Abstract

Myocardial hypoxia induces several physiological changes on cellular and molecular level in order to keep homeostasis in low oxygen conditions. Essential role in this adaptive response is played by secretory regulatory proteins called cytokines. Differences in concentrations of pro-inflammatory and anti-inflammatory cytokines during hypoxic conditions in the myocardium may significantly influence the fate of the heart tissue, i.e. contribute to its injury or protection. This knowledge is used in experimental cardioprotective strategies – adaptation to chronic hypoxia, ischemic preconditioning, postconditioning and remote conditioning – all of which affect the cytokine levels. The main pro-inflammatory cytokines are TNF-α, IL-1 and cytokine family IL-6. The principal anti-inflammatory cytokine is IL-10. This thesis aims to summarize the effects of pro- and anti-inflammatory cytokines in adaptation of heart to hypoxia and to cover their pathological and protective impact on the myocardium.