

Polymorphisms in the pfcr1 and pfmdr1 genes in plasmodium falciparum isolates from South Sumatera, Indonesia

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Abstrak

Over the past decade, antimalarial drug resistance has rapidly become a major public health problem in South East Asia region including South Sumatra. This study aimed to determine the extent of gene polymorphisms associated with chloroquine resistance (CQR) in *P. falciparum* isolates from Lahat, Sekayu, Baturaja and Palembang district.

Methods: A molecular study was conducted to identify the mutant alleles of the genes associated with the resistance to chloroquine among the isolates of *Plasmodium falciparum* from South Sumatra. Blood from 25 patients was collected, DNA was isolated, and the sequences of two different genes (*Plasmodium falciparum* chloroquine resistance transporter/pfcr1 and *Plasmodium falciparum* multidrug resistance/pfmdr1) were analyzed using polymerase chain reaction (PCR) and restriction fragment length polymorphism (RFLP).

Results: This study identified polymorphism in the pfcr1 76-Thr in all isolates and pfmdr1 86-Tyr. These findings may reflect the failure of treatment with the standard dose of chloroquine within the last few years in South Sumatra.

Conclusion: PCR-RFLP technique provide a simple and rapid method of detecting polymorphisms in genes that may predict chloroquine resistance (CQR). Although the identification of the polymorphism in the pfcr1 and pfmdr1 genes provides a significant indicator of CQR, further studies are needed to determine the role of these polymorphisms in the in vivo and in vitro responses to drug treatment.