# Forming statin response in patients with coronary heart disease in presence of acute respiratory viral infections by means of genetic markers

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**Statement of the Problem:** Development of CHD associated with atherosclerosis. One of the main pathogenetic causes of atherosclerosis development is inflammation, being an important atherogenesis component. Any acute infection may be the etiological factor which activates chronic inflammation in the atherosclerotic plaque, involving the cytokine system. A number of studies demonstrate the relation between an increase of cytokine level and the signs of atherosclerosis destabilization and CHD. The purpose of this study is to describe the drug response variability in CHD patients with an acute viral infection.

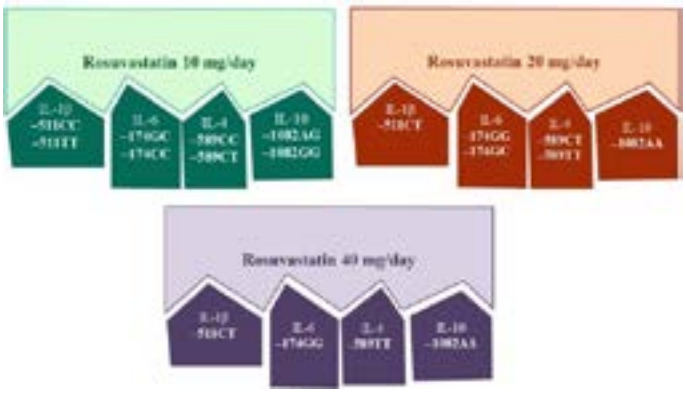
**Methodology & Theoretical Orientation:** The study involved 170 CHD patients, 120 of whom also had infections (ARVI). The LDL-C and cholesterol levels were determined in the blood serum using an enzymatic method. Genotyping of polymorphisms IL-1β –511C>T, IL-6 –174G>C, IL-4 –589C>T, IL-10 –1082G>A was performed using a PCR method on the CFX96 Bio-Rad Laboratories amplifier (USA).

**Findings:** Carriership of –511TT genotype were diagnosed with the lowest LDL-C level and a high HDL-C level ($p<0.05$), which confirmed the hypolipidemic statin effect. Carriers of –511CC genotype had the increased LDL-C levels. Carriership homozygous –1082GG genotype demonstrated the association with the level of Cholesterol ($P=0.003$). When the anti-inflammatory cytokine (IL-4, IL-10) level increased, C level decreased ($P<0.05$). The analysis of correlation between pro- /anti-inflammatory cytokine gene genotypes revealed the activity of genotypes –511TT (IL-1β gene), –174CC (IL-6 gene), –589TT (IL-4 gene), and –1082GG (IL-10 gene) in maintaining chronic inflammation stability ($P=0.012$).

**Conclusion & Significance:** The obtained correlations contributed to the preparation of personalized HLP pharmacotherapy algorithm in CHD patients in presence of ARVI. The presence of heterozygous –511CT genotype for –511C>T polymorphism of the IL-1β gene, homozygous –174GG genotype for –174G>C polymorphism of the IL-6 gene, and homozygous –1082AA genotype for polymorphism –1082G>A of the IL-10 gene did not lead to reaching the target LDL-C level.

**Recent Publications:**

1. Babu BM, Reddy BP, Priya VH et al. (2012) Cytokine gene polymorphisms in the susceptibility to acute coronary syndrome. Genetic Testing and Molecular Biomarkers 16(5): 359-365
2. Chen L, Liu L, Hong K et al. (2012) Three genetic polymorphisms of homocysteine-metabolizing enzymes and risk of coronary heart disease: a meta-analysis based on 23 case-control studies. DNA and Cell Biology 31(2): 238-249
3. Guan X, Yang W, Sun X et al. (2012) Association of influenza virus infection and inflammatory cytokines with acute myocardial infarction.
4. Inflammation Research 61(6): 591-598
5. Loppnow H, Zhang L, Buerke M et al. (2011) Statins potently reduce the cytokine-mediated IL-6 release in




SMC/MNC cocultures. Journal of Cellular and Molecular Medicine 15(4): 994-1004

6. Yu GI, Cho HC, Cho YK et al. (2012) Association of promoter region single nucleotide polymorphisms at positions -819C/T and -592C/A of interleukin 10 gene with ischemic heart disease. Inflammation Research 61(8)

## Biography

Mal Galina Sergeevna throughout the 30 years dealing with the actual problems of cardiology, pharmacology and clinical pharmacology. In 1993 she defended her thesis and was awarded the degree of candidate of medical sciences. In 2005, defended her doctoral thesis and awarded the degree of doctor. Since 2005 she has been working as a professor of pharmacology. She is the author of 500 scientific papers. Develops issues of pharmacological correction of atherosclerosis of coronary heart disease, arterial hypertension. Studies pharmacogenetic approaches to the modification of the drug response in cardiac patients. Her approach to optimizing treatment is based on the pharmacokinetic, pharmacodynamic and pharmacogenetic aspects of the treatment of cardiac patients. That allows to implement personalized medicine in real life. She and her students present their work internationally.

**Notes:**