Abstract No.118

Cloning, Sequencing and Characterization of the α-Amylase Gene from a Native Strain of Basillus cereus

Saber Zahri, *Seyedehmaryam Hosseini**, *Saeid Latifi-Navid*

Department of biology, Faculty of science, University of Mohaghegh ardabili, Ardabil, IR
(E-mail: maryamhosseini24@yahoo.com)

Among various extracellular enzymes, α-amylase is a commercially valuable enzyme which randomly cleaves the 1,4-α -D-glucosidic linkages between adjacent glucose units in the linear amylose chain. An α-amylase producing Basillus strain was isolated from hot springs of Sabalan mountain. The 16S rDNA was amplified and sequenced using universal primers and the isolate was characterized as B. cereus. Two specific primers for upstream and downstream sequences of the gene were designed using genome sequence of the bacteria (NCBI Reference Sequence: NC_012472.1). The polymerase chain reaction was performed according to standard three-step reaction. The DNA band with approximately 2500 bp in size was obtained and cloned into pBluescript II SK+ vector and sequenced. The results were analyzed and confirmed that the isolated Basillus cereus produces a thermostable alkaline α-amylase.

Keywords: α-Amylase Gene, DNA Isolation, PCR Amplification, Cloning.

Abstract No.119

The effects of Radiofrequency Electromagnetic Fields (RF-EMFs) on the Structure of DNA

Aazadeh Hekmat [1], *Ali Akbar Saboury** [1], *Ali Akbar Moosavi-Movahedi* [1], *Reza Faraji-Dana* [2]

1. Institute of Biochemistry and Biophysics, University of Tehran, IR
2. Department of Electrical and Computer Engineering, University of Tehran, Tehran, IR

(E-mail: hekmat@ibb.ut.ac.ir)

Currently, the biological effects of two kinds of nonionizing electromagnetic fields (EMFs) including extremely low and high frequency EMFs including radiofrequency (RF) radiation have been the subject of various experimental and theoretical studies. RF energy has been employed in majority of the areas for instance cell phones and pagers. The potential effect of RF-EMF on DNA is very important because damage to the DNA of somatic cells can lead to the development of cancer or cell death. In this study, the effects of mobile phone RF (940 MHz) on the structure of DNA were investigated by UV-Vis, circular dichroism and fluorescence spectroscopic techniques. The results indicated that mobile phone EMFs can altere the structure and conformation of DNA significantly. Accordingly, our results indicate that we cannot confidently exclude any possibility of an increased risk of DNA damage, with important implications for the possible health effects of exposure to 940 MHz EMFs.

Keywords: DNA, Radiofrequency Electromagnetic Fields, UV-Vis Spectroscopy, Circular dichroism Spectroscopy, Fluorescence Spectroscopy.

Abstract No.120

A Novel Eukaryotic Cell Based Bioluminescence Assay for Detection of Oxidative-Stress Inducing Compounds

*Paria Motahari**

Tarbiat Modares Univercity, Tehran, IR
(E-mail: pariyamotahary@gmail.com)

The modern life of human is accompanied by encounter with various environmental stresses which lead to the accumulation of free radicals in the body. These free radicals give rise to damages to cellular biopolymers including nucleic acids, proteins, carbohydrates and fatty acids. Hence, the goal of our work was to develop a biosensor with high sensitivity and specificity able to detect a wide range of compounds with oxidative capacity in biological samples.Two single-stranded oligonucleotides containing the ARE core promoter, after annealing, were cloned into PGL4.26 vector which comprise the luc2 gene encoding luciferase as reporter. Following amplification of the vector harboring the ARE sequence in E.coli, it was transfected into HUH7 cells (human hepatoma cells) grown in DMEM medium. After 24 hours, the cells were treated with two chemicals (hydroquinon and benzoquinone each with 10 μM concentration). Next, lussiferase assey was performed.The data obtained here exhibited that the ARE sequence is active in the presence of oxidative stress-inducing compounds hydroquinone and benzoquinone. Also, it was revealed that he HUH7 cells treated with hydroquinone and benzoquinone possess a higher level of luciferase expression, up to 10 and 6 times more respectively, in comparison with the control cells which were not exposed to oxidative-stress inducers.According to the data obtained in the first phase of our study presented here we were able to construct a