

Under liquid culture conditions, the hyphae of filamentous fungi aggregate to form pellets, which reduces cell density and fermentation productivity. Previously, we found that loss of  $\alpha$ -1,3-glucan in the cell wall of the fungus *Aspergillus nidulans* increased hyphal dispersion. Therefore, here we constructed a mutant of the industrial fungus *A. oryzae* in which the three genes encoding  $\alpha$ -1,3-glucan synthase were disrupted (*triple* $\Delta$ ). Although the hyphae of the *triple* $\Delta$  mutant were not fully dispersed, the mutant strain did form smaller pellets than the wild-type strain. We next examined enzyme productivity under liquid culture conditions by transforming the cutinase-encoding gene *cutL1* into *A. oryzae* wild-type and the *triple* $\Delta$  mutant (i.e. wild-type-*cutL1*, *triple* $\Delta$ -*cutL1*). *A. oryzae* *triple* $\Delta$ -*cutL1* formed smaller hyphal pellets and showed both greater biomass and increased CutL1 productivity compared with wild-type-*cutL1*, which might be attributable to a decrease in the number of *triple* $\Delta$ -*cutL1* cells under anaerobic conditions.

Summary of the growth characteristic and enzyme productivity in *A. oryzae* *ags* *triple* $\Delta$  strain.

