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Synthesis and Characterization of Cellulase-Polymer Surfactant Conjugates

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PURPOSE OF THE ABSTRACT

Enzyme-catalyzed saccharification of lignocellulosic biomass in ionic liquids is a green approach toward the production of biofuels. However, present cellulases show little or no activity in high concentrations of ionic liquids. Hence, cellulase from *Trichoderma reesei* was modified to improve the stability of the enzyme in ionic liquids. To this end, a cellulase-polymer surfactant nanoconjugate was synthesized. First, the aspartic and glutamic acids of the enzyme were modified using carbodiimide crosslinker chemistry and N,N'-dimethyl-1,3-propanediamine as coupling reagent to yield a cationized enzyme. Subsequently, the cationized enzyme was made interact with an anionic polymer surfactant. The resulted complex was characterized by different techniques including Fourier transform infrared spectroscopy and Differential scanning calorimetry. In addition, the activity of the modified enzyme was measured in buffers and in different ionic liquids and compared to that of the native cellulase.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

Cellulase | Ionic liquids | Conjugate

BIBLIOGRAPHY