

Determining the Genotype of Dengue Virus Serotype 1 and 2: A Comparative Descriptive Study of Envelope and Partial Envelope (Domain III)

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Background/Objective

Whole envelope nucleotide is still being used to determine the genotype of a DENV strain in phylogenetic analysis. This study aims to compare the phylogenetic of DENV-1 and DENV-2 using whole envelope with partial envelope (domain III) only.

Method

Samples were taken from GenBank (<http://www.ncbi.nlm.nih.gov/genbank>) and Laboratory of Microbiology, Faculty of Medicine Universitas Indonesia. These samples were selected to represent each genotype. There were 30 sequences of DENV-1 and 42 sequences of DENV-2, including sequences from Goncalvez et al. and Wu et al. as references for determining genotypes. The sequences were processed using Genetyx 5.1.

Result

Phylogenetic analysis of DENV-1 showed the same genotype distribution with difference of clusters between whole envelope and domain III. On the other hand, phylogenetic analysis of DENV-2 showed distinct genotype distribution between whole envelope and domain III. Genotype Asian II became part of the American genotype on phylogenetic analysis of DENV-2 domain III.

Conclusion

Phylogenetic studies determining the genotype of DENV-1 sequence can be done using domain III alone. Yet, genotype determining of DENV-2 sequences must be done by whole envelope.