

**POLYMORPHISM FREQUENCY *MET420DEL* OF THE DRUG
TRANSPORTER GENES METFORMIN *SLC22A1* AMONG THE JAVANESE
PATIENT POPULATION IN SPECIAL REGION OF YOGYAKARTA**

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ABSTRACT

Polymorphism in the metformin transporter-coding gene plays an important role as the cause of inter-individual variability in metformin response. *SLC22A1* as the metformin transporter-encoding gene is responsible for the metformin influx to hepatocytes. Several studies found that Met420del polymorphism in *SLC22A1* has caused decline in steady-state concentration, the distribution of metformin in the liver, and the effectiveness in lowering HbA1c and blood sugar levels. This study aims to examine the frequency distribution of Met420del polymorphisms on the metformin coding gene (*SLC22A1*) among the Javanese population as the highest type 2 diabetes mellitus patient in Indonesia. The study involved 100 adult patients diagnosed with type 2 diabetes mellitus who met the inclusion criteria, then isolated DNA by silica gel method. Genotype analysis of the *SLC22A1* Met420del gene using the Polymerase Chain Reaction-Restriction Fragment Length Polymorphism (PCR-RFLP) method using 5'-AGG TTC ACG GAC TCT GTG CT-3 forward primer and 5'-AAG CTG GAG TGT GCG ATC T-3' reverse primer. The result of the PCR product is 600 bp. The BspHI restriction enzyme which recognizes the TCATGA base is used to cut the base to T-CATGA on the PCR product, thus being 197 and 403 bp. Data analysis was performed by univariate test method to obtain the result of Met420del genetic variant frequency on the *SLC22A1* transporter. The allele frequencies A (wildtype) and a (mutant) obtained in this study were 0.02 and 0.98. Further research is recommended to examine the effect of the polymorphism on pharmacokinetic profile, pharmacodynamics profile and the adverse drug reaction in patients of Java tribe in Indonesia.

Kata kunci : *SLC22A1*, polymorphism, *Met420del*, metformin, DNA, PCR-RFLP, Javanese tribe, type 2 diabetes.