2. Protein Chemistry Laboratory (PCL), Dept. of Biology, College of Sciences, Shiraz University, IR
3. Dept. of Chemistry, College of Sciences, Shiraz University, Shiraz, IR
4. Dept. of Nuclear Engineering, College of Engineering, Shiraz University, Shiraz, IR
(E-mail: roghayeh.mohammadi@yahoo.com)

In this study, three structurally related platinum (II) complexes, containing benzo [h] quinoline (bhq) moieties as the non-leaving carrier groups were synthesis and their biological activities evaluated. The anti-proliferation activity against K562 and MCF-7 cell lines was measured using 3-(4,5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. Moreover, fluorescence study was performed to obtain the binding parameters of Pt-(II) complexes to both human serum albumin (HSA) and DNA, as well as to explore role of hydrophobic character in their binding to HSA. The results revealed that MCF-7 cell line resists more than K562 cancer cells against the cytotoxic effect of the Pt-(II) complexes. Also depends to type of the substitution made, different anti-proliferation activities and binding properties were observed. Moreover, the environments of the Pt center, charge and hydrophobicity of the complexes were suggested to play significant roles in their biological properties. Overall, the substitutions on the synthetic Pt- (II) complexes which associated with the marked improvement of anticancer activity can be considered as the significant point in construction of a novel generation of antineoplastic agents.

Keywords: Platinum- (II) Complexes, Benzo [H] Quinoline (Bhq), Human Serum Albumin, Anticancer Activity, Fluorescence Study.

Abstract No.19

Study of Effect of The Mutation Amino Acidis18and 125 on Specific Biological Activity of Human Interlukin-2

Zahra sadat Saghaeian, Nahid Saghaiyan, Maryam Nikkhah, Majid Sadeghizadeh*

Department of Genetics, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, IR
(E-mail: saghaiyan@yahoo.com)

Interleukin-2 (IL-2) is a 133 amino acid alpha-helical protein secreted by activated T-cells. This protein possesses three cysteine residues. Cysteines 58 and 105 are two residues involved in forming an intramolecular disulfide bridge, whereas cysteine 125 owns a free sulphydryl group. Formation of this disulfide bond is critical for biological activity of the protein. In this study, we constructed two mutant proteins of IL-2 through site-directed mutagenesis. In the mutant C125 A, the free sulphydryl group was eliminated. This change will probably prevent the formation of mispaired disulfide bonds during the refolding process. In the mutant L18C, a new cysteine residue was introduced for formation of disulfide bond with cysteine 125. This mutation was designed to study the effect of an extra disulfide bond on the structure and function of IL-2. These mutant analogs were then expressed isolated as solution phase in E.coli-derived pLysS strain. Subsequently, the expressed protein was purified using NI-NTA columns. In order to investigate, the effects of introduced modifications on the structure of the protein, Circular Dichroism (CD) and Fluorescence Spectroscopy were exploited. The data obtained exhibited no alteration in the structure of IL-2 variants. As well, the analysis of biological activity of the mutants is under examination on CTLL-2 cells.

Keywords: Human Interleukin-2, Site-directed Mutagenesis, Disulfide Bond, Biological Activity.

Abstract No.20

Structural and Activity Study of The Restriction DNAzyme by Spectroscopic Methods

*Mehdi Sadeqi, Bijan Ranjbar**

Department of Biophysics, Faculty of Biological Science, Tarbiat Modares University, Tehran, IR
(E-mail: mehdi.sadeqi65@yahoo.com)

Beyond the preservation of genetic information in the double helix structure in cells, DNA could also have catalytic role in the single stranded form taking different 3-D structures. This artificial catalytic biomolecule is known as DNAzyme or deoxyribozyme. The Cu2+ dependent DNA cleavage DNAzyme is the unique example of known DNAzymes. It is introduced as a restriction DNAzyme due to the site specific cleavage of single strand DNA molecule. It is also used as Cu2+ nanobiosensor in aqueous solutions by modification of DNAzyme molecule with florescence dye. Herein, we studied the structure and catalytic function of DNAzyme using Uv-visible and extrinsic fluorescence spectroscopy. Hyperchromic and hypochromic effects of DNA have been traced by Uv-visible spectroscopy to investigate structure, hybridization phenomenon and catalytic function. Absorbance intensity at 260 nm decreases upon hybridization of DNAzyme with substrate (hypochromic effect), which increased upon addition of cofactor and starting catalytic activity (hyperchromic effect). This result confirmed the efficiency of this spectroscopic