Antibacterial Activity of Nisin: Comparison the Role of Free and Encapsulated Nisin to Control Staphylococcus Aureus Inoculated in Minced Beef

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Abstract : The use of nisin is successfully used as antibacterial agent in various food products. Although the conclusions of the previous studies were that nisin is not very effective in meat environments. The reduced antimicrobial efficacy of nisin when applied in food has been frequently observed. The aim of this study is to evaluate the potential of free and encapsulated nisin to inhibit the growth of staphylococcus aureus in minced beef. The minimum inhibitory concentration (MIC) of nisin is determined against S. aureus using the agar dilution method. Nisin is encapsulated by spray drying, and encapsulation efficiency, mass yield and total solids content values are 47.79%, 61%, and 96.41 respectively. The study in vitro release kinetics shows highest release of nisin from zein capsules is obtained after 72 hour. This work shows that an appropriate delivery system is necessary to obtain desirable effect of nisin in meat and meat product.

Keywords : nisin, encapsulation, Staphylococcus aureus, minced beef, antibacterial activity

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