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Pharmacogenetic kit for individual correction of warfarin and clopidogrel dosage in central Asian population

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ADME of drugs significantly depends on individual genetic differences and affects efficacy of drug therapy. Information on the patient's pharmacogenetic status minimizes occurrence of side effects and complications after the appointment of drugs. It is well established that every population has its own unique set of allelic variants in the genes involved in drug metabolism. One of our goals was to study Kazakh population and its allele frequencies of 158 SNPs that determine susceptibility to major classes of drugs. A total of 320 blood samples were collected from adult individuals of Kazakh origin. Ethical approval was received from the Ethics Committee of the National Center for Biotechnology. Comparative analysis of allele frequencies has revealed that Kazakh population has common genetic characteristics of the neighboring Caucasian and Asian populations. The latest report of Ministry of Health of the Republic of Kazakhstan states that Warfarin and Clopidogrel are major causes of severe side effects in patients with cardiovascular disease. The acquired genotyping data was used to develop a diagnostic kit that is aimed to correct individual dosage of these drugs. The kit includes 8 SNPs representing 5 genes (*CYP2C9* (*CYP2C9*2*, *CYP2C9*3*), *VKORC1* (1173 C>T, 1542 G>C), *CYP4F2* (G23454A), *CYP2D6* (*CYP2D6*3*, *CYP2D6*4*) and *CYP1A2*1F* (C163A). Real-Time PCR with TaqMan probes was selected and optimized as a genotyping method for diagnostics. Introduction of the in vitro pharmacogenetic diagnostic will result in reduced incidence of adverse reactions and help clinicians to determine therapeutic strategy and treatment dose for Warfarin and Clopidogrel in Central Asian region.

Biography

Pavel Tarykov has received his M.Sc. in Biochemistry from Montana State University (Bozeman) in 2009. He is a research scientist at General Genetics Ltd., a startup company involved in pharmacogenetic research, and senior research scientist at the National Center for Biotechnology of the Republic of Kazakhstan. His work is published in many reputed journals.

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