PRODUCTION AND CHARACTERIZATION OF CASSAVA/CORN STARCH BLEND FILMS INCORPORATED WITH LAPONITE


1Laboratory of Food Packaging and Raw Material – Campus Sete Lagoas - Federal University of São João Del Rei - UFSJ, PO Box 56, 35701-970 Sete Lagoas, Minas Gerais, Brazil.

Natural biopolymer, starch has thermoplastic properties. The mixture of two or more starches can result in improved plastics properties. The nanoclay incorporation in the polymeric matrix is investigated with great potential. The nanocomposites formed have excellent strength properties and barrier. Laponite consists of aluminum silicates, non-toxic, biodegradable, low cost, fine-grained and have an important role in obtaining nanohybrids. The objective of this work was to produce and characterize mixtures of starch films incorporated with laponite. Starch formulations were cassava/corn starch (1% cassava and 3% corn), (1.5% cassava and 2.5% corn), (2% cassava and 2% corn), (1.5% corn and 2.5% cassava), (3% cassava and 1% corn), laponite (1.25%), glycerol (3%). Final starch concentration is 4%. Were also produced films of cassava starch and corn without laponite. In each treatment starch and laponite were separately homogenized at temperature of 150˚C and under constant agitation in magnetic stirrer. Aliquot (20 ml) of solution was placed in the plates (PS 150 x 15 mm) and drying in an oven (35˚C). The thickness (resolution 0.001 mm), color parameters L, a, b and ΔE (Konica Minolta Colorimeter, CR400), and water solubility (%) were determined. Results were submitted to ANOVA (p<0.05). The treatments differed in thickness and the largest thickness (124 µm) was the film containing 4% cassava starch. Films with corn starch (3%) plus cassava starch (1%) showed less thickness (14 µm). Only parameter b was different for treatments. Films of treatment with corn starch (1%) and cassava starch (3%) had a higher solubility and low solubility in the treatment with 4% corn starch. Therefore, the mixture of starch and laponita affect the film properties.

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