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Co delivery of anti-cancer drugs by combination therapy

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Among many cancer therapy, chemotherapy and photodynamic therapy (PDT) have been considered in this essay. For the enhancement of the drug delivery, the use of up-conversion material is taken into account. Under near-infrared (NIR) excitation, up-conversion emit ultraviolet light in the traditional PDT, injecting the photosensitizer (PS), as a drug, then using illumination source like laser, light emitting diodes, arcing lamps and laser to active PS. Using up-conversion can help the drug to penetrate in more depth of the tumor tissue, compared to the traditional PDT, and improve the efficiency of the drug and finally the cancerous cell death. Additionally, we could assemble a core-shell nanoparticle to improve the chemotherapy as well as PDT. In regard to this, we could have conjugated doxorubicin (DOX) in shell and then (PS) in core in order to deliver two anti-cancer. Then, the nanoparticle is PEGylated to overcome the dilemma of "protein corona". Also, using folic acid (FA) for the cancerous cell receptor, as a ligand, in the endocytosis-mediated process, we could guarantee the targeted therapy.

Biography

Mahshid Jafari has completed her BS from Azad University of Tehran- North in Chemical Engineering and is a Master student in the same field and her thesis is about the Nano-medicine in cancer this abstract is part of her thesis.

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