PREPARATION AND CHARACTERIZATION OF MAGNETIC-GOLD NANOPARTICLES FOR MEDICAL DIAGNOSIS

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Cancer is a noticeably difficult disease to treat. Sometimes remaining cancer cells stay even after removing tumors. Hyperthermia is identified to induce apoptotic cell death in lots of tissues and has been shown to enhance local control and generally survival in permutation with chemotherapy and radiotherapy in randomized clinical trials. Iron oxide nanoparticles with superior magnetic properties and appropriately surface functionalized are being extremely studied to achieve extremely effective carcinogenic cell destruction through hyperthermia treatments. In gold nanomaterial-based hyperthermia, the Au-NPs excitation is normally done throughout a near-infrared laser (N-IR) light source. Au-NPs are able of producing high temperatures, but a restrictive factor for this process is the diffusion depth of near-infrared light into tissue. After that the approach developed into a well-researched field because of the introduction of magnetic nanoparticles (MNPs). MNP-based hyperthermia treatment has numerous benefits compared to traditional hyperthermia treatment. The synthesized Au-NPs was characterized by diverse techniques such as scanning electron microscopy (SEM), dynamic light scattering (DLS), X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR) and vibrating sample magnetometer (VSM). The aim of the our work was to development of new techniques for hyperthermia (heat therapy) as a way to deal with cancer tissues, photo thermaltherapy can partly solve this problem due to gold nanostructures. Because the nanoparticles produced by this method, because of their magnetic properties have the ability to enter into the cancer cells and therefore only affect on the cancer cells.

References.

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