

Consortium of Folding-Catalyzing Proteins to Increase Soluble Expression of Cyclohexanone Monooxygenase in Recombinant *Escherichia coli*

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The cyclohexanone monooxygenase (CHMO) gene of *Acinetobacter calcoaceticus* NCIMB 9871 was simultaneously expressed with the genes encoding molecular chaperones and foldases in *Escherichia coli*. While the expression of the CHMO gene alone resulted in a formation of inclusion bodies, the coexpression of the chaperone or foldase genes remarkably increased production of soluble CHMO enzyme in recombinant *E. coli*. Furthermore, it was found that molecular chaperones were more beneficial than foldases to enhancing active CHMO enzyme production. Recombinant *E. coli* strain simultaneously expressing CHMO, GroEL/GroES and DanK/DnaJ/GrpE genes showed 111 U/g cell proteins of specific CHMO activity, corresponding to a 38-fold enhancement in CHMO activity compared with the control *E. coli* strain expressing CHMO gene alone.

Key words: Cyclohexanone monooxygenases, molecular chaperone, foldase, coexpression, inclusion body, coexpression