15±1°C, 97 kDa yolk protein was highly available during recovery period at NT, but not in case of 4°C as this protein probably undergoes aggregation thus non-available for cell plate movement.

Keywords: Zebrafish, Embryonic Development, Temperature, Diapause.

Abstract No.156

Role of Low Molecular Weight Biomolecules in Antioxidant Profile of Camel and Bovine Milk

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As reported previously, the antioxidant activity of milk comes from both low- and high molecular weight biomolecules. In this study antioxidant activity of whole milk and milk protein fractions (WF: Whey Fraction, and CF: Casein Fraction) were examined, using an ABTS radical cation assay. To explore the effect of thermal stress on antioxidant activity of either whole milk or milk protein fractions (WF and CF), their antioxidant activities were measured before and after heat treatment for 5 min at 100 °C. The results of heat treatment experiments, suggest that antioxidant activities of both whole milk and WF of camel were more temperature labile than those from bovine source. Also, a slight reduction in antioxidant activity of CF of both animal sources was observed after the heat treatments. Moreover, prior to performing antioxidant measurements, whole milk and WF were extensively dialyzed. The objective was to explore role of low molecular weight (LMW) biomolecules in their antioxidant profile. The results showed that LMW biomolecules participate to the higher extent in shaping antioxidant profile of milk and WF of camel compared to those from bovine source. The antioxidant activity of LMW biomolecules was more heat labile than that of high molecular weight (HMW) biomolecules such as proteins. Overall, this study suggests a significant role for the heat labile LMW biomolecules in shaping the antioxidant profile of camel milk.

Keywords: Antioxidant Activity, Camel Milk, Bovine Milk, Low Molecular Weight Biomolecules, Heat Treatment.

Abstract No.157

Thermal Inactivation and Conformational Lock Study on Horse Liver Alcohol Dehydrogenase

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Horse Liver Alcohol Dehydrogenase (HLADH) is a two subunits metal enzyme that has two catalytic and coenzyme domains for each subunit. The catalytic domain contains two zinc atoms that one of them has a catalytic role and another one has a structural role. The coenzyme domain connects to NAD+ coenzyme for oxidoreductase reactions. These subunits were connected to each other by coenzyme domains. In this report, we are wondering to obtain the precise residues that participate in subunits via interface locks. For this purpose, the kinetics of thermal inactivation of HLADH were studied in a 50 mM pyrophosphate buffer, pH 8.8, using ethanol as substrate and NAD+ as a cofactor. The temperature range was between 46-55°C and the conformational lock was developed based on the Poltrak theory and analysis of the curves was done by the conformational lock method for oligomeric enzymes. We obtained the number of the locks between subunits equal to two by this method and then confirmed it by the Ligplot program computations. This computation give us more detailed information that there are two patches binding sites in the interface that they spread over two regions of each chain. The small region embraces the sequence of 110 to 118 residues and the large region contains residues of 270 to 320 on each chain. The first small and second large patches may be split to two smaller sub-patches.

Keywords: Horse Liver Alcohol Dehydrogenase, Conformational lock, Poltrak theory, Ligplot program.

Abstract No.158

Autolysis Comparison on Isoenzymes of Ficin Extracted from the Fig (Ficus carica cv. Sabz) Latex

Hamid Zare [1], Maryam Salami [1], Ali Akbar Saboury [1], Morteza Mirzaei [2], Farzaneh Farivar [1], Reza Hosseinzadeh [1], Ali Akbar Moosavi-Movahedi [1]*

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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, absorbsion 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 Albumim Upon Incubation with Hydroxybutyrate: Differential Scanning Calorimetry Approach

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Hydroxybutyrate is one of the important keton bodies. This compounds are produced by fatty acid metabolism in the liver when glucose doesn't available for body. In this situation hydroxylbutyrate is consumed as energetic source. Keton bodies concentration is increased in diabetes patient type I. In acute conditions, it's 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 albumim (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