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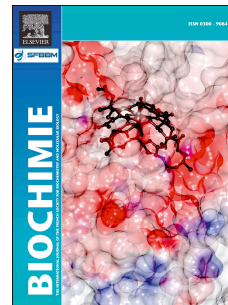
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Construction of the plasmid-free strain for human growth hormone production

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Abbreviations used: hGH, human growth hormone; hGHbp, human growth hormone binding protein

Abstract

The *E. coli* strain, overproducing human growth hormone (hGH) was made by integration of the hGH gene under the control of T7 promoter into the chromosomal *LacZ* gene of BL21(DE3) via lambda Red recombineering. The strain gave higher productivity ($50 \text{ mg} \cdot \text{L}^{-1} \cdot \text{OD}_{550}^{-1}$) and better growth characteristics than the corresponding strain in which the same hGH expression cassette was placed in a plasmid. The protein produced by the plasmid-free strain was purified and characterized to be hGH. The results demonstrate that a plasmid-free recombinant strain having a single-copy gene expression cassette in the chromosome could provide better gene activity regulation, higher productivity, superior growth characteristics, as well as more stringent control of the gene sequence invariance than a plasmid-based strain.

Keywords:

Human growth hormone, somatotropin, plasmid-free, lambda Red recombineering.

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