

عنوان مقاله:

Characterization process parameters influencing the productivity of human interferon- γ in recombinant E.coli cultivations

محل انتشار:

یازدهمین کنگره ملی مهندسی شیمی ایران (سال: 1385)

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خلاصه مقاله:

The effect of various process parameters on over-expression of human interferon- γ using an IPTG inducible expression system in recombinant *Escherichia coli* BL21 (DE3) [pET3a-ifn γ] was investigated. Process parameters include: i) type of cultivation process (batch and fed-batch), ii) feeding strategy (in fed-batch), iii) feed composition in postinduction feeding, and iv) induction conditions, were applied and then overall productivity of interferon- γ was examined. It was found that overall productivity of Interferon- γ was significantly affected by all of the studied parameters, but specific growth rate at both pre and post-induction, type of cultivation process and feeding strategy are more effective. By applying the fed-batch cultivation, feeding strategy with maximum attainable specific growth rate throughout the process, optimum induction conditions, and suitable composition in post-induction feeding basis of amino acid composition of recombinant protein and E.coli, overall productivity and concentration of rhIFN- γ was increased from 0.044 to 3 g l⁻¹ h⁻¹ (interferon- γ), and 0.31 (at batch culture with LB medium) to 51 g l⁻¹, (at fed-batch culture with simple medium) respectively. Also overall productivity and concentration of biomass was increased of 0.14 to higher than 7.3 g l⁻¹ h⁻¹ (dry cell weight) and 0.95 to over than 127 g l⁻¹ (dry cell weight), respectively. According to available data this is the highest specific yield and productivity that reported for recombinant proteins production yet.

کلمات کلیدی:

Human Interferon- γ ; Recombinant *Escherichia coli*; Productivity; Process parameters

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