Research in Pharmaceutical Sciences, 2012;7(5)
School of Pharmacy and Pharmaceutical Sciences
Isfahan University of Medical Sciences

Rapid single-nucleotide polymorphism detection of vitamin K epoxide reductase (VKORC1) genes in an Iranian population using taqman genotyping assay

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Background and Aims: Warfarin is a commonly used oral anticoagulant with a narrow therapeutic index and various genetic and clinical factors that influence interpatient variability in dose requirements. The dose requirements for oral anticoagulants in thromboembolic events are influenced by promoter polymorphism in the Vitamin K epoxide reductase subunit 1, VKORC1 gene. This study investigated the distribution of major allelic variants of VKORC1 in Iranian population.

Methods: The polymorphisms of VKORC1 (VKORC1-1639 G>A allele) was analyzed in 400 healthy unrelated Iranian subjects. Primers and probes were designed using PrimerExpress (Version 3.0) software. Genomic DNA was prepared from blood samples with standard salting out method. Mutation analysis of CYP2C9 alleles was performed by means of real time PCR method (TaqMan assay). 1.5 % agarose electrophoresis gel was used to confirm amplicon fragment size of target. Data were analyzed by SPSS that connect with Real-time PCR device at the end.

Results and discussion: The VKORC1-1639 G>A allele frequency in the study population (n = 200) was found to be 52%. The results of this study will be useful for understanding clinical pharmacokinetics and drug dosage recommendations for Iranians.

Keywords: SNP; VKORC1; Real time PCR