

Abstract

The effect of cold acclimation on body of mammals has been studied for many decades by using relatively low temperatures for acclimation (6-10 °C). The results of these experiments have shown the important role of the adrenergic and thyroid system during acclimation and negative impact on renal system at the same time. In contrast, a recent study on winter swimmers suggests a possibility of positive influence of hardening on cardiovascular system. There is no available study investigating a relationship between cold adaptation and ischemia-reperfusion injury. The aim of this study was to establish a protocol of isolated rat heart and its fixation at our workplace. Furthermore, to find the impact of mild cold acclimation on the ischemia-reperfusion injury of rat. Methods of ex vivo heart perfusion and fixation were successfully established. The effect of 5 weeks long cold acclimation in 10 ± 2 °C on left ventricle ischemia-reperfusion injury was observed.