

CETP and APO-A2 GENETIC VARIANTS

ORDERING INFORMATION

REF: GEN-045-25
Tests: 25 Reactions: 31 x 2
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 the polymorphism of the CETP gene (rs9939224) and APO-A2 gene (rs5082) by Real-Time PCR technique. 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 cholesteryl ester transfer protein (**CETP**), which is a hydrophobic glycoprotein, plays a key role in transporting cholesterol from the peripheral tissues to the liver and is highly expressed in adipose tissue with low lipid contents.

APOA2 is a protein involved in TG, fatty acid, and glucose metabolism. Previous studies have reported that it is closely associated with insulin resistance, obesity, and hypertriglyceridemia. Studies have reported that APO-A2 is closely associated with insulin resistance, obesity, and hypertriglyceridemia.

§ Sci Rep. 2023 Dec 7;13(1):21615. CETP and APOA2 polymorphisms are associated with weight loss and healthy eating behavior changes in response to digital lifestyle modifications

§ Br J Nutr. 2022 Jul 14;128(1):13-29. Interaction between Apo A-II -265T>C polymorphism and dietary total antioxidant capacity on some oxidative stress and inflammatory markers in patients with type 2 diabetes mellitus

§ Apolipoprotein A-II, a Player in Multiple Processes and Diseases. Biomedicine 2022, 10, 1578.

§ J Nutr Sci. 2021 Feb 9. Interaction between Apo A-II -265T>C polymorphism and dietary total antioxidant capacity on some anthropometric indices and serum lipid profile in patients with type 2 diabetes mellitus

§ Nutr J. 2017 May 25;16(1):34. The effect of weight loss on HDL subfractions and LCAT activity in two genotypes of APOA-II -265T>C polymorphism

§ The Association of Common SNPs and Haplotypes in CETP Gene with HDL Cholesterol Levels in Latvian Population. PLOS ONE. May 2013; Volume 8; Issue 5; e6419

CLINICAL SIGNIFICANCE

The CETP SNP rs9939224 (G>T) modulates changes in body mass index (BMI), healthy eating behavior and psychological behavior after lifestyle modification (dCBT-O).

This specific SNP significantly influences the behavioral and psychological mechanisms associated with the efficacy of obesity treatments, being considered genotypes GT and TT as high responders after lifestyle modification.

For **APOA2 promoter (-265 T>C polymorphism rs5082)** it has been reported that the replacement of T with C at -265 nucleotide of the Apo A-II gene leads to reduce the transcriptional rate of the Apo A-II and its serum concentration. Individuals with the rs5082 CC genotype are associated with increased Body Mass Index and food intake. The odds ratio for obesity in CC individuals compared to rs5082(T) allele carriers was 1,70 (CI: 1,02-2,80, p=0,039).

Since APOA2 also acts as a satiety signal, lower plasma APOA2 concentrations lead to a greater appetite. The effect of the C allele on appetite could be the underlying biological mechanism linking this genotype to poor treatment response after lifestyle modification. It has been demonstrated that adherence to a diet with high total antioxidant capacity can improve the complications of diabetes and atherosclerosis in the T carrier genotype more effectively than the CC genotype.

These results suggest that **gene-gene interactions between CETP and APOA2 SNPs** could be significant determinants of the clinical efficacy of lifestyle modifications (dCBT-O).

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DESCRIPTION	LABEL	VOLUME	STORAGE
		GEN-045-25	
Mix oligonucleotides and probes	Mix CETP G>T 10X	1 x 62 µl	-20°C
Mix oligonucleotides and probes	Mix APO-A2 10X	1 x 62 µl	-20°C
Mix buffer and Taq polymerase enzyme	Mix Real-Time PCR 5X	1 x 248 µl	-20°C
Deionized H ₂ O	Deionized H ₂ O	1 x 1 ml	-20°C
Genomic DNA or recombinant DNA	Control 1 CETP GG	1 x 22 µl	-20°C
	Control 2 CETP GT	1 x 22 µl	-20°C
	Control 3 CETP TT	1 x 22 µl	-20°C
Genomic DNA or recombinant DNA	Control 1 APO-A2 TT	1 x 22 µl	-20°C
	Control 2 APO-A2 TC	1 x 22 µl	-20°C
	Control 3 APO-A2 CC	1 x 22 µl	-20°C

TECHNICAL CHARACTERISTICS

COD. GEN-045-25

STABILITY	18 months
REAGENTS STATUS	Ready to use
BIOLOGICAL MATRIX	Genomic DNA extracted from whole blood, tissues, cells
CONTROLS	Recombinant DNA for at least 3 analytical sessions
VALIDATED INSTRUMENTS	Biorad CFX96 Dx, Biorad Opus Dx and Agilent AriaDx, Thermofisher QuantStudio™ 5 Real-Time PCR System.
TECHNOLOGY	Real-time PCR; oligonucleotides and specific probes; 2 FAM/HEX fluorescence channels
RUNNING TIME	85 min
THERMAL CYCLING PROFILE	1 cycle at 95 °C (10 min); 45 cycles at 95 °C (15 sec) + 68 °C (60 sec)
ANALYTICAL SPECIFICITY	Absence of non-specific pairings 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%