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Synergistic action of deep eutectic solvents and cellulases for lignocellulosic biomass hydrolysis (Article)

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Abstract

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The increased awareness of environmental and economic issues has led many researchers to seek green and low-cost solvent for the conversion of lignocellulosic biomass to bioenergy. In this context, deep eutectic solvents, a new class of ionic liquids, have been regarded as greener substitute to conventional solvents for pretreatment of biomass. This paper is concerned with the stability and synergistic action of deep eutectic solvents for the digestion of biomass. The stability was studied by incubating commercial cellulases to different concentration of ethylene glycol-choline chloride-based deep eutectic solvent. The synergistic tests were studied by performing enzymatic saccharification after pretreatment of rice husk with deep eutectic solvent at various temperatures. The stability test showed that, the commercial cellulase activity retained more than 90% of relative activity after 1 hour of incubation in 10(%v/v) deep eutectic solvent at 30°C. The prepared deep eutectic solvent in combination with commercial cellulases study showed that the higher pretreatment temperature improved the production of simple sugar from rice husk. © W. S. Maney & Son Ltd 2014.

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[Cellulases](#)
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[Ionic liquids](#)
[Lignocellulosic biomass](#)
[Rice husk](#)

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[Chlorine compounds](#)
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