Common Polymorphism's Analysis of Thiopurine S-Methyltransferase (TPMT) in Iranian Population

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Abstract
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Objective: Thiopurine S-methyltransferase (TPMT) catalyses the S-methylation of thiopurine drugs. Low activity phenotypes are correlated with several mutations in the TPMT gene and adverse drug reactions. The molecular basis for dissimilar enzymatic activity of TPMT has been established in Caucasians, African-Americans and Southwest Asians, but it remains to be elucidated in Iranian population. Until present, no study on Iranian population has been performed on the known alleles of TPMT. The aim of this study was to investigate the frequencies of four of the most common variants of this gene.

Materials and Methods: This study was conducted during 2007 at the Department of Hematology, Tarbiat Modares University, Tehran, Iran. Using PCR-RFLP and allele specific PCR techniques, allelic variants of the TPMT gene TPMT*2(G238C), TPMT*3B (G460A), TPMT*3C (A719G) and TPMT*3A (G460A and A719G) were genotyped in a normal population of 127 Iranians.

Results: In this study TPMT*2 showed a prevalence of 7.08%. TPMT*3C and *3A were found in 2.47% and 2.18% of the samples, respectively. TPMT*3B variant was not detected in Iranian subjects. 112 out of 127 participants showed homozygote wild type allele.

Conclusion: This study is the first to analyze TPMT allele frequencies in a sample of Iranian population and indicates that TPMT*2 is the most common allele (7.08%) in this population. These results can help to organize national pretreatment strategies in patients with acute lymphoblastic leukemia (ALL) or other diseases requiring thiopurine medication in their standard therapy.

Keywords: Thiopurine S-methyltransferase, Polymorphism Genetic, Pharmaco Genetics