

spectrophotometry, fluorescence spectrophotometry, cyclic voltammetry and viscosity measurements. The decrease of the absorption spectra of (Phend)Cl₃-Au(III) complex were observed in the presence of DNA, and the fluorescence intensity of (Phend)Cl₃-Au(III) was decreased with the addition of DNA. The relative viscosity of DNA increased with the addition of (Phend)Cl₃-Au(III) complex. The calculated binding constants of (Phend)Cl₃-Au(III) complex with DNA at 250 nm and 293 K were $5 \times 10^6 \text{ M}^{-1}$. Cyclic voltamograms due to cyclic voltammetry showed that, cathodic peaks shifted to positive potential that indicates intercalation interaction between (Phend)Cl₃-Au(III) complex and CT-DNA. All these results indicated that (Phend)Cl₃-Au(III) complex can bind to DNA and the major binding mode is intercalative binding.

Keywords: Calf-thymus DNA, (Phend)Cl₃-Au(III), Interaction, Spectrophotometry, Intercalation.

Abstract No.272

Hyperthermia Effects on IC-21 Macrophage Like Cell Line To Assay Activity and Expression of Inducible Nitric Oxide Synthase (iNOS) Enzyme

*Manoochehr Goojai¹, Samideh Khoei², Bahram Goliaei*²*

1. Department of Biology, Azad University of Bonab, East Azerbaijan, IR
2. Laboratory of Biophysics and Molecular Biology, IR
(E-mail: ghojaie@gmail.com)

Nitric oxide (No.) is a uniquely diffusible and reactive molecular messenger in vascular and immune systems, motivated researches for evaluating its biosynthesis by the macrophages. As macrophages are often called to function at times of elevated ambient temperature (e.g. during local inflammation or systemic fever), it is possible that their production of critical effector molecules such as nitric oxide ion or nitric oxide synthase (iNOS), is sensitive to physiological changes in temperature. To test this possibility, the threshold requirement for production of No. and iNOS in macrophage like cell line of IC-21 under normothermic conditions (37 °C) and following mild hyperthermia (40, 42 and 44 °C) were compared. Temperature gradient showed considerable increases of No. concentration at 40 and 42 °C and decrease at 44 °C (24 h incubation). Further, if IFN- γ and lipopolysaccharide (LPS) were given before thermal exposure, a substantial increase in No. and iNOS was observed (highest at 42 °C after 24 h incubation) over that seen using cells kept exposed to hyperthermia alone or that of at normthermic conditions (37 °C). As RT-PCR data have revealed the thermal regulation of iNOS expression

is not entirely at the transcriptional level, suggesting possible points of post-transcriptional thermal sensitivity, so our direct application of hyperthermia on macrophages without any treatment supports this hypothesis. The data in this study reveal the potential of mild hyperthermia (elevated physiological temperature) to increase No. production and iNOS synthesis in using peritoneal type macrophage like cell line. These may support the concept that altering the thermal micro environmental would be an important means by which the host can affect the macrophage responses.

Keywords: Nitric Oxide, Nitric Oxide Synthase (iNOS), Macrophage, IC-21 Cell Line and Hyperthermia.

Abstract No.273

Detection of Fibrillar Aggregates and Inhibition of Amyloid-Mediated Peroxidase Activity Using the Novel Benzothiazole- and Benzofuranone-Derivatives Fluorescence Compounds

Seyyed Abolghasem Ghadami^{1,2}, Reza Khodarahmi^{1,3}, Hadi Adibi³, Sirous Ghobadi²*

1. Medical Biology Research Center, Kermanshah University of Medical Sciences, Kermanshah, IR
2. Departments of Biology, Faculty of Sciences, Razi University, Kermanshah, IR
3. Faculty of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, IR
(E-mail: saghadami@mbrc.ac.ir)

