

Title Water interactions and microstructure of chitosan-methylcellulose composite films as affected by ionic concentration

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Abstract

Edible films based on high molecular weight chitosan (CH) and methylcellulose (MC) were obtained by mixing different ratios (0:1, 0.5:1.5, 1.0:1.0, 1.5:0.5 and 1:0) of the biopolymers in two solvent conditions (0.95 and 6.85 mmol of ions per g polymer). In order to characterize the dry films, water sorption isotherms, water vapour permeability and film microstructure were evaluated. Water vapour permeability of CH-MC composite films was significantly affected by both the CH-MC ratio and the ionic concentration in the matrix. This can be attributed to the influence of ions on polymer chain packaging during the film formation and their role in the water uptake capacity of the films which affects the water transport properties.