

Preparation of Novel Antimicrobial Meat Packaging Using Chitosan-Arginine

Authors : R. A. Lahmer, A. P. Williams, S. Townsend, S. Baker, D. L. Jones

Abstract : Chitosan-arginine (Ch-arg) has been proposed as an anti-microbial agent to reduce the proliferation of spoilage and pathogenic bacteria within meat products destined for human consumption. In the current experiment its use as an antimicrobial packaging material was examined. Two different concentrations of chitosan-arginine (0.05 and 0.15 % w/w) were blended into a cellulose film (Ch-arg film). When placed in contact with chicken and beef juice inoculated with a lux-marked strain of E. coli O157, the film incorporating the highest Ch-arg concentration resulted in a small reduction of E. coli O157 in chicken juice; however, there was no effect of the Ch-arg film on E. coli O157 in beef juice. The lack of observed effect in the beef juice experiment we ascribe to insufficient surface-to-surface contact between the film and the bacteria in the beef juice and the greater presence of other Ch-arg reactive components in the juice (e.g. fats, blood cells). Results suggest that, in combination with other anti microbials, Ch-arg packaging may offers some potential for limiting the growth of pathogenic bacteria in foodstuffs; however, further research is needed to enhance their anti-microbial performance.

Keywords : cross-contamination, foodborne pathogen, polymer film, shelf life

Conference Title : ICFAPE 2015 : International Conference on Food and Agricultural Process Engineering

Conference Location : Jeddah, Saudi Arabia

Conference Dates : January 26-27, 2015