

FREKUENSI VARIAN *EPHX1* rs1051740 T337C GEN PENYANDI ENZIM PEMETABOLISME CARBAMAZEPINE PADA RELAWAN SEHAT LAKI-LAKI SUKU JAWA DI INDONESIA INDONESIA

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INTISARI

Epilepsi adalah salah satu penyakit kronik berupa gangguan saraf yang lebih banyak dialami oleh laki-laki di Asia. Carbamazepine (CBZ) merupakan salah satu antiepilepsi yang digunakan sebagai terapi lini pertama dalam beberapa tipe kasus epilepsi yang memiliki indeks terapeutik sempit. Enzim *microsomal Epoxide Hydrolase* (mEH) yang disandi oleh gen *Epoxide Hydrolase 1 (EPHX1)* sebagai enzim pemetabolisme CBZ dilaporkan memiliki sifat polimorfik yang dapat menyebabkan penurunan metabolit aktif CBZ. Penelitian ini ditujukan untuk mengetahui varian gen *EPHX1* rs1051740 T337C di Indonesia khususnya pada relawan sehat laki-laki Suku Jawa sebagai suku terbesar di Indonesia. Analisis variasi genetik dilakukan dengan menggunakan metode PCR-RFLP. Desain primer PCR yang digunakan yaitu 5'-GATAAGTTCCGTTTCACCC-3' sebagai primer *forward* dan 5'-TGTTCCCTGCCTAGCTCTAA-3' sebagai primer *reverse*. Kondisi PCR yaitu denaturasi awal suhu 94°C selama 3 menit dilanjutkan 32 siklus denaturasi pada suhu 94°C selama 30 detik, *annealing* suhu 55°C selama 25 detik dan *extension* suhu 72°C selama 1 menit dan *final extension* suhu 72°C selama 5 menit. Enzim restriksi yang digunakan adalah *EcoRV* dengan hasil pemotongan 136bp dan 232bp untuk varian TT (*wildtype*). Frekuensi varian gen *EPHX1* rs1051740 T337C belum dapat diketahui dalam penelitian ini. Enzim restriksi gagal untuk memotong sekuen target yang dibuktikan dengan perolehan hasil yang berbeda dari metode *direct sequencing* pada tiga sampel acak.

Kata Kunci: Carbamazepine (CBZ), *EPHX1*, *Single Nucleotide Polymorphisms* (SNPs), *EPHX1* rs1051740.

**VARIANT FREQUENCY OF *EPHX1* rs1051740 T337C OF
CARBAMAZEPINE METABOLIZING ENZYME GENE ON HEALTHY
VOLUNTEERS OF JAVANESE MEN IN SPECIAL REGION OF
YOGYAKARTA PROVINCE**

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ABSTRACT

Epilepsy is one of the chronic diseases of the neurological disorders that are more commonly experienced by men in Asia. Carbamazepine (CBZ) is one of the antiepileptic drugs that have been used as the first line therapy of some epileptic cases that has narrow therapeutic index. *Microsomal Epoxide Hidrolase* (mEH) encoded by *Epoxide Hydrolase 1 (EPHX1)* gene as carbamazepine metabolizing enzyme is reported to be polymorphic. This polymorphism caused a decreased level of active metabolite of CBZ. This study aim is to examine the frequency of the variant gene of carbamazepine metabolizing enzyme *EPHX1* rs1051740 T337C in Indonesia especially on healthy men volunteers of the biggest ethnic group in Indonesia, Javanese Ethnic. This study used blood as the sample. Analysis of genetic variant will be performed by using PCR-RFLP methods. Primers that have been used are 5'-GATAAGTTCCGTTTCACCC-3' as forward primer and 5'-TGTTCTGCCTAGCTCTAA-3' as reverse primer. The PCR condition were 94°C for 3 minutes, 32 cycles of 94°C for 30 seconds, 55°C for 25 seconds, 72°C for 60 seconds, and a final extension of 72°C for 5 minutes. The amplified PCR will digest with *EcoRV* with the final result is 136bp and 232bp for the wildtype (TT) variant. Frequency variant of *EPHX1* gene rs1051740 T337C can not be known in this research. The restriction enzyme failed to cut the sequence target. It proved with the different results which are obtained from confirmation of gene variant using direct sequencing method in three random samples.

Kata Kunci: Carbamazepine (CBZ), *EPHX1*, *Single Nucleotide Polymorphisms* (SNPs), *EPHX1* rs1051740.