

**Background and Aim:** Phospholipases are functional enzymes that are important in the biological process of organisms. These enzymes can hydrolyze glycopospholipids with esterase activity and they invade tissue and have an important role in pathogenesis. *Candida albicans* is one of the most common microorganisms in the human body that affected by phospholipase enzymes. The aim of this study was molecular diagnosis of *C. albicans* genes *plb1* and *plb2*, and vaginal infection agent in women in Tehran City

**Methods:** Fifty of *C. albicans* isolates were collected from patients with vaginitis symptoms who had referred to health centers in Tehran city. DNA extraction was performed using a DNA extraction Kit and amplified by PCR for detecting *plb* genes (*plb1* and *plb2*) with specific primers. The PCR products were sequenced by Microsynth Company in Switzerland and FASTA format of sequences were extracted using Chromas Lite software. Then sequence analysis was performed by BLAST program in NCBI database. DNA sequences translated to amino acid sequences using sequence translation tools (EBI, (EXPASY). The three-dimensional structure and the secondary and estimated protein structure were determined by PHYER2 Protein Fold Recognition Server.

**Results:** Results of homology comparison *C. albicans* gene *plb1* shows 88.71% homologous with *C. albicans plb1* gene for phospholipase B1 from USA (Muzzey et al., 2018). The secondary structure of the protein showed that the protein structure of this gene contains 3% alpha helix and 48% beta strand. Maximum phylogenetic relationship with the *Candida albicans* TIMM 1768. Molecular analysis of the *PLB2* gene shows 88.33% homology similarity with *C. albicans plb2* gene for phospholipase B2 from USA (Hoover et al., 1998). Secondary structure of protein of *C. albicans* gene *plb2* contains 56% alpha helix and 6% beta strand structure. And maximum likelihood (phylogenetic relationship) with the *Candida albicans* SC5314.

**Conclusion:** *Candida albicans* secreted phospholipase B genes (*plb1*, *plb2*) polymorphism were found in isolates from patients with vaginitis symptoms who had referred to health centers in Tehran.

**Keywords:** Candidiasis, *Candida albicans*, Phospholipase B Genes, Vaginal, Infection, Yeast.

#### **P-255: The significant change in Antibiotic-resistant gene expression of *Acinetobacter baumannii* by using functionalized carbon nanotubes Nanofluid**

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**Background and Aim:** *Acinetobacter Baumannii* is one of the most critical factors in the development of nosocomial infections around the world and carries the Tet (A) gene encoding a tetracycline efflux pump. Recently, Carbon nanotubes have described as a novel and potential antibacterial and Nanocarrier agents. Aim: In this research, Antimicrobial effects study of carbon nanotubes Nanofluid on *Acinetobacter baumannii* and gene

expression study on the Tet (A) gene was done.

**Methods:** Cell viability assay was carried out after incubation of *Acinetobacter baumannii* by the CNT's suspensions (100 µg/ml) and antibiotic for 24, 48, and 72 h. Then the gene expression profile of the Tet (A) gene was studied by Real-Time PCR method on bacteria, which were treated by functionalized carbon nanotubes Nano fluid+ Antibiotic in comparison with Antibiotic alone.

**Results:** Results were shown significantly, reduced bacterial proliferation, and reduced expression of the Tet (A) gene in the Nano fluid+ Antibiotic condition.

**Conclusion:** The present study showed that the functionalized carbon nanotubes Nanofluid could be a suitable drug delivery vehicle for overcoming bacterial Antibiotic-resistant.

**Keywords:** Antibiotic-resistant, *Acinetobacter baumannii*, Carbon nanotubes, Nanofluid, Tet (A) gene.

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## Molecular and Cellular

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#### **P-256: Evaluating toxic effects of biosynthetic nanocurcumin on human gastric cancer cells**

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**Background and Aim:** Gastric cancer is ranked as the fifth most frequently diagnosed cancer and the third for mortality in the world. Despite chemotherapy is a common therapeutic option for gastric cancer patients, efficacy of current regimens is still low. To introduce a novel nanoparticle with cytotoxic activity against human gastric cancer cells, we evaluated effects of biosynthetic nanocurcumin derived from a gram positive coccus.

**Methods:** For biosynthesis of nanocurcumin, whole bacterial cell cultivated for 24 h in the presence of curcumin was used, followed by centrifugation at 5000 rpm. To prepare different concentrations of nanocurcumin, as well as curcumin itself, DMSO was used as solvent, and final concentrations were made by DMEM supplemented with 10% FBS just before each experiment. Then, MKN45 cells, a human gastric cancer cell line, were treated with 5, 10, 20 and 40 µg/ml of each agent for 24 h. At the end, cell viability was determined by alamar blue as a colorimetric assay, and changes in the cell morphology were recorded by an inverted microscope.

