

Title Microbiological evaluation of an edible antimicrobial coating on minimally processed carrots
Author A.M. Durango, N.F.F Soares and N.J. Andrade
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Abstract

This work aimed to develop an edible antimicrobial coating based on a starch–chitosan matrix to evaluate its effect on minimally processed carrot by means of microbiological analyses. Coatings based on 4% yam starch (w/w) + 2% glycerol (w/w) and coatings based on 4% yam starch (w/w) + 2% glycerol (w/w) + chitosan in 0.5% and 1.5% concentrations were prepared. Samples of minimally processed carrot slices were immersed into these coatings. All the samples were placed in expanded polystyrene trays, wrapped in polyvinylchloride film and stored at 10 °C/15 days. During storage, all the samples had counting <100 CFU/g for *Staphylococcus aureus* and <3 MPN/g for *Escherichia coli*. Starch + 0.5% chitosan coating controlled the growth of mesophilic aerobes, yeasts and molds and psychrotrophs during the first five days of storage, ultimately presenting reductions of only 0.64, 0.11 and 0.16 log cycles, respectively, compared to the control. Starch + 1.5% chitosan coated samples showed reductions in mesophilic aerobes, mold and yeast and psychrotrophic counting of 1.34, 2.50 and 1.30 log cycles, respectively, compared to the control. The presence of 1.5% chitosan in the coatings inhibited the growth of total coliforms and lactic acid bacteria throughout the storage period. The use of edible antimicrobial yam starch and chitosan coating is a viable alternative for controlling microbiological growth in minimally processed carrot.