

Gene mutation of *mgs* and *dhaD* genes for the development of *Saccharomyces cerevisiae* strain producing 1,2-propanediol and optimizing fermentation

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Among yeasts, *Saccharomyces cerevisiae* is the best-studied organism, and the most frequently employed yeast in industrial processes. 1,2-propanediol(1,2-PD) is used in unsaturated polyester resins, cosmetics, pharmaceuticals and as an environmentally friendly antifreeze and deicer. In this study *Saccharomyces cerevisiae* YPH500, *E. coli* MG1655 (containing *mgs* gene), and *Citrobacter freundii* (containing *dhdD* gene) were used as the construction sources of genes and plasmids. In the previous study we could develop new *Saccharomyces cerevisiae* strains which can produce 1,2-PD. 1,2-PD productivity in *Saccharomyces cerevisiae* strain seemed to be increased by constructing co-expression vectors;; The pESC-URA vector containing two promoters, GAL1 and GAL10, which differs in the direction of transcription was used in the co-expression. Furthermore, the increase of 1,2-PD yield was induced, by adding input time and the amount of galactose which is controlled by the GAL promoter, to the fermentation process.