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Effect of synthetic parameter on the cytotoxicity of CdTe/CdSe nanoparticles against osteosarcoma cell line

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LM-8 is a murine osteosarcoma cell line associated with bone tumor and is commonly found in young adult and children. The LM-8 cell line has Nuclear factor (NF)-κB which make them high resistance to irradiation thus limiting their treatment only to chemotherapy and surgery and this has become a source of concerned for cancer therapy. In addressing this problem, quantum dots (QDs), which has high potential application in cancer treatment not only as imaging tool but also as drug transport agent have been proposed as possible agent to address this problem. Thus, in this study we herein report the synthesis of CdTe/CdSe QDs core/shell NPs via a simple, economical and green method in the absence of inert atmosphere. The temporal evolution of the CdTe/CdSe QDs cytotoxicity against osteosarcoma cell line was investigated by varying the pH and reaction time. The optical properties of the as-synthesized quantum dots were monitored by UV-Vis and photoluminescence spectrophotometer, while electron microscope was used for structural properties. Prolonging the reaction time and increasing the pH resulted in highly monodispersed CdTe/CdSe core-shell NPs with good optical properties in the near infrared region and high cell viability. The high fluorescence intensity and improved cell viability against the osteosarcoma cell line confirms QDs great potential for imaging and drug delivery applications.

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