Production of Fusion Human Interleukin-6 in Soluble Form by Fed-batch Culture of Recombinant *Escherichia coli* and Immobilized Metal Affinity Chromatography

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In this study, fed-batch cultures of a recombinant *Escherichia coli* were carried out for the production of human interleukin-6 fused with NusA (NusA/hIL6) in a soluble form in the cytoplasmic space. The fusion protein was recovered from the culture broth by an one-step process of immobilized metal affinity chromatography (IMAC)[1)]. A pH-stat feeding strategy was used. The amount of glucose addition per feeding was optimized to maintain a good cell growth and protein production, while minimizing acetic acid accumulation. Under the optimized conditions, more than 80 % of the expressed NusA/hIL6 existed as a soluble form until 2.5 hours after IPTG induction. Since then, however, the soluble fraction of NusA/hIL6 sharply decreased with time, and most of the expressed NusA/hIL6 existed in inclusion body at the end of the culture. The maximum concentration of soluble NusA/hIL6 was about 8 g/L. The soluble NusA/hIL6 was simultaneously recovered and purified by IMAC. The recovery yield and purity were 81.7 % and 74 %, respectively.

Reference

1. Oh. G. H., M. S. Hahm, and B. H. Chung (1999), "Use of Carboxypeptidase Y Propeptide as a Fusion Partner for Expression of Small Polypeptides in *Escherichia coli*", *Protein Expression and Purification* **17**, 428-434.