

NR1I2 63396 C>T GENETIC VARIANT pregnane X receptor (PXR)

ORDERING INFORMATION

REF: FGC-021-25
Tests: 25
Reactions: 31
Manufacturer: BioMol Laboratories s.r.l.

CONTENTS OF THE KIT

The kit consists of reagents for
Real-Time PCR amplification
*reagents for the extraction of genomic
DNA are not supplied in the kit.



PRODUCT CHARACTERISTICS

Device belonging to the family of in vitro devices **REAL-TIME QUALITATIVE PCR-GENETIC VARIANTS- RESEARCH USE ONLY**.
Detection of genetic variant 63396 C>T (rs2472677) of the NR1I2 gene (PXR pregnane X receptor) by amplification with specific oligonucleotides and probes (allele-specific genotyping) and subsequent detection with qPCR-Real-time.. Kit optimized for Real-time PCR instruments Biorad CFX96 Dx, Biorad Opus Dx, Agilent AriaDx, Thermofisher QuantStudio™ 5 Real-Time PCR System.

SCIENTIFIC BACKGROUND

The human NR1I2 gene, also called pregnane X receptor (PXR), is located on chromosome 13q12-q13.3 and encodes the NR1I2 protein, a member of the nuclear receptor superfamily. Its main role in the human body is as a transcription factor, regulating the metabolism and excretion of various drugs, particularly by influencing the activity of the cytochrome P450 enzyme system in the liver. NR1I2 plays an important role in drug metabolism, toxicity regulation, and the effects of endogenous chemicals, making its function significant in the study of drug interactions, drug metabolism pathways, and the prediction of individual responses to drugs. PXR regulates the expression of cytochrome CYP3A4 and ABCB1. PXR is a ligand-activated receptor that regulates gene expression in response to endogenous and exogenous substances, but PXR expression is correlated with that of CYP3A4 and ABCB1 in the liver and peripheral blood mononuclear cells (PBMCs) in the absence of enzyme inducers. Several single nucleotide polymorphisms (SNPs) identified within the NR1I2 gene have been associated with the risk of developing certain diseases in different populations.

CLINICAL SIGNIFICANCE

Various genetic polymorphisms in the NR1I2 gene can influence the pharmacokinetics and therapeutic response to many drugs, such as irinotecan, tacrolimus, and atazanavir. In particular, the single nucleotide polymorphism (SNP) 63396 C>T (rs2472677) of PXR alters PXR expression and CYP3A4 activity in vitro, demonstrating an association of this polymorphism with plasma concentrations of atazanavir. Atazanavir (ATV) is an HIV protease inhibitor. The 63396 C>T polymorphism is located in intron 1 of the PXR gene and is in linkage disequilibrium with other polymorphisms (63704 A>G, 63813(CAAA)(CA), and 65104 T>C). The same SNP is located at a putative binding site for hepatocyte nuclear factor 3β (HNF3β) and has previously been associated with CYP3A4 activity in primary human hepatocytes, with a tendency to be associated with PXR expression. Therefore, the putative mechanism for the association with ATV clearance (a pharmacokinetic parameter that measures the body's ability to eliminate a drug from the systemic circulation) is that individuals with the T allele have increased PXR expression, resulting in increased constitutive activity of the nuclear receptor. The phenotypic effect was observed only when the polymorphism was in TT homozygosity, indicating that the allele is recessive.

§ NR1I2 as a core biological target in chronic venous ulcer tissues treated with ultrasound therapy. Lu et al. • Medicine (2024) 103:19
§ Pregnane X Receptor (PXR) Polymorphisms and Cancer Treatment. Biomolecules 2021, 11, 1142; <https://doi.org/10.3390/biom11081142>
§ Genetic Variations of the Xenoreceptors NR1I2 and NR1I3 and Their Effect on Drug Disposition and Response Variability. Pharmacogenomics Volume 19, 2018 - Issue 1

NR1I2 63396 C>T GENETIC VARIANT pregnane X receptor (PXR)

ORDERING INFORMATION

REF: FGC-021-25
Tests: 25
Reactions: 31
Manufacturer: BioMol Laboratories s.r.l.

CONTENTS OF THE KIT

The kit consists of reagents for
Real-Time PCR amplification
*reagents for the extraction of genomic
DNA are not supplied in the kit.



CONTENTS OF THE KIT

DESCRIPTION	LABEL	VOLUME	STORAGE
		FGC-021-25	
Mix oligonucleotides and probes	Mix 63396 C>T NR1I2 10X	1 x 62 µl	-20°C
Mix buffer and Taq-polymerase enzyme	Mix Real-Time PCR 5X	1 x 124 µl	-20°C
Deionized H ₂ O	Deionized H ₂ O	1 x 1 ml	-20°C
Genomic DNA or recombinant DNA	Control CC	1 x 22 µl	-20°C
Genomic DNA or recombinant DNA	Control CT	1 x 22 µl	-20°C
Genomic DNA or recombinant DNA	Control TT	1 x 22 µl	-20°C

TECHNICAL CHARACTERISTICS

COD. FGC-021-25

STABILITY	18 months
REAGENTS STATUS	Ready to use
BIOLOGICAL MATRIX	Genomic DNA extracted from whole blood, tissues, cells
POSITIVE CONTROLS	Recombinant DNA for at least 3 analytical sessions
TECHNOLOGY	Real-time PCR; oligonucleotides and specific probes; 2 FAM/HEX fluorescence channels
VALIDATED INSTRUMENTS	Biorad CFX96 Dx, Biorad Opus Dx and Agilent AriaDx, Thermofisher QuantStudio™ 5 Real-Time PCR System.
RUNNING TIME	85 min
THERMAL CYCLING PROFILE	1 cycle at 95 °C (10 min); 45 cycles at 95 °C (15 sec) + 62 °C (60 sec)
ANALYTICAL SPECIFICITY	Absence of non-specific pairings of oligonucleotides and probes; absence of cross-reactivity
LIMIT OF DETECTION (LOD)	≥ 5 ng of genomic DNA
LIMIT OF BLANK (LOB)	>40 Cq
REPRODUCIBILITY	99,9%
SPECIFICITY / SENSITIVITY	99,9%/98%