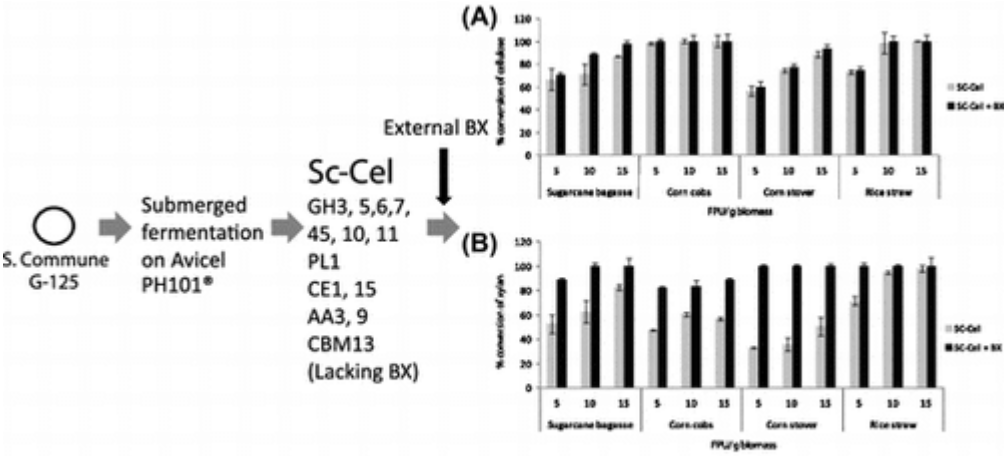
Schizophyllum commune is a basidiomycete equipped with an efficient cellulolytic enzyme system capable of growth on decaying woods. In this study, production of lignocellulose-degrading enzymes from *S. commune* mutant G-135 (SC-Cel) on various cellulosic substrates was examined. The highest cellulase activities including CMCase, FPase, and β-glucosidase were obtained on Avicel-PH101 while a wider range of enzymes attacking non-cellulosic polysaccharides and lignin were found when grown on alkaline-pretreated biomass. Proteomic analysis of SC-Cel also revealed a complex enzyme system comprising seven glycosyl hydrolase families with an accessory carbohydrate esterase, polysaccharide lyase, and auxiliary redox enzymes. SC-Cel obtained on Avicel-PH101 effectively hydrolyzed all agricultural residues with the maximum glucan conversion of 98.0% using corn cobs with an enzyme dosage of 5 FPU/g-biomass. The work showed potential of SC-Cel on hydrolysis of various herbaceous biomass with enhanced efficiency by addition external β-xylosidase.

Enzymatic hydrolysis of alkaline-pretreated biomass by Sc-Cel and yield enhancement by external β-xylosidase (BX).



Enzymatic hydrolysis of alkaline-pretreated biomass by Sc-Cel and yield enhancement by external β-xylosidase (BX)