

Abstract

Myocardial infarction remains one of the most serious diseases of civilization worldwide. The aim of the research is therefore to search for new strategies to protect the heart from ischemia-reperfusion (I/R) damage and its consequences. New findings can be used in clinical practice and for the prevention and treatment of heart diseases. This work builds on a study from our laboratory that developed a model of mild cold acclimation (5 weeks, 8 °C) associated with a significant reduction in infarct size after rat myocardial I/R without side effects. However, further study is needed to elucidate the mechanism of the cardioprotective effect. The diploma thesis was focused on the potential influence of known batokines, fibroblast growth factor (FGF21) and interleukin 6 (IL-6). Furthermore, we aimed to introduce a method for isolating adult rat cardiomyocytes and a procedure for verifying the viability and resistance of myocardial cells under the load of hypoxia and oxidative stress at the workplace. Effective cardioprotection of the mild cold acclimation was confirmed in the work. Acute ablation of BAT before the ischemia-reperfusion protocol had no effect on infarct size. The cardiomyocyte isolation method was successfully introduced and the protective effect of acute cold (10 days, 8 °C) was confirmed.

Key words: cardioprotection, cold acclimation, batokines, isolated cardiomyocytes