MACROPHAGES FROM PERIPHERAL HUMAN BLOOD AS A MODEL FOR STUDYING GLUCOCEREBROSIDASE DYSFUNCTION

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Mutations of the *GBA* gene cause Gaucher disease (GD), a lysosomal storage disease (LSD), connected with decreased activity of the lysosomal enzyme glucocerebrosidase (GCase). Both, homozygous and heterozygous states of *GBA* mutations implicate an increased risk of Parkinson's disease (PD). Cell-based model *in vitro* from patients with mutations in the *GBA* gene is crucial for the new approaches of GD and PD treatment by increasing the GCase enzymatic activity, in particular, using pharmacological chaperones. The current study is based on the use of homogeneous populations of primary human macrophages for investigation of GCase disfunctions. The efficiency of different methods for macrophages culturing was compared with subsequent evaluation of GCase enzymatic activity and lysosphingolipids concentration in the dry spots of macrophages by means of LC-MS/MS. The efficiency of pharmacological chaperones isofagomine and ambroxol in restoring GCase enzymatic activity in the macrophages from GD patients was tested. The following research allowed to propose an approach *in vitro* to screening the potential drugs increases the activity of GCase.

K e y w o r d s: Parkinson's disease, macrophages, glucocerebrosidase, lysosphingolipids