

عنوان مقاله:

Biosynthesis of gold nanoparticles by Evening primrose (*Oenothera biennis*) seed extract and optimization of synthesis conditions by Taguchi method

محل انتشار:

بیستمین کنگره ملی و هشتمین کنگره بین‌المللی زیست‌شناسی ایران (سال: 1397)

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خلاصه مقاله:

The development of nanotechnology in the fields of medicine, technology and engineering, promote the optimal methods of production of nanomaterials. Today, organic and inorganic nanoparticles are commonly used in drug delivery systems, early diagnosis of diseases, control of agricultural pesticides and fertilizers, genetic engineering and industries. One of the best and most biocompatible methods to production of nanoparticles is through the bottom-to-up production with the help of effective herbal compounds. The Evening primrose medicinal plant, is able to synthesize and stabilize nanoparticles due to its active compounds, tannin, terpene, flavonoids, omega-6 fatty acids, vitamin E and phenolic compounds. The most important therapeutic effects of this plant are anti-inflammatory, anti-cancer, cholesterol lowering, sedation, anti-asthma and anti-pertussis. In this study, 16 experiments with 4 factors in 4 different levels were designed with the use of the Minitab 17 software and the Taguchi experiment design method, for the purpose of the synthesis of gold nanoparticles in the appropriate size, by EP seed extracts. Then seed extracts prepared by ultrasonic-assisted extraction and GNPs were synthesized by adding chloroauric acid after adjusting the levels of each experiment. The size of synthesized GNPs, were determined by UV-visible spectrophotometry and DLS analyzes in the range of 1-7 nm. Data analysis results indicate that the appropriate levels of investigated factors are, concentration 200:400 μ l gold chloride to seed extract, pH=10, temperature 70°C and time 24 hour, and also time and pH are the most effective factors in biosynthesis of suitable and stable gold nanoparticles.

کلمات کلیدی:

Gold nanoparticles, Bionanotechnology, *Oenothera biennis*, Taguchi method, Biosynthesis, Biocompatible

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