activity investigated using UV-visible spectroscopy, fluorescence spectroscopy and circular dichroism spectroscopy. The results demonstrated that the Sodium selenate decreased enzyme activity and the main inactivation take place in the 1300μm concentration of Sodium selenate ($p<0.05$). It can be concluded that increasing the concentrations of Sodium selenate caused to increase helicity of AChE, therefore, in the presence of different concentrations of Sodium selenate the α-helix structure can induce in the secondary structure of AChE. Also the intrinsic fluorescence decreased by increasing the concentrations of Sodium selenate. In conclusion, according to changes observed in the secondary and tertiary structure of enzyme it is proposed that Sodium selenate are able to affect the activity of the AChE . Therefore, we suggest that the Sodium selenate could be useful in treatment of Alzimer's disease.

Keywords: Acetylcholinestrase, Alzimer's Disease, Circular Dichroism Spectroscopy, Fluorescence Spectroscopy, Sodium Selenate, UV-Visible Spectroscopy.

Abstract No.14

Extremely Low Frequency of Electromagnetic Fields (ELF-EMF) Decreased Acetylcholinesterase Activity

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Daily exposure to electromagnetic field is unavoidable as a consequence of living in a society that depends heavily on the use of the electricity. The exposure to extremely low frequency electromagnetic field (ELF-EMF, frequencies less than 200-300 Hz) can alter enzyme activities. Acetylcholinesterase (AChE) (EC 3.1.1.7), is responsible for the hydrolysis of acetylcholine to form choline and acetate. AChE is mainly found at cholinergic synapses in the central nervous system (CNS). The aim of this study was to examine the effects of ELF-EMF (frequency of 75, 120, 217 Hz, induction 0.3 mT) on AChE activity. AChE activity was measured by using acetylthiocholine chloride as substrate and monitoring the thiocholine production according to the Elman method with UV-visible spectroscopy. We also use circular dichroism spectroscopy and fluorescence spectroscopy for investigating of secondary and tertiary structure of enzyme. The results demonstrated that the ELF-EMF decreased enzyme activity and the main inactivation took place in 217 Hz ($p<0.05$). According to changes observed in the secondary and tertiary structure of enzyme it is proposed that these fields are able to affect structure and dynamics of the active site gorge of AChE and result in changing enzyme activity.In conclusion, AChE plays an important role in nervous system and EMF changes can affect on some biochemical processes in decreasing the severity of diseases such as Alzheimer's disease.

Keywords: Acetylcholinestrase, Circular Dichroism Spectroscopy, Elman Method, Extremely Low Frequency Electromagnetic Field, Fluorescence Spectroscopy, UV-Visible Spectroscopy.

Abstract No.15

Effect of Shear Stress on Stem cells

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The stem cells especially Mesenchymal stem cells (MSCs) or stromal cells, can be used as a therapeutically in tissue engineering and regenerative medicine to substitute and relief the damage tissues and also differentiate to verify cell lineages to idealization of tissue engineering. All cells in body are exposed to tangential mechanical forces, called shear stress because of the blood flowing across the cells surface. These force effect on cell culture conditions, differentiation, proliferation and cells expression way. Considering the essential role of stem cells, understanding and investigation of these cells responses to mechanical forces are very important. The present article reviews the mechanisms of gene expression changes the MSCs in response to different amounts of laminar shear stress during periods and its role in proliferation, culture and differentiation of cells under different shear stress.

Keywords: Stem cell, Mesenchymal, Stress.
