

### عنوان مقاله:

Modified Photochemical Properties of Mitoxantrone by Plasmonic Photothermal Response of Hollow Gold Nanoshells

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### خلاصه مقاله:

Introduction: Mitoxantrone (MX) has been introduced as a photosensitizer drug. However, due to some side effects, the widespread use of this drug has been confronted with some limitations. Hollow gold nanoshells (HGN) have attracted considerable attention due to their interesting photochemical features that can use as nanocarrier. In this paper, the thermal response of MX and the use of this property for thermal effects during the photodynamic process by MX-conjugated HGN were investigated. Material and Methods: After optimizing the synthesis of ultimate nanostructure, the characteristics of pharmacological agents including MX, HGN, methoxy polyethylene glycol (mPEG)-HGN, and MX-mPEG-HGN were determined. Then, the thermal response of MX was determined at o-00°C. Finally, by applying light irradiation with a non-coherent source at a wavelength of FYo nm and exposures of o to ao j/cmY, the profile release and temperature variation in MX-mPEG-HGN were determined. Results: The zeta potentials of HGN and MX were negative, which resulted in electrostatic repulsion between them. In order to solve this challenge, the surface modification of HGN with mPEG was performed, resulting in the chemical bonding of the drug with the nanostructures and increasing the stability of the final nanostructure. With increasing temperature, the optical density of the drug at FFo nm significantly increased, which is an effective induction of photodynamic effect. Conclusion: In this study, we used mPEG-HGN as the nanocarrier for MX. Also, the thermal behavior of MX was .recognized as an important factor in increasing temperature that could improve the photodynamic process

کلمات کلیدی: Mitoxantrone, Nanoshells, Photodynamic, Photothermal

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