

EVALUATION OF THE EFFICIENCY OF ALUMINA NANOPARTICLES PREPARED BY PLASMA METHOD AGAINST SOME PATHOGENS OF SKIN INFECTIONS

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Abstract

This study included isolating and diagnosing the bacteria causing skin infections and using the plasma method to prepare alumina nanoparticles, testing their activity as an antimicrobial against gram-negative and gram-positive bacteria. Twenty-five samples were collected from different skin infections, and these samples were diagnosed based on culture, microscopic characteristics, and biochemical tests. The positive growth result was 86% distributed among *Staphylococcus* spp., *K. pneumoniae*, *Proteus mirabilis*, and *Acinetobacter baumannii*. The properties of the prepared nanoparticles were studied using diagnostic devices represented by UV-visible spectroscopy, X-ray diffraction, and field emission scanning electron microscopy. The results of these examinations indicate the formation of pure alumina nanoparticles in a spherical shape with an average size ranging (20-55) nm. Where the peak of the absorption of alumina nanoparticles appeared at (250, 254). The activity of alumina nanoparticles was tested against gram-negative and gram-positive bacteria, it proved its high effectiveness as an anti-bacterial by measuring the diameters of the inhibition zones. Its effectiveness against gram-negative bacteria was greater than Gram-positive bacteria. Also, found alumina nanoparticles have antimicrobial activity greater than Gentamicin (GM).