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عنوان مقاله:

Combined effects of zinc oxide nanoparticle and malic acid to inhibit Escherichia coli and Staphylococcus aureus

محل انتشار:

فصلنامه میکروب شناسی پزشکی ایران, دوره 10, شماره 5 (سال: 1395)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

Background and Aim: The prevalence of food-borne pathogens has been to draw public attention to food safety. Therefore, it needs to design and production of new antimicrobial agents to ensure food safety and increase food storage. Aim to this study was combined effects of zinc oxide nanoparticle and malic acid to inhibit Escherichia coli and Staphylococcus aureus. Materials and Methods: The study was experimental. Antibacterial activities were tested for different concentrations of zinc oxide suspensions containing ‰۰.۲ malic acid against the Escherichia coli and Staphylococcus aureus inoculated onto culture media and carrot juice. Results: Results showed that Zinc oxide Nanoparticle (NP) suspensions (۰, ۱, ۳, ۵ and ۸) containing malic acid had a significant inhibitory effect on the growth of E. coli and S. aureus during ۲۴ h of incubation. Also results indicated that the ۵ and ۸ mM suspensions of ZnO Nanoparticle containing malic acid were the most effective on E. coli and S. aureus (P values <۰.۰۵). In addition, the obtained results exhibited that addition ZnO Nanoparticle to malic acid increased inhibitory effects on the growth of all strains in during ۲۴h. The zinc oxide NP in suspension malic acid had preferred the ability to suppress the growth of E. coli and S. aureus in carrot juice (P values <۰.۰۵). Conclusions: It seems, formulations containing zinc oxide .Nanoparticle may be used for food storage

کلمات کلیدی:

,Zinc oxide nanoparticle, Antibacterial agent, Food, Nutrition pathogen
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