Optimasi ekspresi protein apobec3g dalam sistem ekspresi escherichia coli bl21 codonplus de3 = Protein expression optimization of apobec3g in escherichia coli bl21 codonplus de3

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Abstrak

[ABSTRAK
Protein APOBEC3G merupakan salah satu protein intrinsik sel imun manusia yang memiliki kemampuan antiretroviral terhadap infeksi HIV-1. Protein Vif HIV-1 dapat merangsang degradasi APOBEC3G sehingga penghambatan interaksi antara kedua protein tersebut melalui inhibitor berpotensi digunakan dalam pengembangan antiretroviral baru. Pengembangan antiretroviral baru melalui interaksi antara protein APOBEC3G dengan protein Vif HIV-1 memerlukan protein rekombinan APOBEC3G. Protein APOBEC3G diperoleh dengan cara melakukan ekspresi gen APOBEC3G yang telah dikloning ke dalam vektor ekspresi pQE-80L. Ekspresi protein APOBEC3G dilakukan dalam sistem ekspresi prokariota yaitu bakteri Escherichia coli BL21-CodonPlus (DE3). Ekspresi protein dilakukan pada tiga kondisi optimasi yaitu suhu, konsentrasi IPTG dan waktu inkubasi setelah induksi. Berdasarkan penelitian, APOBEC3G berukuran 43,08 kDa dapat diekspresikan paling optimal pada induksi IPTG 0,5 mM pada suhu 37oC waktu inkubasi 4 jam setelah induksi.
ABSTRACT
APOBEC3G is one of intrinsic protein in human immune system. It has an antiretroviral ability against HIV-1 infection. However, HIV-1 has Vif protein which stimulate degradation of APOBEC3G. Therefore, inhibition of interaction between both proteins by an inhibitor is potentially used in development of new antiretroviral agents. The development of new antiretroviral using interaction of APOBEC3G and Vif HIV-1 needs recombinant protein of APOBEC3G. This APOBEC3G recombinant protein can be produced by expression of APOBEC3G gene cloned into pQE-80L expression vector in prokaryotic system of Escherichia coli BL21-CodonPlus (DE3). Protein expression conducted in three optimization condition: themperature, IPTG concentration, and incubation time after induction. Based on this research, APOBEC3G which has 43,08 kDa molecular weight is expressed optimally in 0,5 mM IPTG induction at 37oC and incubation time 4 hours after induction.
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