

عنوان مقاله:

Aptamers can monitor ionization radiation

محل انتشار:

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خلاصه مقاله:

Ionization radiation, even at low doses, causes various diseases and is one of the main reasons for many kinds of cancers . Therefore, the detection and control of low doses of ionizing radiation are very important in nuclear medicine, radiation protection, and environmental problem. Gold nanoparticles are one of the most stable metal nanoparticles which their colour variation depends on size, due to the localized resonance surface plasmon. This colour change, which is in the visible region and change from red to blue range, has greatly favourable to the use of gold nanoparticles for colour-based diagnosis .Aptamers are synthetic single-strand sequences of oligonucleotides that produced by so-called SELEX process. The interaction of aptamers with gold nanoparticles improves electrostatic repulsion between nanoparticles and enhance their colloidal stability. The binding of aptamer to the target molecule with high specificity and affinity changes the stability of gold nanoparticles and then changes the colour of the colloidal solution . In this study, the effect of very low doses of gamma radiation with ^{60}Co source on the plasmonic behavior of gold nanoparticles protected by aptamers was investigated. The results show that the presence of radiation reduces the colour intensity of the Gold nanoparticles solution and therefore, can simply detect the ionizing radiation

کلمات کلیدی:

Radiation detection, Gold nanoparticles, Plasmonic, Aptamer, Gamma ray

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