



Elucidation of antibacterial, synergistic, antioxidant, and anticancer activities of green synthesized copper oxide nanoparticles against human breast cancer cells (<https://kijoms.uokerbala.edu.iq/cgi/viewcontent.cgi?article=3305&context=home>)



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Abstract

The study conducted biosynthesis of copper oxide nanoparticles using an aqueous extract of *Aspergillus niger* and investigated their potential biomedical applications. The nanoparticles were characterized using various techniques including UV-Vis, SEM, TEM, and EDX, revealing their spherical to crystalline shape with sizes ranging from 21 nm to 48 nm. The nanoparticles demonstrated notable antimicrobial activity against *Staphylococcus aureus* with a zone of 8 mm and *Escherichia coli* recorded high synergistic activity with 20.93%, as well as antioxidant properties. Furthermore, selective cytotoxicity towards breast cancer cells was observed with an IC₅₀ of 107.81 µg/ml and an IC₅₀ of 250.93 µg/ml on normal cells, suggesting their potential use as an anticancer agent and for targeted drug delivery.

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