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.
