Connection between GST genes (GSTT1 and GSTM1) polymorphism and drug-induced hepatotoxicity, in the case of Lung Tuberculosis, in Georgian Population

Nowadays, the genetic study of the effectiveness of pharmacotherapy and its side effects is actively achived. The reason for the development of a significant part of hepatitis is the effect of medication.

The cause of hepatotoxicity of some drugs is the polymorphism of the genes encoding enzymes which are involved in the metabolism of these drugs. To the number of these enzymes belongs to Glutathione-s-Transferase (GST). GST plays a vital role in II phase biotransformation and detoxification of many artificially produced compounds, including drugs. GSTs are polymorphic and they are characterised by ethno-dependency associated with various diseases. One of these diseases is tuberculosis.

Liver damage caused by anti tuberculosis drugs causes a lot of side effects in the treatment of disease. Thus, it is necessary to take into account genotypic differences during treatment with antituberculotic drugs in order to reduce the risk of liver damage caused by preparations.

The goal of the research was to determine the frequency of polymerism of GST genes in the Georgian population and to determine linkage between GSTM1 and GSTT1 genes polimorphism and the liver damage caused by drugs, in patients with pulmonary tuberculosis, in Georgian population.

The study material was used 2-5 ml peripheral (capillary) blood of healthy and tuberculous individuals.

The results of polymorphism studies of GSTT1 and GSTM1 genes showed that in 82% of healthy individuals in Georgian populations revealed positive genotypes of GSTT1 and GSTM1, in 14% - negative (null genotype) by GSTT1 gene and GSTM1(-) was observed in 6%. Double null genotype (GSTT1 (-)/ GSTM1(-) - was observed in 3% of individuals.

In the case of individuals with pulmonary tuberculosis of the Georgian population, investigation of polymoerphism of GST (GSTT1 and GSTM1) genes revealed that 79% of individuals have positive GSTT1 (+) GSTM1 (+) genotypes. In 9% of investigated patients revealed null genotype by one of these genes (GSTT1 and GSTM1). As for the double null genotypes, it was shown in 12 % of investigated PT individuals. Those individuals with PT, who had a double null genotypes, have changes in the liver functional tests, which should be related to their intake of anti-tuberculosis drugs.