

عنوان مقاله:

Antioxidant capacity of cerium oxide nanoparticles synthesised by hyssopus officinalis plant

محل انتشار:

سومین سمپوزیوم بین المللی سرطان نسترن (سال: 1396)

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خلاصه مقاله:

Cerium oxide nanoparticles are a group of nanoparticles with high antioxidant potency and potential healing properties. The high antioxidant power of cerium oxide is due to the simply reversible oxidation states of cerium (Ce^{3+} and Ce^{4+}) at the nanoscale. The antioxidant properties of the compounds, like all other properties, are different depending on the synthesis of nanoparticles and the existing conditions. Since the antioxidant capacity of compounds can enhance their ability to prevent the development or progression of various diseases, such as cancer, the antioxidant capacity of a compound is an important factor in evaluating the biological properties of different substances. Therefore, in this study, the antioxidant power of the synthesized cerium nanoparticle was evaluated. In order to evaluate the capacity of inhibiting free radicals by the cerium nanoparticle, initially ABTS and DPPH free radicals were produced using specific protocols. To create DPPH free radicals were used from 96% ethanol and for ABTS free radicals, potassium persulfate and deionized distilled water were used. Subsequently, different concentrations of nanoparticles with equal volumes of DPPH and ABTS free radicals were combined and the wavelength was recorded at 517 and 734 nm respectively. Inhibition of free radicals in comparison with ethanol as negative control and BHA as positive control was evaluated. The results showed that the synthesized cerium nanoparticle was able to inhibit free radicals with excellent power. ABTS and DPPH Free radicals with a IC_{50} about 31.2 and 62.5 $\mu g/ml$ were inhibited. Comparison of the inhibition power of nanoparticles on ABTS and DPPH free radicals showed that both free radicals were greatly (Above 80%) scavenged in treatment with nanoparticle at 500 $\mu g/ml$ concentrations and this amount of inhibition maintained at a high level with a reduction of concentration to 250 $\mu g/ml$. Comparison of two free radicals showed that inhibiting ABTS free radicals was more potent than DPPH. We suggest that the synthesized serum nanoparticle in this study as a biocompatible nanoparticle may be able to prevent oxidative stress related diseases such as cancer

کلمات کلیدی:

Cancer Prevention, Cell and Cancer, Multidisciplinary Cancer Research, Cancer Treatment and Management, Drugs and Cancer

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