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The *in vitro* investigation on the effect of infrared waves combined with silica-gold nanoparticle on the breast cancerous cells**Delaram Babaei**

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Nanotechnology is one of the novel platforms for diagnosis and treatment of cancer which nowadays is the most cause of death in Iran and other countries. Gold nanoshells are made of a dielectric core which surrounded by a thin gold shell. By the surface Plasmon resonance (SPR) properties, nanoshells adsorb the near-infrared light (NIR) and generate heat by increasing the local temperature of the tumors which finally cause the photo-thermal ablation of cancerous cells. Herein, we synthesis the silica-gold nanoshells which have a silica core as a dielectric core by which surrounded thin Au layer. In the first step, we made the silica nanoparticles by Stober method. In the next step, the silica nanoparticles aminated with (aminopropyl)triethoxysilane (APTES). The gold nanoparticles have been synthesized separately by two different protocols. The gold nanoparticles were seeded to the aminated silica nanoparticles to produce silica-gold nanoshells. The focus of this project is the discussion of various NIR light and their effects on breast cancerous cells. The MCF-7 breast cancer cells were incubated with the various concentrations of nanoshells and after several hours they exposed to NIR light at 810, 980 nm and 4 W/cm² for 2 minutes with 1.5 mm spot size. The MTT and alamarBlue tests clarify that the cells which are under laser radiation were caused ablation of cancerous cells.

Biography

Delaram Babaei has completed her MSc degree in Medical Nanotechnology from the Islamic Azad University in Iran.

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