O3 ARYLAMINE N-ACETYLTRANSFERASE-2 GENOTYPE POLYMORPHISM IN THAI POPULATION.

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ABSTRACT

The *N*-acetyltransferase enzymes (EC 2.3.1.5) encoded by the *NAT* genes are responsible for the human polymorphic acetylation of numerous arylamines or hydrazine-containing chemicals. Enzymes are consisted of 2 isoforms: NAT1 and NAT2. They are expressed in different tissues and possess different substrate specificity. The classical *N*-acetyltransferase is NAT2, where phenotype and genotype are well recognized to be polymorphism. Frequency distribution of the polymorphic forms varies widely among ethnic groups and this polymorphism may be implicated in drug toxicity and cancer susceptibility. There is no previous report on the *NAT2* genotype in Thai population. The aim of this study was to determine the allele frequencies of *NAT2* gene in Thai population. *NAT2* genotyping was investigated in 236 unrelated Thais by use a method of polymerase chain reaction-restriction fragment length polymorphisms (PCR-RFLP). The analysis was carried out in the major four mutation point found in Asian populations namely, C282T, C481T, G590A, and G857A. The results showed that alleles associated with slow acetylation were identified to be 61.65% (95% CI: 57.27 to 66.04). The frequencies of particular *NAT2* alleles were **4*(wild-type), 38.35%; **5*(C481T), 3.81%; **6*(G590A), 32.20%; **7*(G857A), 20.55%; **13*(C282T), 5.08%. NAT2 genotypes consisted of 12.71% of homozygotes of *NAT2*4*, 51.27% of heterozygotes of *NAT2*4* and other mutant alleles, and 36.02% of combinations of mutant alleles. The most common genotypes found were *NAT2*4/*6A*, **4/*7B* and **4/*4* with frequencies of 0.23, 0.15 and 0.13 respectively. Although NAT2 genotype in Thai population are in similar patterns with other Asian populations, *NAT2*4* is significantly lower than Japanese, Chinese and Korean populations ($P<0.001$). The prevalence of slow acetylation status predicted by genotyping in Thais was consistent with our phenotyping study (0.64 (95% CI: 0.58-0.70) and 0.63 (95% CI: 0.51-0.75), respectively). The data obtained may be pertinent to epidemiological studies of the influence of acetylator status in association with drug toxicity and carcinogenesis.

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