

TITLE: COMPARISON OF EDIBLE CHITOSAN-BASED COATINGS INCORPORATED WITH *Piper nigrum* AND *Schinus terebinthifolius* ESSENTIAL OILS APPLIED ON MINIMALLY PROCESSED PINEAPPLE.

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ABSTRACT: Recently, minimally processed foods have been gaining in popularity because of their convenience. However, fruits and vegetables become more susceptible to microorganisms after physical changes such as peeling and cutting. Therefore, this study aimed to produce chitosan-based edible coatings incorporated with essential oils of *Piper nigrum* and *Schinus terebinthifolius* and to evaluate the ability of these coatings to inhibit the growth of the following microorganisms: *Escherichia coli*, *Staphylococcus aureus*, *Bacillus cereus* and *Penicillium commune*. Three different coating formulations were applied to minimally processed pineapple to prolong its useful life: one control coating with no essential oil and the other two incorporated with the essential oils. Chitosan is a cationic polysaccharide with an excellent filmforming capability and has a high potential as packing material because of its antimicrobial activity and non-toxicity. Initially, the minimal inhibitory concentration (MIC) of both oils was determined for each microorganism. The samples were tested for thermotolerant coliforms and Salmonella over a period of 15 days, under refrigeration, in addition to morphological analysis of the pineapple film. *P. nigrum* showed a 1.5% *E. coli* MIC, 12.5% *S. aureus*, 25% *B. cereus* and *P. commune* 12.5%, whereas *S. terebinthifolius* showed MIC for 0.33% *E. coli*, 12.5% *S. aureus*, 25% *B. cereus* and 3.2% *P. commune*. The MIC obtained were 0.5% for *P. nigrum* and 1% for *S. terebinthifolius*. Over the 15 days of thermotolerant coliforms and Salmonella analysis the samples did not show any type of contamination. Visually, the fruits covered with the edible coating, with or without essential oils, were indistinguishable from fresh fruits, which is an important aspect for the consumers. It was concluded that the

coatings preserved the pineapple to acceptable standards for up to 15 days of storage.

Keywords: Edible coating, essential oils, packaging material, antimicrobial activity, food preservative, natural compound.

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