



Protective effect of necrostatin-1 on myocardial tissue in rats with acute myocardial infarction

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ABSTRACT. The aim of this study was to investigate the protective effect of necrostatin-1 on myocardial tissue of acute myocardial infarction (AMI) rats and to provide a basis for necrostatin-1 for the treatment of acute myocardial infarction. AMI rats (45) were established by ligating the anterior descending branch of the left coronary artery. The rats were randomly divided into the model group and necrostatin-1 low-dose and high-dose groups. The control group rats (15) underwent the sham operation. The rats in the necrostatin-1 low-dose and high-dose groups were injected with 1 and 4 mg/kg necrostatin-1, respectively, via the tail vein. The rats in the control and model groups were injected with isometric dimethyl sulfoxide, once daily, for 3 consecutive days. The levels of RIP1 and RIP3 mRNA and phosphorylated protein in the myocardial tissue of rats were detected by real time polymerase chain reaction and western blot. The myocardial infarct size was detected by tetrazolium chloride. Compared with that in the control group, the levels of RIP1 and RIP3 mRNA and phosphorylated protein significantly increased in the myocardial tissue of model group rats, necrostatin-1 low-dose group, and high-dose group. The levels of RIP1 and RIP3 mRNA and phosphorylated protein in the myocardial tissue of rats in the necrostatin-1 low-dose and high-dose groups decreased significantly compared with that in the model group ($P < 0.05$). The levels of RIP1

and RIP3 mRNA in the myocardium of the high-dose group rats were significantly lower than those of the low-dose group rats ($P < 0.05$). The myocardial infarct sizes significantly increased in model, low-dose, and high-dose group rats. The apoptotic level of myocardial cells significantly decreased in the low-dose group and high-dose group after treatment with necrostatin-1 but was still higher than that of the control group ($P < 0.05$). In conclusion, necrostatin-1 can inhibit myocardial tissue apoptosis and necrosis in acute myocardial infarct rats and has a protective effect on myocardial tissue.

Key words: Necrostatin-1; Acute myocardial infarction; Cell apoptosis