Title Effect of polythene film activated with enterocin EJ97 in combination with EDTA against *Bacillus coagulans*

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Abstract

Polythene films coated with the enterococcal bacteriocin enterocin EJ97 alone or in combination with EDTA were tested against *Bacillus coagulans* CECT 12. Bacteriocin activity was clearly enhanced by EDTA, as shown by viable staining and epifluorescence microscopy observation of treated cells. Activated films were tested in liquids from canned corn and canned peas inoculated with *B. coagulans* cell suspensions and stored at 4 °C and 20 °C for 24 h. The bacteriocin alone showed highest activity in samples stored at 4 °C, while the maximum performance of EDTA was observed at 20 °C. Films activated with a combination of both antimicrobials showed highest bactericidal activity at 4 °C. In liquid from canned corn and peas stored at 4 °C, the combined treatment reduced the concentrations of viable cells progressively over incubation time. Viable staining revealed an increase in the percentage of dead cells at 20 °C, avoiding proliferation of the bacilli. The bactericidal effect of the combined antimicrobial agents was higher in the liquid of canned peas than that of canned corn. The combined use of viable staining and classical viable cell counts allowed a better estimation of cell damage caused by the antimicrobial treatments.