

عنوان مقاله:

Investigation of synergistic effect of cuo nanoparticles and nisin on genome of Escherichia coli bacteria

محل انتشار:

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خلاصه مقاله:

Given the gradual development of drug resistance in different bacterial species, it is necessary to search for new drugs with effective broad-spectrum antimicrobial activity. Therefore, recent studies on various nanometal oxides such as copper oxide and on antibacterial peptides including nisin as antibacterial agents are especially important. The present study aimed to investigate the synergistic effect of nisin conjugated copper oxide nanoparticles (CuO NPs) on the genome of *E. coli* selected as a Gram-negative model. After being cultured in a Nutrient Broth medium, the bacteria were treated with CuO NPs at 15, 30, 40, and 60 $\mu\text{g/mL}$, with nisin at 30, 60, 90, and 120 $\mu\text{g/mL}$, and with nisin-conjugated CuO NPs at 10, 20, and 30 $\mu\text{g/mL}$ and were then incubated. The optical densities of the samples were read at 600 nm and their DNA was extracted. RAPD-PCR was used to study genomic effects, and statistical analysis was performed employing NTSYS-PC based on the DICE coefficient, the similarity matrix, and the drawn dendrogram. Results showed that the combination of CuO NPs and nisin had synergistic effects and was able to inhibit growth more than either of them used alone. However, this combination had no synergistic effects on the genome and caused minimal changes in the DNA sequence.

کلمات کلیدی:

Copper Oxide Nanoparticles, Escherichia Coli, Nisin, RAPD-PCR, Synergistic

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