



# Intermedin protects against myocardial ischemia-reperfusion injury in hyperlipidemia rats

S.M. Yang<sup>1</sup>, J. Liu<sup>2</sup> and C.X. Li<sup>1</sup>

<sup>1</sup>Department of Cardiac Surgery, Affiliated Hospital of Medical College, Qingdao University, Qingdao, Shandong, China

<sup>2</sup>Department of Library Management, Affiliated Hospital of Medical College, Qingdao University, Qingdao, Shandong, China

Corresponding author: S.M. Yang

E-mail: smjlcn@163.com

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**ABSTRACT.** Hyperlipidemia is a well-established risk factor for the development of coronary atherosclerosis, while intermedin (IMD) has been identified as a novel calcitonin/calcitonin gene-related peptide family member involved in cardiovascular protection. However, whether IMD protects against hyperlipidemia-associated myocardial ischemia/reperfusion (MI/R) injury is unknown. We established a hyperlipidemia model using Sprague-Dawley rats, and created a MI/R condition by ligating the cardiac left circumflex artery. The possible pathophysiological role of IMD and its physiological function in MI/R was further studied. The level of IMD significantly decreased in hyperlipidemia rats ( $P < 0.05$ ). After MI/R, the IMD level was increased both in the plasma and myocardial tissue of hyperlipidemia rats compared to the sham-operated rats ( $P < 0.001$ ). As evaluated by the activity of LDH, CK-MB, MDA and SOD, additional IMD was revealed to alleviate MI/R heart injury in hyperlipidemia rats ( $P < 0.05$ ). By regulating the process of cardiomyocyte apoptosis

and inflammatory reaction, IMD could perform an important role in cardio-protection, especially against hyperlipidemia-associated MI/R injury. Additional IMD could protect cardiac myocytes against MI/R injury via reduction of apoptosis and inflammation in the hyperlipidemia rat model, and thus, it may play a potential role as a novel therapeutic target for cardiac ischemic injury in hyperlipidemic patients.

**Key words:** Hyperlipidemia; Myocardial; Ischemia-reperfusion injury; Intermedin; Cardiovascular protection; Rat