studies (e.g. effect of different ligands and their interactions) have been carried out on it. On the other hand, polyamines are produced naturally in living cells. They are implicated in a wide range of cell processes including cell growth, cell division, differentiation, gene regulation, enzyme activity and signal transduction.In this study effect of various concentrations of di and poly-amines has been investigated on the structure of 2',3'-cyclic cytidine monophosphate by following ΔA284. 2',3'-cyclic cytidine monophosphate and all amines were dissolved in Tris-EDTA buffer (Tris 100mM, EDTA 2mM, pH 7.5). As our results showed, none of the diamines, including 1,3-diaminopropan, 1,4-diaminobutane (putrescine) and 1,5-diaminopentane (cadaverine), had significant effect on the nucleotide spectrum, while both of polyamines (spermidine and spermine) caused significant and meaningful change on 2',3'-cCMP absorbance. Overall, it seems that polyamines interaction with phosphate group and/or cytosine base of the nucleotide resulting in a change in its absorbance while diamines may interact only with phosphate group of the nucleotide which has no effect on its absorbance. This difference may be related to size of polyamines that are larger than the diamines.

Keywords: 2',3'-cyclic Cytidine Monophosphate, Diamine, Polyamine, Interaction.

Abstract No.242

In Silico Analysis of Conformational and Immunological Differences of Linked StxB and CtxB

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CtxB and StxB are of the most impacting factors in initiation of cholera and shigella infections. These two proteins are working as carriers of catalytic domains of shigella and cholera toxins. All such proteins have 5 same subunits along with a catalytic domain among. These two proteins are considered as novel targets for immunological studies. It is assumed that accompaniment of both of proteins can boost the immunological effects. Linking both proteins with a linker is a possible solution, but structural integrity and proper folding of proteins must remain stable. In order to discover suitable number of linker molecules for proper separation of proteins, CtxB-linker(n)-StxB and StxB-Linker(n)-CtxB manner of proteins are designed and structures modeled with Modeller 9 program based on protein data bank structures of proteins. A Furin cleavable linker is used for evaluation of structures. Best scored models are studied for their stability and original structures by over fitting of models and initial structures, solvent accessible surface and ramachandran plot. Results demonstrate that presence of StxB at the N-Terminal of structure stabilizes the total fusion because of C-Terminal structure of StxB. Number of linker repeats must be at least one but more than 3 repeats those not change the structure stability.

Keywords: CtxB, StxB, Modeling, Furin linker, Shigella, Cholera.

Abstract No.243

Spectroscopic Investigation on the Interaction of c-MYC quadruplex DNA with Water-Soluble Tetrapyridinoporphyrazinatozinc(II)

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Nucleic acid sequences which are rich in guanine are capable of forming four-stranded structures called G-quadruplexes. Oncogenes are especialy rich in quadruplex. It is known that ~90% of c-MYC transcription is controlled by a 27-nt purine rich strand is composed of consecutive five guanine stretches. Recent experimental data suggest that even a brief inhibition of c-MYC expression may be sufficient to permanently stop tumor growth and induce regression of tumors. The ligands that bind to hypersensitivity element III1 (NHE III1) of the c-MYC promoter can control the transcriptional activity of the c-MYC oncogene. Here, interaction between water-soluble N,N′,N″,N‴-tetramethyltetra-3,4-pyridinoporphyrazinatozinc(II) {[Zn(3,4-tmtppa)]$^{4+}$} and c- MYC G-rich oligonucleotide was investigated. The absorption spectrum of {[Zn(3,4-tmtppa)]$^{4+}$ displays a Q band at ~670 nm. It was found that at low concentrations of DNA, a hypochromicity in the Q band of the complex is shown but, at higher concentrations, the intensity of spectra increases and the maximum absorption shifts to higher wavelengths considerably. It seems two types of complexes form due to interaction of the porphyrazine with c-MYC G-quadruplex DNA. The quenching of [Zn(3,4-tmtppa)]4+ by G4 DNA and the G4–thiazole orange by the complex were measured by fluoresnce spectroscopy. Stern–Volmer

dynamic quenching constant, binding constant and number of binding sites for the interaction of {[Zn(3,4-tmtppa)]4+ with the G-rich oligonucleotide, its complementary C-rich strand and the DNA structure formed by mixture of G-rich and C-rich oligonucleotides were measured using analyzing of the fluorescence spectroscopic data.

