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大肠杆菌中同时表达的可溶性和不溶性人α-干扰素-2b的初步分离研究

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摘要 Alpha-interferon 2b (IFN 2b) was produced both in soluble and insoluble forms from recombinant E. coli. The dissolution of the expressed IFN 2b in inclusion body was carried out and it was found that the optimal condition to dissolve the expressed protein was 7 mol. L-1guanidininm salt solution at pH 3.0. The resultant solution was diluted 20 times using pH 6.0 buffer to ref+ld the protein correctly. The cation exchange column was employed to purify both refolded and soluble IFN 2b. For soluble IFN sample, high IFN 2b recovery yield (92.1%) with 91.7% purity was obtained in the eluate. However, for refolded IFN sample, only 72.7% ofIFN 2b was recovered with relatively low purity (56.8%) by cation exchange chromatography. Although the expression level of insoluble IFN was higher than that of co-expressed soluble IFN in this recombinant E.coli cells, the productivity of bioactive IFN 2b was higher with soluble expressed IFN after primary purification process. Soluble expression of foreign proteins in recombinant bacteria might be an alternative strategy for efficient production of heterogeneous proteins due to high bioactivity and simple downstream protein purification process.

关键词 alpha-interferon 2b soluble expression inclusion body refolding purification

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Primary Purification of Co-expressed Soluble and Insoluble Alpha-interferon 2b from Recombinant E.coli

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Abstract Alpha-interferon 2b (IFN 2b) was produced both in soluble and insoluble forms from recombinant E. coli. The dissolution of the expressed IFN 2b in inclusion body was carried out and it was found that the optimal condition to dissolve the expressed protein was 7 mol. L-1guanidininm salt solution at pH 3.0. The resultant solution was diluted 20 times using pH 6.0 buffer to ref+ld the protein correctly. The cation exchange column was employed to purify both refolded and soluble IFN 2b. For soluble IFN sample, high IFN 2b recovery yield (92.1%) with 91.7% purity was obtained in the eluate. However, for refolded IFN sample, only 72.7% ofIFN 2b was recovered with relatively low purity (56.8%) by cation exchange chromatography. Although the expression level of insoluble IFN was higher than that of co-expressed soluble IFN in this recombinant E.coli cells, the productivity of bioactive IFN 2b was higher with soluble expressed IFN after primary purification process. Soluble expression of foreign proteins in recombinant bacteria might be an alternative strategy for efficient production of heterogeneous proteins due to high bioactivity and simple downstream protein purification process.

Key words alpha-interferon 2b; soluble expression; inclusion body; refolding; purification

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