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Title: Production of a lignocellulolytic enzyme system for simultaneous

bio-delignification and saccharification of corn stover employing co-culture of fungi

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Abstract

Aiming at improving the efficiency of transferring corn stover into sugars, an efficient lignocellulolytic enzyme system was developed and investigated by co-cultivation of the *Coprinus. comatus* with *Trichoderma. reesei* in a single bioreactor. The results showed that the lignocellulolytic enzyme activities of the co-culture exceeded that of the monoculture, suggesting synergistic interaction between two fungi. The highest laccase activity from the co-culture was 2.6-fold increase over that of the *C. comatus* monoculture and reached a peak 3 days earlier. The maximum delignification obtained was 66.5% and about 82% of the original polysaccharides were converted into fermentable sugars by simultaneous bio-delignification and saccharification process.

Correlation analysis showed that sugar yields were directly proportional to the lignin degradation. Our results suggested that co-fungi cultivation was a valuable technique for corn stover bioconversion, which could produce high efficiency of lignocellulolytic

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