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**Composite films of regenerate cellulose with chitosan and polyvinyl alcohol:
Evaluation of water adsorption, mechanical and optical properties.**

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ABSTRACT

The aim of this study was to develop composite films from cellulose, chitosan and polyvinyl alcohol to obtain environmentally friendly materials. Toughness, burst strength, distance to burst and water adsorption properties were measured and analyzed as a function of cellulose (3-5%), chitosan (0-1%) and polyvinyl alcohol (0-4%) contents. Polynomial models were obtained. Light-barrier properties, transparency, morphology, structural and thermal analyses were assessed. Results showed that chitosan and polyvinyl alcohol enhanced the mechanical properties of cellulose-based films. Toughness values ranged from 0.47 to 8.01 MJ/m³, burst strength values ranged from 929 to 6291 g, distance to burst ranged from 1.25 to 2.52 mm and water adsorption values ranged from 52.30 to 143.56 %. Cellulose and chitosan improved the UV light protection effect of the films. However, PVA increases the transmittance meanwhile improves the film transparency. FT-IR and DSC showed an interaction between the components of the films. Results showed that it is feasible to obtain cellulose-chitosan-polyvinyl alcohol composite films with improved mechanical properties, high capacity to adsorb water,

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