

P2: Probiotic edible films from bacterial cellulose/cashew tree gum

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Abstract

Edible films are thin layers of biopolymer-based materials, which are expected to help the packaging system in protecting food against environmental factors. Besides passive protection, edible films may also be carriers of active/bioactive components. Probiotic films are expected not only to bring health benefits to the consumers, but also to extend food microbial shelf life due to competitive effects of probiotics¹. Bacterial cellulose (BC) has been presented as a promising matrix for immobilization of probiotics, protecting them against adverse factors e.g. stomach pH². In this study, BC was combined to cashew tree gum (CG) to produce an edible film carrying a probiotic bacteria (*Bacillus coagulans*). CG was used to decrease the viscosity of film forming dispersions. Four films were produced: BC/CG/Pro (containing the probiotic *B. coagulans*), BC/CG/Pre (containing the prebiotic fructooligosaccharides – FOS), BC/CG/Syn (containing both probiotic and prebiotic, making it synbiotic), and BC/CG (a control film). The presence of the probiotic and/or prebiotic affected the tensile properties of the films, especially the tensile strength. The survival rate of the probiotic on film drying and storage was increased by the presence of FOS. An *in vitro* digestibility test was also carried out on films, demonstrating that the bacteria in BC/CG/Pro films exhibited an enhanced survival rate on gastric environment when compared to the free probiotic.

References

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