عنوان مقاله:

Purification and refolding of recombinant Interferon alpha-۲b over-expressed as inclusion bodies in Escherichia coli

محل انتشار:

چهارمین کنگره بین المللی و شانزدهمین کنگره ملی ژنتیک (سال: 1399)

تعداد صفحات اصل مقاله: 1

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خلاصه مقاله:

Background and Aim: Interferon alpha ۲b is an important cytokine used as a therapeutic agent for hepatitis and cancer treatment. This protein is produced by recombinant DNA technology using bacterium Escherichia coli as insoluble inclusion bodies. Purification and activation of inactive protein from inclusion bodies are challenging. To obtain active and pure IFN α۲b from inclusion bodies, an efficient method under optimized conditions should be used for refolding and purification.Methods: In this study, overexpression recombinant IFN-a۲b in the form of inclusion bodies (IBs) was obtained using the autoinduction culture of recombinant Escherichia coli. Inclusion bodies were solubilized in ۲۰% SDS and Dithiothreitol ۵۰ mM in Tris buffer (۵۰ mM) at pH ۸, then IFN α۲b was purified using solvent extraction with ۲-butanol as an organic solvent. The purified IFN α۲b was refolded in a concentration of ۲۵ µg ml-۱ using the dilution method in refolding buffer containing ۰.۶۴ mM urea, ۵.۵۷ mM cysteine, ۱.۸ mM cysteine, ۱mM EDTA, ۵% Glycerol and ۵۰ mM Tris with ۸ pH. The activity of the refolded sample was determined by measuring the in-vitro bioassay activity (antiviral type).Results: Finally, the purity and activity of Interferon alpha ۲b respectively were ۹۰% and ۲.۱ × ۱۰۸ of the international unit, which was obtained from refolded protein.Conclusion: In the developed method refolded IFN α۲b was achieved with high purity and suitable activity, which makes this process suitable for the research and biopharmaceutical industry.

کلمات کلیدی:

Interferon alpha ۲b, Inclusion body, Protein refolding