



The synthesis technology of nanoparticles from extracts of medicinal plants for the obtained drug nanoparticles

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The main goal of these studies was to develop optimal methods for preparing extracts and homogenates of medicinal plants to obtain drug nanoparticles. Metal-based nanoparticles Ag and Fe were prepared using a green synthesis method involving AgNO_3 and FeCl_3 salts, aqueous extract, and homogenate of medicinal plants *Melissa officinalis* L. and flowers *Eleaegnus caspica* E. The properties of the nanoparticles were characterized using SEM, UV-Vis, XRD, and FTIR methods. UV-Vis spectroscopy confirmed the formation of drug nanoparticles as evidenced by distinct surface plasmon resonance bands between 300 - 450 nm. Medicinal plants contain terpenes, phenolic components, volatile compounds, phenols, etc. These components play an important role in the synthesis of nanoparticles as reducing and stabilizing agents, thus contributing to their transformation into drug nanoparticles. The size, shape, and quantity of drug nanoparticles were found to depend on the dosage, extraction time, and stabilization time. SEM images showed different shapes, sizes, and morphologies of nanoparticles based on the type of aqueous extract used. Drug nanoparticles obtained from the aqueous extract and homogenate were characterized as spherical particles with diameters between 10 and 80 nm, as well as other shapes. XRD analysis showed that nanoparticles formed as a result of the reduction of silver and iron ions using the aqueous extract had a crystalline nature. The functional groups of the aqueous extract involved in the synthesis and stabilization of nanoparticles were studied by FTIR. The functional groups OH and CO of plant extracts play a dual role as reducing and stabilizing agents of nanoparticles. Therefore, it can be inferred that Ag and Fe nanoparticles obtained through optimal synthesis in the aqueous extract of the medicinal plants hold promising medicinal properties. Consequently, experiments of this nature enable the synthesis of nanoparticles in medicinal plant extracts, leading to the production of medicinal preparations, or in other words, medicinal nanoparticles.

Biography

Kamala Gahramanova completed his MS at the age of 35 from the Baku State University. At present she is doctoral students of the Department of Molecular Biology and Biotechnology at Baku State University. Kamala has published over 10 papers in reputable journals. Her research interests include molecular biology and nanobiotechnology.

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