

ABSTRACT

G protein-coupled receptors (GPCRs) are a family of membrane receptors with hundreds of members, many of them present in the heart, where their signalling systems are involved in regulation of many cellular processes. An important role of GPCRs is the cardioprotection against cardiac ischemia-reperfusion injury, which mainly involves the so-called RISK pathway containing of kinases signalling for cell survival and against apoptosis. By protecting the heart during ischemia/reperfusion they can prevent irreversible cardiac injury, including myocardial infarction or cardiac dysfunctions, which can lead to heart failure. GPCRs regulate many processes linked to pathophysiology of heart failure – hypertrophy, fibrosis, loss of cardiac function. Understanding the role of individual receptors in these cardioprotective and cardiotoxic processes is essential for the development of new drugs.