

GENETIC DIVERSITY OF *PLASMODIUM VIVAX* DUFFY BINDING PROTEIN (*PvDBP*) GENE IN SABAH, MALAYSIA

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Abstract. *Plasmodium vivax* Duffy binding protein (PvDBP) is a member of the Duffy binding-like erythrocyte binding protein (DBL-EBP) family expressed on the surface of *P. vivax* merozoites. PvDBP consists of seven regions responsible for the invasion of the parasite into host reticulocyte. DBP type II region is highly polymorphic and is genetically diverse. The gene sequence and genetic polymorphism of this region were investigated among *P. vivax* samples collected in Sabah, Malaysia. DNA was extracted from 20 *P. vivax*-infected blood samples and subjected to nested PCR to amplify the *PvDBP*II region for subsequent sequencing of the 900-bp amplicons. Sequences were aligned and compared with that of Salvador-1 strain (Sal-1) as standard *PvDBP*II, and a phylogenetic tree was constructed employing sequences from neighboring countries. The samples from Sabah could be categorized into four haplotypes. The amplified *PvDBP*II fragment contained 288 amino acids, among which 36 are nonsynonymous and 11 synonymous silent mutations; no mutations involved the conserved cysteine residues. Phylogenetic analysis of *PvDBP*II indicated that the phylogenetic tree has nine clusters and samples from Sabah are categorized into four clusters: cluster 1 (6 samples), cluster 6 (1 sample from Sabah, and samples from Thailand and Myanmar and Sal-1), group 8 (8 samples) and group 9 (5 samples from Sabah and samples from Thailand and Myanmar). Phylogenetic analysis revealed that *PvDBP*II of Kalabakan samples are confined to that area.

Keywords: *Plasmodium vivax*, *PvDBP*II, Sabah, Malaysia

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