

## Documents

Sabbah, M., Di Pierro, P., Cammarota, M., Dell'Olmo, E., Arciello, A., Porta, R.

**Development and properties of new chitosan-based films plasticized with spermidine and/or glycerol**  
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### Abstract

Different chitosan solutions were characterized by evaluating zeta potential and particle size, in the absence or presence of spermidine and/or glycerol, and the physicochemical, morphological and antimicrobial properties of the derived films were determined. An increase of film tensile strength and elongation at break was observed by increasing chitosan amounts, whereas only tensile strength and Young's modulus values were revealed higher at all chitosan concentrations when spermidine was absent. Spermidine-containing films were always more extensible exhibiting an elongation at break even higher than that of glycerol-plasticized films. The concurrent presence of appropriate concentrations of spermidine and glycerol further enhanced the extensibility and plasticity of the biomaterial, conferring to it the ability to be heat-sealed, as well as similar permeability in comparison with Viscofan NDX, widely commercialized as protein-based food casing. Finally, all the prepared films exhibited a clear antimicrobial activity, thus representing credible candidates as food preservative coatings and/or wrappings. © 2018 Elsevier Ltd

### Author Keywords

Chitosan; Edible films; Food coating; Glycerol; Plasticizer; Spermidine

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