Microbial Cell Factories

Poster Presentation

Open Access

Development of extracellular production system of recombinant proteins in recombinant *Escherichia coli*

Jong Hyun Choi*[1], Zhi Gang Qian[1] and Sang Yup Lee[1,2]

Address: [1]Metabolic and Biomolecular Engineering National Research Laboratory, Department of Chemical & Biomolecular Engineering, Bioinformatics Research Center and BioProcess Engineering Research Center and [2]Department of BioSystems, Korea Advanced Institute of Science and Technology, 373-1 Guseong-dong, Yuseong-gu, Daejeon 305-701, Republic of Korea

* Corresponding author

from The 4th Recombinant Protein Production Meeting: a comparative view on host physiology
Barcelona, Spain. 21–23 September 2006

Published: 10 October 2006

Microbial Cell Factories 2006, **5**(Suppl 1):P86 doi:10.1186/1475-2859-5-S1-P86

Background

Escherichia coli has been the workhorse for the production of various recombinant proteins and metabolites because of the availability of well established technologies for genetic manipulation and cultivation. Various strategies have been employed for the development of *E. coli* strains which are able to efficiently produce recombinant proteins [1,2]. Extracellular production of recombinant proteins has advantages over secretion into the periplasm [2]. Extracellular production does not require outer membrane disruption to recover target proteins, and therefore, it avoids intracellular proteolysis by periplasmic proteases and allows continuous production of recombinant proteins, and new approaches for the extracellular production of recombinant proteins in *E coli* are discussed.

Results

E. coli BL21 strains showed the high accumulation of OmpF protein in culture medium during high cell density cultivation (see Figure 1). From this interesting phenomenon, a new and efficient method for the extracellular production of recombinant protein in *E coli* was developed. Using this new developed extracellular production system, various recombinant proteins could be efficiently produced into culture medium.

Conclusion

We developed new approaches for the extracellular production of recombinant proteins in *E. coli* by using one of the outer membrane proteins as a partner.

Acknowledgements

This work was supported by the Korean Systems Biology Research Grant (M10309020000-03B5002-00000) from the Ministry of Science and Technology, Regional Innovation System (RIS) from the Korean Ministry of Commerce, Industry, and Energy, the Brain Korea 21 program of the Ministry of Education and LG Chem. Chair Professorship

References

1. Choi JH, Keum KC, Lee SY: **Production of recombinant proteins by high cell density culture of *Escherichia coli*.** *Chem Eng Sci* 2006, **66**:876-885.
2. Choi JH, Lee SY: **Secretory and extracellular production of recombinant proteins using *Escherichia coli*.** *Appl Microbiol Biotechnol* 2004, **64**:625-635.

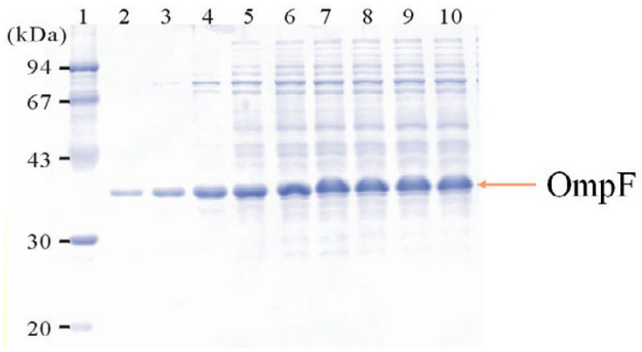

Figure 1
SDS-PAGE analysis of culture supernatant from the high cell density culture of *E. coli* BL21(DE3).