Keywords: c-MYC, Quadruplex, Interaction, Spectroscopy, Porphyrazine.

Abstract No.244

Amyloid-like Aggregate Formation in Apo-Carbonic Anhydrase Using Different Alcohols

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Amyloid fibrillation plays a crucial role in disorders such as Alzheimer's and Parkinson's diseases. However, despite the ability of most proteins to form amyloid fibrils, not much is known about their structures and factors that contibute to their formation. Organic solvents, including alcohols could be used to induce fibrillation in proteins. In this study the effects of various alcohols were compared on apo- carbonic anhydrase amyloid formation. Congo red and thioflavin-T binding and CD spectroscopy experiments suggested that the aggregates induced by alcohols have amyloid-like properties, and atomic force microscopy data indicated that these aggregates have a spherical morphology. Comparison of stability of aggregate species was also performed. Among the different alcohols tested particularly fluorinated alcohols (HFIP, TFE) were particulary effective in amyloid like aggregate formation. At low pH, formation of aggregates was promoted by HFIP and TFE with an optimum at 5% (v/v) and 12% (v/v) respectively. The effective concentration to drive the protein toward amyloid-like stucture formation was higher for other alcohols.Stability of oligomers that were formed in fluorinated alcohols was significantly greater than those formed in other alcohols. Our results also demonstrate that when the alcohols are added an α-helix is formed at first. The partly α- helical conformation is converted with time into a highly ordered β-sheet. The Combined effects of hydrophobic and electrostatic interactions, both of which are strengthened by presence of the alcohols, may drive the protein toward amyloid formation. Subtle balance between these two types of interactions may determine whether the fibrils or amorphous aggregates dominate as end products.

Keywords: Amyloid, Apo-Carbonic Anhydrase, Alcohols, Hydrophobic Intraction.

Abstract No.245

Effect of Glycine on Human Serum Albumin Glycation

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Diabetes is one of the prevalent diseases in a lot of countries and makes huge expenses to human beings. High blood sugar plays a key role in diabetes's complications because sugars with the reducing end interact with biological macromolecules, e.g. proteins and produce advanced glycation end products (AGEs). In addition, AGEs and their receptors are involved in the pathogenesis of heart failure, cancer, Alzheimer's disease, Parkinson's disease, familial amyloid, polyneuropathy, prion disease, and etc. It has been clear that inhibiting or decreasing the AGEs production helps to decrease the diabetic complications like cataract, nephropathy, retinopathy, atherosclerosis, and etc. We have shown before that chemical chaperones e.g. glycerol and spermidine are able to reduce hemoglobin glycation by glucose (Glc) and glucose-6-phosphate (Glc-6-ph). In continue, the effect of other chemical chaperons on glycation of proteins are studding in our lab. The results of glycine (Gly) application, as a member of this family of compounds, are presented here. We investigated its inhibitory effect on albumin (Alb) glycation by both Glc and Glc-6-ph. Therefore, the same concentration of Alb solution was put in different vials and incubated with Glc / Glc-6-ph, in the presence or absence of Gly up to four months. Then all samples were investigated by fluorometry, CD and electrophoresis. The results showed the various degrees of protein glycation by each of the used sugars, also Gly showed different degrees of inhibition of Alb glycation induced by each reducing sugars. In conclusion, Gly as a glycation inhibitor decreased AGE production and conserved protein structure.

Keywords: Glycine, Glycation, Albumin, AGEs, Chemical Chaperon.
