

## Deletion analysis of the basidiomycete *Coprinopsis cinerea* cel6A promoter suggested new cellulose-responsive element

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**Purpose:** Mechanisms underlying transcriptional regulation of lignocellulolytic enzyme genes in wood-decaying basidiomycetes have not been well studied owing to the difficulty in conducting sophisticated molecular genetic study. *Coprinopsis cinerea* is one of model basidiomycetes for molecular genetic studies. In this fungus, cel6A gene encoding a cellobiohydrolase was shown to be upregulated in the presence of cellulose (Yoshida et al. 2009, Biosci. Biotechnol. Biochem.), one of major wood components. In order to gain an understanding of how lignocellulolytic enzyme genes are regulated in basidiomycetes, the cellulose-responsive element in Cccel6A promoter was investigated.

**Methods:** Deletion analysis of the promoter was done with the luminous shrimp luciferase gene (NanoLuc) as the reporter using a random integration approach in *C. cinerea* strain 326.

**Results:** Plasmid containing NanoLuc driven by the 799-bp cel6A promoter was introduced into *C. cinerea*. The luciferase activity of the obtained transformants was 43-fold higher on minimum medium containing microcrystalline cellulose (Avicel) as carbon source (MMA) than on MM containing glucose (MMG). Deletion of 22 bp (nucleotide positions from -799 to -778 upstream of the start codon) significantly decreased luciferase activity on MMA, but not on MMG. The cellulose-responsive element proposed in *Aspergillus nidulans* [5'-CC(A/T)6GG-3'; Yamakawa et al. 2013, BBRC] was not found in this 22-bp region.

**Conclusions:** The results suggest new cellulose-responsive element, which would provide useful knowledge about mechanisms underlying regulation of lignocellulolytic enzyme genes in basidiomycetes. We are currently conducting detailed deletion and mutation analyses of this promoter using a gene knock-in approach.