produce hydrogen peroxide upon the recation by GOD. Hydrogen peroxide is produces gradually and does its antimicrobial activity in effective and gentle manner. GOD also is routinely used to evaluate glucose in physiological fluid included with medical diagnosing kits. Measurement of glucose concentration is important for determination of blood glucose levels in diabetic patients. GOD has been successfully immobilized onto various scaffolds to improve its stability. In this study we used covalent binding strategy for immobilization of GOD on glycation induced biocompatible amyloid nanofibers of bovine serum albumin in which glutaraldehyde was used as a cross-linker. The optimum concentration of the enzyme for immobilization was determined at 160 µg GOD per mg amyloid nano-fibers. . The kinetic parameters of the free and immobilized GOD were also determined. Despite on a decreasing of the catalytic performance (kcat/Km) of the enzyme upon immobilization, the covalently bound GOD on amyloid nano-fibers retained almost 40-70% of its activity after incubation at temperatures 25, 45 and 65ºC but a major decrease in the activity was occurred for free enzyme under the same conditions. Hence, presented activity in a broad range of temperature most importantly at 40°C< in immobilized form compared to the free enzyme are explained. Interestingly, comparison between pH profiles of the free and immobilized enzymes indicates on increasing pH sensitivity of the GOD activity in the pH range lower than 6 and the optimum pH shift from 5 to 6 upon immobilization was observed.

**Keywords:** Catalytic Nano-Fibers, Amyloid, Glucose oxidase, Glycation, Immobilization.

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**Abstract No.208**

### Salt-induced Bundle Formation of F-actin Using a Detailed Model

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Actin filaments assemble into networks or bundles helped by linker proteins, depending on their different roles in cell function. Similar patterns have also been observed experimentally in solutions of F-actin rods with multivalent salt. In bundle structure, F-actins place close to each other in parallel formation. So despite their same high negative charge, why do they attract each other?Here we aim to represent a model which contains enough structural details of F-actins to study the mechanism of this attraction. For this purpose, we apply the 4-sphere model for the structure of G-actin. In this model, G-actin is composed of four subdomains, one of which carries the most charge of G-actin (sd1). Using this 4-sphere model, we consider real structure and size of F-actin in addition to bending and twist rigidity and helical charge distribution of F-actins.Applying MD simulation to a group of these F-actins, we observe that they attract each and form a hexagonal lattice of the same lattice size as the experiment results. Also it is observed at equilibrium that counter-ions tend to assemble midline between two neighbor F-actins. This distribution of counter-ions around F-actins and how sd1s arrange on F-actins will shed light on understanding the mechanism.Accurate look at equilibrium details of arrangement of sd1 of two neighbor F-actins and plotting the force on them along F-actins, it is concluded that at equilibrium, F-actins will rotate and twist until they expose their sd1s close to each other. Because of their high negative charge, they will attract a cloud of counter-ions in a region between themselves. This cationic cloud will locally attract the two F-actins in its side and it is effectively seen that the two F-actins attract each other.

**Keywords:** F-actin, Bundle, Counter-ion, Multivalent salt, 4-sphere model, MD simulation.

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**Abstract No.209**

### Amyloid Peptide Nanofibrils: from Structure to their Lipid Peroxidative Effects

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Alzheimer's disease is a neurodegenerative disorder which is the most common cause of senile dementia. Amyloid beta (Aβ) is an amphiphilic peptide of 39 to 43 amino acids which is produced from a transmembrane precursor by a proteolytic cleavage, furthermore it is the main component of the neuritic plaques of the Alzheimer's disease.In this research some of the structural, physicochemical, and cytotoxic properties of the Aβ (25-35) and one of its modified, cys-amyloid beta (25-35), which has an additional cysteine residue on its N-terminal, have been investigated. The objective of this research is to

comprise these two peptides and understand the effects of the presence of cysteine residue on the rate of amyloid oligomer and nanofibril production. Moreover, structural and physicochemical properties of the oligomers and nanofibrils have been investigated. As a result, α helix to β sheet transition, degree of β-aggregation and morphology of non-modified and modified Aβ peptides were studied using spectropolarimetery (CD), thioflavin T (ThT) extrinsic fluorescence and microscopic methods including TEM and AFM, respectively. As a result, fibrilogenesis of cys-amylid beta (25-35) showed the same rate as it was for Aβ (25-35). Also, their lipid peroxidative effects on model liposomal membrane are reported.

**Keywords:** Amyloid Beta, Nanofibrils, Alzheimer's Disease, Aggregation.

**Abstract No.210**

### Effect of Chitosan Nanoparticles on T47D Viability

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This study describes the low cytotoxicity of chitosan/DNA complexes on T47D in compare with Lipofectamine as a novel way of gene transfection.The chitosan/DNA nanoparticles were synthesized through the complex coacervation method of the chitosan solution with pTracer-CMV2 plasmid. In this regard two diffrent molecular weight of chitosan(18-50 KD) and several concentrations of each including 1%-0.5%-0.1%-0.05%-0.01%-0.005%-0.001% were used. samples were run through an agarose gel to examine the synthesis of complexes of nanoparticles. In order to measure the Particle size and zeta potential of nanoparticles we used zetasizer. T47D cell line treated with chitosan/plasmid nano particle complex synthesized using above-mentioned dilutions of chitosan. Treatment with Lipofectamine2000 was taken as the control. The Cell viability was determined by MTT assay.Gel electrophoresis results indicated that 1%, 0.5%, 0.1% and 0.05% concentrations could form chitosan/ pTracer-CMV2 nanoparticle. MTT assay indicated that the average viability of cells treated with chitosan/plasmid nanoparticles was about 97% versus 80% for Lipofectamine 2000. Average complex size of18 and 50KD chitosan molecular weight were 197 and 299 nm respectively.Protection of nucleic acid in the serum is a major problem in gene therapy that could be solved by chitosan for its Strong attachmentto DNA.Furthermore using chitosan nanoparticles as a gene delivery system is a safer way of gene transfection for its lower cytotoxic effect.

**Keywords:** Chitosan Nanoparticle, Cytotoxicity, Lipofectamine, T47D cell line.

**Abstract No.211**

### Interaction of Human Umbilical Cord Derived Stem Cells with Biodegradable PLLA Scaffold

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Tissue Engineering (TE) is the regeneration of biological tissues through the use of cells, with the aid of supporting structures and biomolecules. Mimicking architecture of extracellular matrix is one of the challenges for TE. The ideal scaffolds provide a framework and initial support for the cells to attach, proliferate and differentiate, and form an extracellular matrix (ECM). Electrospined Poly-L-lactic acid (PLLA) was selected for this study. They haven't immunologic response and have FDA permission for medical use. Scaffold surface topography, chemical microstructure and mechanical properties have been shown to significantly influence cell behaviors such as adhesion, growth and differentiation. The umbilical cords derived stem cell interaction with (PLLA) scaffold via evaluation of cell adhesion to synthetic nanofibrous polymeric scaffold. During the experiment, human mesenchymal stem cells (MSCs) were successfully isolated from the umbilical cords and cultured in the PLLA scaffold and then the viability and proliferation of the cells determined via both of trypan blue exclusion test and MTT assay. Results exhibited high biocompatibility which verified by no significant difference between the number of the cultured cells on the scaffold and control samples. Furthermore cell morphology, adhesion