Ekspresi protein rekombinan pre-membran, envelope dan non struktural 1 (NS1del) virus dengue serotipe 2 strain Indonesia secara in vitro sebagai kandidat vaksin DNA = Expression of pre membrane envelope and non structural 1 (NS1del) recombinant proteins from dengue virus serotype 2 Indonesian strain in vitro as DNA vaccine candidates / Lola Febriana Dewi

Lola Febriana Dewi, author

Abstrak

ABSTRAK
Infeksi yang disebabkan oleh virus dengue telah banyak dilaporkan di negara tropis dan subtropis. Virus dengue terdiri dari 4 serotipe yaitu dengue 1-4. Hingga saat ini belum tersedia vaksin yang berlisensi untuk mencegah terjadinya infeksi dengue. Pada penelitian ini dikonstruksi vaksin DNA yang mengkode gen prM-E dan prM-E-NS1del virus dengue 2 strain Indonesia yang akan dijadikan sebagai kandidat vaksin dengue. Hasil penelitian berhasil mendapatkan 9 plasmid rekombinan pUMDE2 yang membawa gen sisipan prM-E dan telah dikonfirmasi dengan melakukan PCR koloni dan restriksi plasmid. Dari hasil sekuensing plasmid pUMDE2 koloni no. 11 ditemukan 19 mutasi asam amino pada gen prM-E, sepuluh mutasi pada gen prM dan sembilan mutasi pada gen E. Mutasi protein prM N29D dan N52K serta protein E V164I dan S390N terletak pada daerah epitop pengenalan sel B. Transfeksi plasmid pUMDE2 dilakukan pada sel Chinese Hamster Ovary (CHO)-K1 dan menunjukkan adanya ekspresi protein prM-E rekombinan berdasarkan uji imunostaining dan ELISA. Hasil ELISA menunjukkan bahwa protein ditemukan pada sel yang ditransfeksi. Sedangkan, plasmid rekombinan yang membawa gen prM-E-NS1del tidak berhasil dikonstruksi. Plasmid pUMDE2 dapat dikembangkan menjadi kandidat vaksin DNA.
<hr>ABSTRACT
Infection by dengue virus were reported in tropical and subtropical area. Dengue virus (DENV) consist of 4 serotype, DENV-1 to DENV-4. There is no licensed vaccine available for dengue infection. In this research, we construct DNA vaccine encode prM-E and prM-E-NS1del genes of dengue virus serotype 2 for vaccine development. Nine recombinant plasmids that encode prM-E genes (pUMDE2), were successfully obtained. Recombinant plasmids were confirmed by PCR colony and restriction enzyme analysis. Colony of pUMDE2 no. 11 was sequenced and total 19 amino acid mutations were founds, 10 mutations in prM and 9 mutations in E protein. prM mutations N29D and N52K, E mutations of V164I and S390N were found in B cell epitopes. Transfection pUMDE2 plasmid was done to Chineese Hamster Ovary (CHO)-K1 and showed that recombinant protein prM-E was successfully expressed by immunostaining assay and ELISA. Results showed that the protein was mainly found in cell fraction. However, recombinant plasmid that encode prM-E-NS1del were failed to be constructed. pUMDE2 could be developed for vaccine candidate.