These changes were strengthening over the time of incubation. HSA incubation with sodium benzoate in the absent of glucose, also shows similar results. These results, emphasis on the binding of sodium benzoate to free lysines of HSA and its probability rule in diabetes complexity.

Keywords: Oxidative stress, Glycation, HSA, Glucose, Sodium benzoate, Diabetes complexity.

Abstract No.165

Thermodynamic and Spectroscopic Investigation on the Binding of Cationic and Anionic Porphyrin Derivatives to Telomeric G-quadruplex DNA formed in Presence of K+ ion

Fatemeh Hakimian, *Leila Hassani**, *Elham Safaei*

Department of Biological sciences, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, IR
(E-mail: f.hakimian90@gmail.com)

The G-quadruplex structural motif of DNA has emerged as a novel target for anticancer drug discovery. Guanine rich sequences are found to occur throughout the genomes of most organisms and are prevalent in the promoter regions of a variety of genes and oncogenes, as well as at the telomeric ends of chromosomes. Small molecules that selectively target the G- quadruplex structure may serve as potential therapeutic agents and have garnered significant interest in recent years. Here, interaction of an anionic water-soluble phthalocyanine Cu(PcTs) and two cationic water-soluble tetrapyridinoporphyrazines including [Cu(2,3-tmtppa)] 4+ and [Cu(3,4-tmtppa)]4+ complexes with human telomeric G-quadruplex DNA has been investigated. The binding constant and stoichiometry, thermodynamic parameters and structural changes were investigated by absorption, fluoresnce and circular dichroism spectroscopy. The results indicated the interaction of cationic porphyrazines is stronger than the anionic phthalocyanine dramatically due to their different charges. In addition, higher binding constant of the 2,3-isomer with respect to the 3,4-isomer can be attributed to internal positioning of the cationic charges in the former. Hypochromicity and large red shift in the Q-band absorption region of both porphyrazines indicating existence of intercalation mode. Circular dichroism experiments (the spectra are shown) suggested that in presence of K+ ion, upon addition of ([Cu(2,3-tmtppa)]4+) or ([Cu(3,4-tmtppa)]4+), the hybrid and chair-type structure changes to the basket-type G-quadruplex structure, but upon addition of (CuPcTs) no transition occurred. In summary, our results implied that ([Cu(2,3-tmtppa)]4+) and ([Cu(3,4-tmtppa)]4+) bind strongly and selectively to human telomeric G-quadruplex DNA, inducing the formation of an antiparallel quadruplex.

Keywords: Telomeric G-quadruplex, Spectroscopy, Thermodynamic, Phthalocyanine, Porphyrazine.

Abstract No.166

Spectroscopic Studies of the Interaction Between new Designed Nanoemulsion with Human Hemoglobin

Farhad Sanginabady[1], Farshad Sanginabady[1], Adeleh Divsalar[2], Ali Akbar Saboury[3], Mina Avini[3]*

1. Science and Research Branch, Islamic Azad University, Tehran, IR
2. Department of Biological Sciences, Tarbiat Moallem University, Tehran, IR
3. Institute of Biochemistry and Biophysics, University of Tehran, Tehran, IR
(E-mail: sanginabadyfarhad_2010@yahoo.com)

Hemoglobin is the one- of most important and effective proteins of blood. In present study, the intraction of new synthesized nanoemulesion (as new drug carrier) with human blood carrier protein of hemoglobin (Hb) was investigatedusing different spectroscopicmethods of UV-Visible, fluorescence and circular dichroism (CD) at different temperatures of 25 and 37°C.UV-Visible results show that adding of nanoemulesion to Hb solution causes increasing the absorption of hemoglobin in all wavelength regions. Intrinsic fluorescence studies show that nanoemulesion have ability to quenching of fluorescence intensity of Hb via static quenching mechanism. Also, in the presence of different concentrations of nanoemulesion, the maximum emission wavelength of Hb was shifted to smaller wavelengths (blue shift) which indicate that with adding nanoemulesion the hydrophobicity of Triptophan environment was increased. Also, the binding site of nanoemulesion might be in near of tryptophan residue. Far UV-CD data show that nanoemulesion can change the regular secondary structure content of Hb via decreasing of content of α-helix at temperatures of 25 and 37 °C. From above results, it can be concluded that our new designed nanoemulsion can change the secondary and tertiary structure of blood protein of Hb at different temperatures.

Keywords: Hemoglobin, Nanoemulsion, Fluorescence, Quenching.
