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Comparative Analysis of Iron Oxide Nanoparticle's (Fe_3O_4) Cytotoxicity Synthesized by Chemical and Biogenic Methods

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For the use of iron oxide nanoparticles (NPs) for medical purposes, they must have the following properties: low cytotoxicity, bioavailability, the possibility of large-scale production, etc. Nowadays, there are many approaches for the iron oxide NPs synthesis, including chemical, biological, physical methods, etc. In this research, a comparative analysis of the cytotoxicity of iron oxide (Fe_3O_4) NPs synthesized with chemical and biological methods was carried out. For chemical Fe_3O_4 NPs oleic acid was used as a stabilizer, while for biogenic NPs were used various extracts of *O. basilicum*. As research results showed, the synthesized chemical and biogenic NPs do not have any pronounced cytotoxicity in relation to the studied bacterial strains and human erythrocytes, which allows them to use for further *in vivo* studies.