

P1 GENETIC POLYMORPHISM OF CYTOCHROME P450 2C19 (CYP2C19) IN THE NORTHEASTERN THAI POPULATION

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ABSTRACT

Cytochrome P450 2C19 (CYP2C19) is a polymorphically expressed enzyme responsible for the metabolism of several drugs including barbiturates, carisoprodal, diazepam, mephenytoin, omeprazole, lansoprazole, proguanil and propranolol. Genetic polymorphism of this enzyme shows marked interracial differences with the poor metabolizer (PM) phenotype representing 2-5 % of Caucasian and 13-23 % of Oriental populations. More than 99 % of the PM in Asian populations are defined by two defective alleles, *CYP2C19*2* and *CYP2C19*3*. In the present study, the phenotype and genotype of CYP2C19 was investigated in 55 Northeastern Thai subjects using omeprazole hydroxylation index and polymerase chain reaction-restriction fragment length polymorphism technique, respectively. The distribution of omeprazole hydroxylation index in these subjects was bimodal. Four of these subjects (7.3 %) were identified as PM with omeprazole hydroxylation index higher than 7 (8.31-29.59). Analysis of CYP2C19 genotype in these 55 subjects revealed that the allele frequencies of *CYP2C19*1*, *CYP2C19*2* and *CYP2C19*3* were 72.72, 22.72 and 2.72 %, respectively. The frequencies of the defective *CYP2C19*2* and *CYP2C19*3* alleles in the Northeastern Thai PMs were 50 % and 25 %, respectively. It is noteworthy that one of our four PMs appeared to be an outlier whose phenotype could not be explained by the two major defective alleles. Whether this PM representing a novel defective allele need to be further investigated.

Key words: cytochrome P450 2C19, CYP2C19, genetic polymorphism, phenotype, genotype, Thai