**Results:** Assessment of MKN45 cell viability revealed that 92%, 66%, 34% and 35% of cells were alive after administration of 5, 10, 20 and 40 µg/ml nanocurcumin, respectively.

Moreover, viability of cells were calculated as 69%, 47%, 43% and 25% when curcumin was used in concentrations of 5, 10, 20 and 40 µg/ml, respectively.

**Conclusion:** Based on present findings, which indicated toxic effects of nanocurcumin against gastric cancer cells, synthesis of nanocurcumin by microorganisms could be considered as reliable and eco-friendly method to obtain novel anticancer agents.

**Keywords:** Gastric cancer, Nanocurcumin, Biosynthesis, Toxic effects

### **P-257: The effect of metformin treatment on the gender and mortality of diabetic mice offsprings**

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**Background and Aim:** Diabetes is a common disease that affects human health, especially mothers and their children. It leads to materialization and mortality of mice offsprings. Using metformin is a common way of treating diabetes. However, it is not clear whether it can reduce gynogenesis and mortality or not. Therefore, the aim of this study is to investigate the effect of metformin treatment on the gender and mortality of diabetic mice offsprings.

**Methods:** The mice were injected with 200 mg/kg of Alloxan for the induction of diabetes. After inducing diabetes, they were divided into four groups. The first group included the males and females treated by Alloxan and metformin which were mated with each other. In the second group, males were treated by Alloxan and metformin, being mated with healthy females. The third group included the females treated by Alloxan and metformin, which were mated with healthy males. And the fourth group included the males and females treated by Alloxan which did not receive metformin. After treatment, mice were coupled with the male/female ratio to determine the sex ratio of their offsprings. The One Way Repeated ANOVA was used for statistical analysis.

**Results:** The result showed that the number of male offsprings in all the groups was significantly more than the control group ( $p < 0/05$ ) (fig 1). In addition, the mortality of the control group was significantly more than the other groups ( $p < 0/05$ ) (fig 1).

**Conclusion:** It seems that the metformin treatment in diabetic mice can control the mortality ratio of offsprings; it also leads to producing the more males in offsprings. Gender determination and population control have been human ambitions and the metformin treatment of diabetes seems to meet some of them.

**Keywords:** metformin, offspring, mortality, mice

### **P-258: Cloning and expression of BDNF protein in Escherichia Coli**

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**Background and Aim:** Brain derived neurotrophic factor (BDNF) located on chromosome 11p14.1, is a member of the nerve growth factor family which involved in the growth, differentiation, and survival of specific types of developing neurons both in the central and the peripheral nervous system. It is also involved in regulating synaptic plasticity in the central nervous system. Expression of a similar gene in human is reduced in both Alzheimer's and Huntington disease patients. This has been found to be related with many biological functions, including NMDA receptor activity, synapse stability, dopaminergic, cholinergic, serotonergic, and GABAergic signaling, synaptogenesis, and dendritogenesis. Due to the importance of BDNF in pharmaceutical industries as well as its application on neurological disorders treatment, producing BDNF is crucial and is considered as an important step in development of pharmaceutical industries.

**Methods:** BDNF gene was optimized based on E. coli strain BL21 expression system and synthesized in pUC 57 vector, Then it was sub-cloned into pET21a between NdeI and XhoI restriction sites. The constructed recombinant plasmid was transformed in to E.coli strain BL21 and expressed under different conditions. Then BDNF protein was purified by affinity chromatography by nickel-agarose column. The protein purity was assayed by sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE). Finally, its activity will be evaluated.

**Results:** The highest protein expression level was determined with 0.5 mM of Isopropyl β-D-1-thiogalactopyranoside (IPTG), at 18°C in 5 h of incubation. The expressed protein then was purified by Ni-agarose affinity chromatography and was illustrated by SDS-PAGE.

**Conclusion:** In this study we have cloned and then expressed BDNF protein in E. Coli strain BL21 and the purified protein then was achieved by Ni-agarose affinity chromatography.

**Keywords:** Brain-Derived Neurotrophic Factor, Drug industry, Escherichia coli

### **P-259: Viability assessment of human colon and gastric adenocarcinoma cells after treatment with nano-MgO**

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**Background and Aim:** Colon and gastric cancers are major clinical concerns worldwide, with high incidence in developing and industrial nations. Adenocarcinoma of the colon makes more than 90% of all colorectal cancer cases, and develops in cells lining of the large intestine. Since mortality rate of colon and gastric adenocarcinomas are high in Iran, the aim of present