

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

Poster Presentations

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Synthesis and optimization of cationic liposomal system for miRNA-15a loading in order to use in prostate cancer treatment

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Background: Prostate cancer is the second most common cancer among men and the fifth leading cause of death in the world. Gene therapy is a new method

for cancer treatment. Liposomes are known as carriers for gene delivery, but microRNA instability and poor translating are important challenges in miRNA delivery.

Objective: The aim of this study is to provide an optimized formulation of cationic liposomal system in order to delivery of miRNA-15a as an anti-tumor agent to prostate cancer cell line (PC3).

Materials and Methods: In this study, different formulations of the cationic liposomal system with different content of phospholipid (10, 20, 30, 40, 50%) and positive charge were synthesized, its size and charge were determined by Zeta-Sizer (DLS), then the cell viability percentage of PC3 prostate cancer cell line after treatment with various liposomal systems was evaluated.

Results: Based on the results of the DLS device, the particle size was below 150 nm and zeta potential was in the range of 0 to +15 mV. The MTT results determined that the viability percentage of cells were between 70 to 90%.

Conclusion: The optimal formulation with appropriate size, charge and cells viability percentage which could increase anti-cancer effects of miRNA-15a to PC3 cell line was selected for miRNA-15a delivery.

Keywords: Prostate cancer, Gene therapy, Nanocarrier, miRNA-15a, Liposome.