzyme was investigated by UV-Vis spectrophotometry at pH 7.25 at 35°C using sodium phosphate buffer. Measurements were carried out using 6×10^{-8} M concentration of lysozyme and a range of SDS solution concentration between 0.4 and 0.8 mM. It was found that by increasing of SDS concentration, the rate of *Micrococcus lysodeikticus* lyses will be decreased. V_{max} value will be reduced by increasing of SDS concentration. Lysozyme consists of two domains: a α -domain with helical structure and a β -domain with predominantly β -sheet, separated by the active cleft. The cleft between the two domains includes the binding site for the substrate. Probably the contents of α -helix decreased sharply with the increase of concentration of SDS.

Keywords: Lysozyme, Sodium Dodecyl Sulfate, Spectrophotometry, Activity, Protein.

Abstract No.13

Effects of Sodium Selenate on the Structure and Activity of Acetylcholinesterase

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Acetylcholinesterase (AChE) (EC 3.1.1.7), is one of the most important enzymes in nervous system, and plays a role in the signal transduction in the somatic nervous system by termination of signal transduction in the synapse. It has been reported that the function of this enzyme plays a role in Alzheimer's disease. Selenium is one of the most important micronutrient. Many investigations have been performed about the physiological, biochemical and behavioral effects of this element, such as postponing the Alzheimer's symptoms in the elderly and delaying the initiation signs of skin aging. In this study the effects of different concentrations of Sodium selenate (0, 390, 870, 1300 μ M) on AChE