

## Resistance of *Escherichia coli* W3110 against catabolic repression on expression of heterologous protein by helping of bacterial hemoglobin

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### 요약문

*Vitreoscilla* hemoglobin (VHb) has been successfully applied to enhance production of foreign proteins in several microorganisms including *Escherichia coli*. In our previous study, we compared the expression of green fluorescent protein (GFP) as a model foreign protein, in two typical industrial *E. coli* strains, BL21 (a B derivative) and W3110 (a K12 derivative), which have different metabolic properties under the influence by co-expression of VHb. We employed the *nar* oxygen-dependent promoter for self-tuning regulation of VHb expression due to the natural transition of dissolved oxygen level as the duration of culture. In the present research, we investigated the effect of glucose amount on GFP in *E. coli* under co-expression of VHb. We observed *E. coli* W3110 under VHb co-expression revealed strong resistance against catabolic repression and therefore, showed similar expression patterns of GFP regardless of glucose concentration in culture media while *E. coli* BL21 was suffered by catabolic repression on GFP expression regardless of VHb expression. Owing to this advantage, this strain can be successfully introduced into fed-batch or continuous cultures for foreign protein production without need to maintain glucose feeding as low concentration to avoid by-product formation.

### 참고문헌

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