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Multi-functional magnetic nanocarriers for cancer theranostics

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In this work we have designed a multi-functional hetero-component system that embraces Magnetic Nanoparticles and Photosensitizer pro-drug based Magneto Liposomal carrier (MLC) for Cancer Theranostics. These MLC carriers have the ability to induce both Hyperthermia and Photo Dynamic therapy that would make the system effectual and hasten the fatality rate of cancer cells. Moreover the property of Magnetic nanoparticles that could function as a negative contrast agent has made the system an effective Imaging system. Additionally there is a possibility of having both local and site specific targeting. We have synthesized Trisodium citrate capped magnetic nanoparticles (TCCMN) and loaded along with zinc phthalocyanine (ZnPc) into Liposomes. Analytical investigation (SEM, Uv-Vis-NIR spectroscopy, DSC, FTIR and TEM) depicts the presence of both TCCMN and ZnPc into Liposomes. Further investigation on prostate cancer cell lines need to be done to check its therapeutic efficiency.

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