

## Effective delivery of doxorubicin by surface-modified gold nanoparticles with dihydrolipoic acid

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Gold nanoparticles are potentially used in disease diagnosis or treatment. These advances in nanotechnology have led to new and improved nanomaterials in biomedical applications. Common nanomaterials that can be applied in biomedical applications include liposomes, polymer micelles, graphene, carbon nanotubes, quantum dots, iron oxide nanoparticles, gold nanoparticles (Au NP), and more. Among them, Au NPs were considered the most interesting nanomaterials due to their unique optical, electronic, sensing and biochemical properties. Au NPs have potential applications in medical imaging, drug delivery, and tumor treatment in the early detection, diagnosis and treatment of diseases. This study focuses on the synthesis of doxorubicin (DOX) functionalized gold nanoparticles (AuNP) for the detection and monitoring of drug carriers and target molecules for intracellular delivery of therapeutic agents and for drug release. AuNPs were surface modified via dihydrolipoic acid (DHLLA) and characterized by ultraviolet (UV) spectrophotometer, Fourier transform infrared (FT-IR) spectroscopy, X-ray diffraction (XRD) and transmission electron microscopy (TEM) measurements.