Comparison of cardioprotective effects of salvianolic acid B and benazepril on large myocardial infarction in rats

Hai-Bo He[1], Xian-Zhe Yang[1], Meng-Qiong Shi[2], Xiao-Wei Zeng[1], Li-Mao Wu[1], Lian-Da Li[1]

[1]Institute of Chinese Herbal Medicine, College of Pharmaceutical Sciences, Zhejiang University, 310058 Hangzhou, China

[2]Center of Medical Science Analysis, Dahe Clique, 310053 Hangzhou, China

Correspondence: Li-Mao Wu, e-mail: wulimao@zju.edu.cn

Abstract:

In the present study, we compared cardioprotective effects of salvianolic acid B (Sal B) and the angiotension-converting enzyme inhibitor, benazepril, in rats with large myocardial infarction (MI). The large MI was produced by coronary artery ligation for 4 weeks in rats. The rats were divided into the following groups: sham operation; MI; MI + Sal B (100 mg/kg by a gavage, once a day for 4 weeks) and MI + benazepril (1 mg/kg by a gavage, once a day for 4 weeks). Echocardiogram, hemodynamic and hemorheological changes, angiogenesis, infarct size and cardiac remodeling, as well as messenger ribonucleic acid (mRNA) of vascular endothelium growth factor (VEGF) were measured. The following similar effects were observed in MI rats treated with Sal B and benazepril: (1) a marked improvement of echocardiographic, hemodynamic and hemorheological parameters, (2) significant reduction of infarct size, (3) significantly attenuated heart hypertrophy, left ventricular (LV) dilatation and fibrosis. The unique effects of Sal B were: angiogenesis and augmented VEGF expression in the border and remote noninfarcted LV area. These results suggest that Sal B and benazepril exerted beneficial cardioprotective effects. However, Sal B enforced some different modality than benazepril, which might improve myocardial microcirculation by augmenting VEGF expression and promoting angiogenesis besides similar effects to benazepril.

Key words:
salvianolic acid B, benazepril, large myocardial infarction, heart function, blood viscosity, angiogenesis, infarct size, ventricular remodeling