9th Yazd International Congress and Student Award on Reproductive Medicine with 4th Congress of Reproductive Genetics

Poster Presentations

P-159
Fabrication of miR-16-1 carrier lipid system with the aim of affecting prostate cancer cell line (PC-3)

Tajgardoon M[1], Akhlaghi M[2], Ansari K[3], Shahmohammadi S[1], Haghirosadat BF[4].

1. *Medical Nanotechnology and Tissue Engineering Research Center, Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.*
2. *Department of Clinical Biochemistry, Faculty of Medicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.*
3. *Nano-Biotech Foresight Company Biotechnology Campus, Science and Technology Park of Yazd, Yazd, Iran.*
4. *Department of Advanced Medical Sciences and Technologies, School of Paramedicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.*

Email: fhaghirosadat@gmail.com

Background: Prostate cancer in the men is one of the most common types of cancer. This cancer has a poor prognosis and is diagnosed usually in advanced stage. One of the new methods in cancer therapy is drug delivery system. Liposomes and niosomes are nano carrier that can improve cellular uptake of drug and genes and another material like mi RNAs. Tumor suppressor miR-16-1 target tumor tissue and specially the Bcl-2 oncogene.

Objective: Our aim in this study was to increase targeting cancer cell with miR-16-1 liposomal system.

Materials and Methods: The lipid system was synthesized by thin hydration film method using neutral and charged phospholipids with a percentage of 70: 30: 20: 3. In brief, phospholipids and cholesterol were dissolved in chloroform. After homogenization organic solvent was removed by rotary evaporator (Heidolph, Germany) at 50 °C until a thin-layered film formed. The dry lipid films were hydrated by adding phosphate-buffered saline (PBS, pH = 7.4) and obtain the liposomal suspensions.Then to reduce the vesicles' mean size, the prepared vesicles were sonicated for 15 min using a micro tip probe sonicator. The charge and size of nanoparticles were analyzed by Zeta Sizer and the Zeta Extractor. In the next step, miR-16-1 was loaded on the system by incubation method for 45 minutes at 25°C.

Results: The size and charge of the lipid were below 100 nm and below 12 mV before loading and below 150 nm and near 0 mV after loading.

Conclusion: Accordingly, the results quantitatively and qualitatively indicate the loading of miR-16-1 on the lipid system, which can be effective in targeting prostate cancer cells in the next phase.

Key words: *Prostate cancer, Gene therapy, Liposome, miRNAs, Drug delivery.*