SYNERGY AND PROCESSIVITY IN THE HYDROLYSIS OF CELLULOSE BY CELLOBIOHYDROLASES I AND II

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ABSTRACT

The cellobiohydrolases (CBH) I and II from the filamentous fungus *Trichoderma reesei* exhibit complementary and synergistic activities in the hydrolysis of crystalline cellulose. The two main differences in the catalytic action of these two enzymes are directionality: CBH I hydrolyzes cellulose from the reducing end while CBH II attacks from the non-reducing end; and processivity: the substrate binding site of CBH I binds seven glucosyl units, while that of CBH II only binds four. In this study, cellulose substrates of varying chain length and crystallinity were used in combination with recombinant cellulose binding domains to define the differences in action of the CBHs and endoglucanases.