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Development and Characterization of Biodegradable Films Based on Biopolymer Extracted From Natural Sources

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Abstract : The fight against plastic pollution implies the development of polymers as alternatives to synthetic polymers. Starch is a natural polymer that can easily be plasticized by means of additives. The objective of this work is to develop and characterize biodegradable biofilms based on starch, plasticized by glycerol (20 and 30%). The elaboration of the biofilms was carried out by the casting method under simple conditions. The samples were characterized by infrared spectroscopy analysis with Fourier transform (FTIR), thermogravimetric analysis, and biodegradability test. Infrared spectral analysis showed that the 30% and 20% glycerol films have the same chemical structure and no functional group changes occurred. Thermogravimetric analysis showed that a 30% glycerol film has higher thermal stability than a 20% glycerol film. Biodegradability test showed that the lower the percentage of glycerol, the more easily the biofilm degrades.

Keywords : starch, natural sources, FTIR, thermogravimetric analysis, biodegradability test
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