

عنوان مقاله:

Spectroscopic investigation on the interaction of DNA with superparamagnetic iron oxide nanoparticles doped with chromene via dopamine as cross linker

محل انتشار:

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خلاصه مقاله:

Objective(s): The interaction of DNA with iron oxide nanoparticles (SPIONs) was studied to find out the interaction mechanism and design new drug delivery systems. Materials and Methods: The interaction of calf thymus DNA (ctDNA) with SPIONs doped with 2H-chromene via dopamine as cross linker (SPIONs@DA-Chr) was studied using the UV absorption spectroscopy, viscosity measurement, circular dichroism, fluorescence and FT-IR spectroscopic techniques. Results: UV absorption study showed hyperchromic effect in the spectra of DNA. Few changes were observed in the viscosity of ctDNA in the presence of different concentration of SPIONs@DA-Chr. The result of circular dichroism (CD) suggested that SPIONs@DA-Chr can change the secondary structure of DNA. Further, fluorescence quenching reaction of ctDNA with SPIONs@DA-Chr and competitive fluorescence spectroscopy studied by using methylene blue, have shown that the SPIONs@DA-Chr can bind to ctDNA through non-intercalative mode. FT-IR spectroscopy confirmed the binding of SPIONs@DA-Chr and ctDNA. Conclusion: These results suggested that .SPIONs@DA-Chr binds to DNA via groove binding mode

کلمات کلیدی:

DNA interaction, Dopamine, Iron oxide nanoparticles, Spectroscopy

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