

Enzymatic hydrolysis of microwave assisted acid pretreated chili postharvest residue for the production of value added products

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Agricultural crop residues serve as a renewable source for production of bioethanol and other value added chemicals. Optimization of enzymatic saccharification may ensure cost-effective production of bioethanol and other industrially important products. Here, we attempted optimization of various process variables affecting enzymatic hydrolysis of microwave-assisted acid pretreated chili post-harvest residue was evaluated by adopting statistical design experiments. The optimum conditions of enzymatic hydrolysis were solid loading of 15% (w/w), cellulase loading of 20 FPU per gram of pretreated biomass and incubation time of 12 h. The high solid loading, low cellulase loading and low incubation time may lead to better process economics. Maximum reducing sugar yield of 0.205 g/g was observed. Fermentation inhibitors, such as furfural and 5-hydroxymethylfurfural were absent in the hydrolysate obtained after enzymatic saccharification of pretreated biomass and were found suitable for the production of various value added products like xylanases, bioethanol and biopolymer (poly-3-hydroxybutyrate).

Keywords: Bioethanol, Biomass, Chili, Lignocellulose, Pretreatment, Saccharification