

**Title** Antimicrobial activity and physical properties of chitosan–tapioca starch based edible films and coatings

**Author** María B. Vásconez, Silvia K. Flores, Carmen A. Campos, Juan Alvarado and Lía N. Gerschenson

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#### **Abstract**

Antimicrobial activity of edible coating solutions based on chitosan and blends of chitosan–tapioca starch with or without potassium sorbate (KS) addition was studied. The agar well diffusion assay showed an antagonist effect on the efficiency of chitosan against *Lactobacillus* spp. when KS and/or tapioca starch were present. A salmon slice coating assay showed that the chitosan solution was the best coating since aerobic mesophilic and psychrophilic cell counts were reduced, pH and weight loss remained acceptable throughout refrigerated storage, extending global quality to 6-days. Chitosan–tapioca starch based films reduced *Zygosaccharomyces bailii* external spoilage in a semisolid product but were not effective against *Lactobacillus* spp. The results suggest that antibacterial action depended on the application technique, due to the fact that chitosan is more available in a coating solution than in a film matrix. Interactions between chitosan–starch and/or KS could affect film physical properties and the antimicrobial activity of chitosan. The addition of chitosan reduced water vapor permeability and solubility of starch films.