cost, ready availability and similarity to human serum albumin (HSA). In the present study, we investigated the interaction of the synthesized phosphinic acid with BSA using steady state fluorescence, synchronous fluorescence, and fluorescence resonance energy transfer (FRET). The fluorescence titration experiments showed the quenching effect of the considered synthesized phosphinic acid on the emission of BSA with slightly blue shift. The binding parameters including number of binding sites and binding constant have been estimated from the fluorescence quenching results. Further, the distance of the bound ligand from the tryptophan residues and Förster critical distance have been determined. The changes in the microenvironment of the tyrosine and tryptophan residues have been investigated using the synchronous fluorescence spectra.

Keywords: Aminophosphinic acid, Bovine Serum Albumin, Ligand binding, Fluorescence Spectroscopy.

Abstract No.232

A Spectroscopic Study on Interaction of Diamines with Guanosine Triphosphate

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Diamines are positively charged small molecules that have essential roles in cell growth, cell division, differentiation, gene regulation, enzyme activity and signal transduction. Diamines bind to negatively charged macromolecules including proteins, nucleic acids and phospholipid membranes and cause physiological effects in organism. Diamines are able to make complex, through their amine groups, with nucleotide compounds. Positive charge of the amines can interact with negative charge of phosphate of nucleotides. Moreover free electron pair of nitrogen of the amine group interacts with nucleotide base via van der Waals interactions. It is expected that diamines affect on nucleotides function either the nucleotides act as a substrate (ATPase, RNAse) or a ligand (GTP-binding proteins or microtubules). Guanosine triphosphate (GTP) is one of important nucleotides in metabolism.In this research GTP was used as a model nucleotide to investigate GTP-diamine interaction by measuring ΔA253 (lmax of GTP) in the presence of increasing concentrations of 1,3-diaminopropan, 1,4-diaminobutane (putrescine) and 1,5-diaminopentane (cadaverine) in PEM buffer (100mM PIPES, 1mM EGTA, 2 mM $MgSO_4$) using spectrophotometer UV-vis at 37°C. The results showed that diamines causes a change in GTP spectrum with a concentration-dependent manner showing interaction of diamines with guanine base of GTP molecule. But quality of the interaction differed from cadaverine to other diamines. In conclusion, diamines interact with GTP molecule probably via electrostatic interactions with its guanine base. Such interactions may disturb GTP binding to other molecules.

Keywords: Diamines, Putrescine, Cadaverin, GTP, Interaction.

Abstract No.233

Polyanionic Couted Nanoparticles Triggers Tau Protein Fibrillization in Vitro

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Neural transmission is vital process in brain function. Microtubules and MAP proteins are two of the main macromolecules, facilate transmission through neural axons. Among microtubule associated proteins, fibrillar tau protein has been demonstrated to participate in Alzheimer disease. To mimic tau fibrillization in vivo, several molecules have been tested for identification of tau aggregation in vitro. In this study carboxylate couted carbon nanotubes to simulate microtubules and magnetic iron nanoparticles (polyaspartated, polysulfonated and carboxylated) were employed instead of heparin. The interaction between recombinant human tau and polyanionic nanoparticles were characterized by using transmission electron microscopy and spectroscopial methodologies. Our results showed that functionalized nanoparticles and carbon nanotubes induce tau fibrillization in vitro.

Keywords: Tau Protein, Nanoparticles, Carbon Nanotube, Fibrillization.
