

Title Antimicrobial activity of and edible film incorporated with essential oils of spices
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Abstract

Introduction: Essential oils of clove and cinnamon have been reported as active against different microorganism responsible of food spoilage and deterioration. Edible films have shown ability to carry antimicrobial agents, so this work has the objective of evaluate the antimicrobial activity of an edible film added with essential oils. **Materials and Methods:** The microorganisms studied were *Penicillium notatum*, *Aspergillus versicolor*, *Penicillium roqueforty* and *Penicillium commune*. The essential oils of cinnamon and clove were selected for this study and their antimicrobial activity against those microorganisms was determined. Two formulations were prepared for film production. The first one with casein and the second one, casein-chitosan, Glicerol was used as plasticizer. Oils were incorporated during the mixing of the materials at concentrations of 1, 2 and 3% and films were obtained by compression. Films were evaluated for their antimicrobial activity right after they were obtained and during a time study period of ten days. **Results and Discussing:** As previously reported, essential oils were effective in inhibiting fungus growth showing inhibition at 100% in the range of 10-60 μ l and with MIC of 0.15-0.20 μ l/ml. The antimicrobial activity of the films was evidenced during the evaluation for 10 days, since casein films inhibited completely the fungus tested at 2 and 3% of cinnamon oil. In the same direction, casein-chitosan films showed antifungal activity at 3% concentration of cinnamon essential oil. Cinnamon was more effective against the microorganisms tested.