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Iran is a country with large production of figs, therefore study of ficin as an enzyme extracted from fig is necessary. Minor researches on autolysis show that multiple forms of ficin are not resulted from the collection, storage and purification stages. However, it is believed that autolysis begins at early stages of enzyme purification. In this study, Iranian ficin isoenzymes were purified from the fig latex of Sabz variety by high performance liquid chromatography (HPLC). Four dominant peaks of the HPLC chromatogram were chosen. The first isoenzyme was eluted from cation exchange column without salt washing and the three other isoenzymes were eluted with sodium chloride salt gradient. The aim of this research was to investigate the autolysis of each isoenzyme of Iranian ficin and the stage where the autolysis takes place. Inhibitory effect of potassium tetrathionate on autolysis was studied for the long-term maintenance of these isoenzymes. Autolysis was evaluated by HPLC chromatogram comparison, activity assay, absorbance in 280 nm, sodium dodecyl sulfate polyacrylamide gel electrophoresis and determination of peptides or proteins status. Our results indicated that the second isoenzyme did not show any autolysis. The first isoenzyme had autolysis in the first stage. The last isoenzymes had autolysis in all different stages. Potassium tetrathionate showed the highest and lowest inhibitory effect on the last and first isoenzymes, respectively. Autolysis started shortly after elution from the column, and after a ten day, part of the isoenzymes polypeptide chain was cleaved to peptides. Peptides from autolysis with a molecular weight between 5 to 10 kDa were dominant. In this report shows the difference in isoenzymes conformations and probably it is the claim for different autolysis behavior.

Keywords: Autolysis, Ficin, Iranian Fig latex, Isoenzymes, Conformation.

Abstract No.159

Enhancement of Reversibility for Human Serum Albumin Upon Incubation with Hydroxybutyrate: Differential Scanning Calorimetry Approach

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Hydroxybutyrate is one of the important keton bodies. These compounds are produced by fatty acid metabolism in the liver when glucose doesn't available for body. In this situation hydroxybutyrate is consumed as energetic source. Keton bodies concentration is increased in diabetes patient type I. In acute conditions, its level reach up to 25 mM. Some of studies shows, that keton bodies concentration also is increased in diabetic patient type II. These compounds have carbonyl groups that produce free radicals and increase oxidative stress in diabetes patient. In this study, we focused on hydroxybutyrate effects on human serum albumin (HSA) structure. For this purpose, HSA was incubated with Hydroxybutyrate during 7, 14 and 35 days. The free lysine contents test shows that Hydroxybutyrate bind to free lysines at the surface of protein. Differential scanning calorimetry (DSC) results shown that the % reversibility of HSA is enhanced as follows: 43.6, 45.9, 66.6 during 7, 14 and 35 days respectively. The % reversibility enhancement is due to hydrophobicity increment. As a result, the protein aggregation able to be increased. By this way Hydroxybutyrate may cause aggregation state and participate in diabetic complexity.

Keywords: Differential Scanning Calorimetry, Diabetes, Keton body, Hydroxybutyrate, Reversibility.

Abstract No.160

Molecular Modeling of Pathological Mutations in Proteins: an Application of Structural Bioinformatics in Endocrine Diseases

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Protein modeling is the process of predicting a three-dimensional structure for a protein, based on its amino acid sequence. Usually, these protein structures are used as targets in computationally assisted drug design, may serve in functional characterization of the macromolecule or be used in protein design. Observing consequences of amino acid changes on these structures could also be of interest in further elucidation of pathological mutations effect. As example, mutations found in five cases of neonatal diabetes (a genetic