T16-155

Tohoku University's Invention

Fully dispersed culture of mutant filamentous fungi

Several times of production volume or of cost down, whichever you want !

Abstract

Filamentous fungi (e.g. *A. oryzae)* are well-used for production of useful proteins and small molecules in industry. However, it is well-known that hyphal aggregation during the liquid culture often prevents fungi to grow with high density, resulting in low productivity of useful substances.

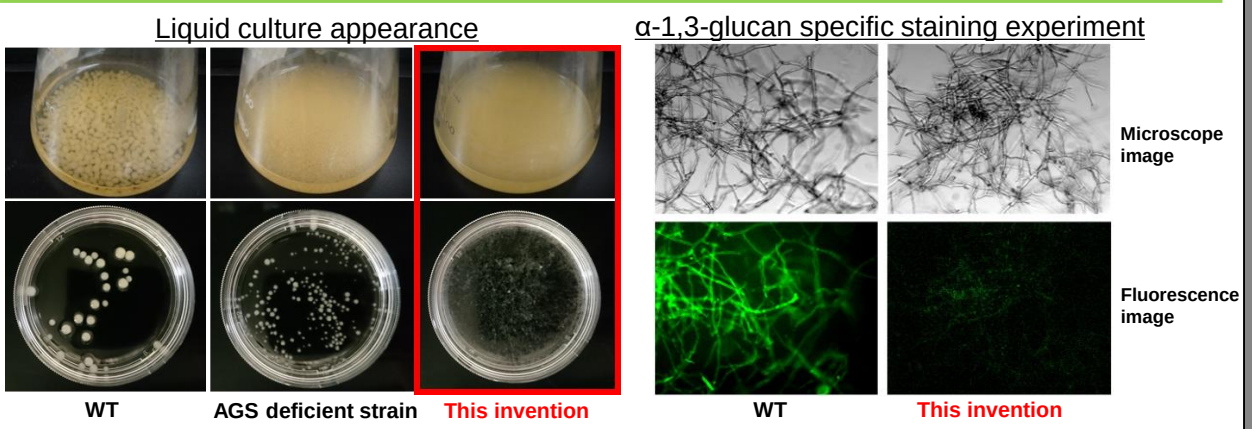
This invention discloses a mutant fungus, in which α-1,3-glucan synthase (AGS) genes plus the genes on galactosaminogalactan (GAG) cluster are deficient, and its use to increase the productivity or decrease any production costs of substances of interests.

Effect

AGS deficient fungi (AGΔ) showed a highly dispersed property (reference1). By inducing further deficiency in genes on GAG cluster in AGΔ, the mutant (AG-GAGΔ) shows a fully dispersed state in liquid culture. The α-1,3-glucan in the cell wall of AG-GAGΔ is drastically reduced, suggesting that this phenotype may contribute to full dispersion property of AG-GAGΔ (see Fig. A upper). Further, this phenotype contributes to well aerobic conditions during cultivation, resulting in increasing growth of cells and substance production thereby (See Fig. A lower). This invention may also contribute to reduce production costs of substances with keeping production volume thereof in similar level to present one.

[Reference]1. PCT/JP2013/080352

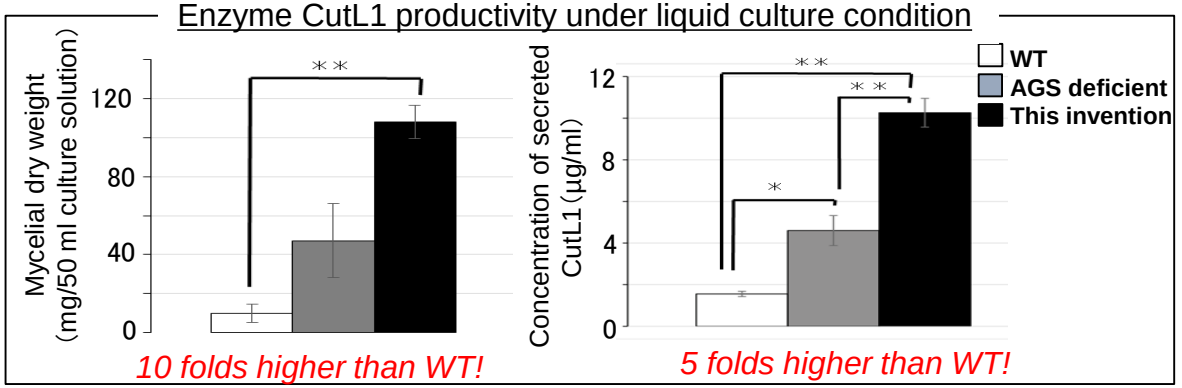
Fig. A. Fully dispersed property of AGS-GAG double deficient strain of *A. oryzae*



Fully dispersed cells without aggregation

Low level of α-1,3-glucan in cell wall

Enzyme CutL1 productivity under liquid culture condition



10 folds higher than WT!

5 folds higher than WT!

Patent Data Sheet

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