

عنوان مقاله:

A Study on the Antimicrobial Effect of Zinc Oxide Nanoparticles on Clinical Strains of Staphylococcus aureus Resistant to Vancomycin

محل انتشار:

مجله بین المللی میکروبیولوژی مولکولی و بالینی، دوره 6، شماره 2 (سال: 1395)

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

Staphylococcus aureus, as one of the main agents for hospital infections, is considered as highly important because they show resistance to a wide range of antibiotics. Resistance to selective antibiotics such as vancomycin is a serious problem in the medical community; thus it seems rational to use alternative substances for treating these bacteria. The aim of this study is to investigate the prevalence of resistance to vancomycin in clinical isolates of Staphylococcus aureus as well as the antimicrobial effects of zinc oxide nanoparticles on them. In this study, 70 samples of wound, boil, abscess and urine were isolated. Staphylococcus aureus strains resistant to vancomycin were then identified through routine laboratory tests using Broth Microdilution test. The antibacterial effect of ZnO nanoparticles (20 nanometer) was investigated at concentrations of 100, 50, 25, 12.5 and 6.25 mg/ml using Agar well diffusion method over strains resistant to vancomycin. From the total of 70 samples, 30 samples were identified as Staphylococcus aureus out of which 33.3% showed resistance to vancomycin. During this study it was found that ZnO nanoparticles in concentrations of 50 and 100 mg/ml have a good antibacterial effect and can be a good alternative for controlling Staphylococcus aureus resistant to vancomycin. Considering the increasing trend in drug resistance, the growth of pathogenic bacteria can be inhibited by increasing the concentration of zinc oxide nanoparticles.

کلمات کلیدی:

Staphylococcus aureus, Vancomycin, Zinc Oxide, Nanoparticle, Drug resistance

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<https://civilica.com/doc/1932863>