Alzheimer's disease is characterized by the presence of amyloid deposition. Thioflavin T (ThT) has been one of the molecules of choice to attempt the detection of amyloid deposits, however, it has been reported that ThT was unable to cross blood-brain barrier (BBB). Since compounds without a permanent positive charge are mainly capable of crossing the blood-brain barrier, there is a strong motivation to develop suitable compounds for in vitro fibril quantification as well as for in vivo amyloid imaging. Moreover, oxidative stress has frequently been reported to play a critical role in the onset/progression of some neurodegenerative disorders. In this study, we synthesized and employed benzothiazole and benzofuranone derivatives (including neutral ThT analogues), both as fluorescent probes to quantitatively determine the amyloid fibrils made of chymotrypsin (and crystalline) and as potential inhibitors for peroxidase activity. Analyses of the in vitro binding studies indicated that compounds 2 and 4 bind to the amyloid structures successfully while compounds 1 and 3 showed a low affinity in binding to fibrils. Furthermore, compounds 3 and 4 were

observed to inhibit amyloid-mediated peroxidase activity in a reversible un-competitive manner. The resulting data may be useful in providing mechanistic insights to develop potential diagnostic, curative, and/or preventive strategies in vivo against amyloid-related neurodegenerative disorders. We will discuss importance of our observations.

Keywords: Amyloid Detection, Benzothiazole And Benzofuranone, Peroxidase Activity.

Abstract No.274

Investigation on the Effects of Glibenclamide on the Structure and Function of Human Carbonic Anhydrase II

*Sirous Ghobadi¹, Reza Khodarahmi^{2,3}, Mona Pazhohi*¹,
S. Abolghasem Ghadami¹, Noushin Bijari¹*

1. Department of Biology, Faculty of Science, Razi University, Kermanshah, IR
2. Medical Biology Research Center, Kermanshah University of Medical Sciences, Kermanshah, IR
3. Faculty of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, IR
(E-mail: m_pazhohi@yahoo.com)

Carbonic anhydrases (CAs, EC 4.2.1.1) are metalloenzymes which catalyze the reversible hydration of CO₂ to form bicarbonate and proton. CAs inhibition is exploited clinically for decades for various classes of diuretics and systemically acting antiglaucoma agents. In the last years, novel applications of CA inhibitors emerged, such as topically acting anticonvulsants, antiobesity, antipain, and antitumor agents/diagnostic tools. In this study, we used the combination of computer modeling with spectroscopic techniques, such as UV-Vis, fluorescence and circular dichroism (CD) spectroscopy to investigate the effects of glibenclamide, a sulphonylurea drug, on the human carbonic anhydrase II (hCA II) structure and function. Kinetic studies showed that glibenclamide inhibits hCA II esterase activity via a simple competitive mode. Stern-Volmer analysis of quenching data at different temperatures revealed that the intrinsic fluorescence of enzyme was quenched through a dynamic quenching mechanism. Analysis of the thermodynamic parameters of binding showed that hydrophobic interactions play the major role in stabilization of the enzyme–drug complex. The results of the surface hydrophobicity index determination, chemical modification of the surface tryptophans and CD spectroscopy showed occurrence of some compactness in hCA II structure due to

interaction with glibenclamide which was in good agreement with the theoretical analyses.

Keywords: Human Carbonic Anhydrase II, Glybenclamide, Competitive Inhibition, Binding Study.

Abstract No.275

Effect of Boswollia Extract on Dynamicity of Microtubule Protein, Related Memory and Consciousness

Gholam Hossein Riaz, Dayhim Atarod, Ghazaleh Eskandari sedighi,
Ali Afrasyabi, Seyed Morteza Karimi*

Institute of Biochemistry and Biophysics, University of Tehran, IR
(E-mail: ghriazi@ibb.ut.ac.ir)

Tubulin and microtubule protein have been defined as constants of neural processes resulting memory and consciousness. Microtubule protein is composed of tubulin dimers α and β . Microtubule Polymer (MTP) is a dynamic polymer residing mostly in neural axon and dendrites as well as mitotic spindle. It has been shown that decreasing polymerization rate or shortening of MTP results in decreasing memory and consciousness-based memory. Therefore deformation or deactivation of MTP has been shown in Alzheimer's disease. Lots of effort have been conducted to enhance polymerization for memory loss remedy. In our study Boswollia acid was extracted from Boswollia gum. Different doses of Boswollia acid and taxol were prepared and tested on polymerization of tubulin at 37°C and at the presence of 1mM GTP. In spite of the fact that both compounds increased the length of the tubuline polymers, taxol inhibited dynamicity of microtubule proteins, while Boswollia acid increased the dynamicity. In vivo studies showed that taxol decrease memory of albino mouse while Boswollia acid enhanced the memory and consciousness of animal by several factor. We suggest substituted drugs from Boswollia extract for enhancing neuroplasticity.

Keywords: Microtubule Protein, Consciousness, Tubulin, Neural Axon.