

论著

人参茎叶皂苷预适应对自发性高血压大鼠心肌缺血再灌注损伤的保护作用

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摘要 目的 研究人参茎叶皂苷(GSLs)预适应对自发性高血压大鼠(SHR)心肌缺血再灌注损伤(I-R)的保护作用及可能机制。方法 SHR于I-R造模前每日1次灌胃给予GSLs 50和100 mg·kg⁻¹,连续3周,于缺血40 min和再灌注30 min内测定大鼠血压、心功能和心脏血流动力学指标,生化方法测定心肌ATPase酶、乳酸脱氢酶(LDH)和超氧化物歧化酶(SOD)活性及丙二醛(MDA)和NO含量,镉血红素饱和法测定心肌和肝脏金属硫蛋白(MT)含量,免疫组化方法测定细胞热休克蛋白70(HSP70)表达。结果 GSLs 50和100 mg·kg⁻¹预适应组显著改善I-R损伤SHR的心率、左室内压峰值和左室内压最大变化速率($\pm dp/dt_{max}$),明显提高心肌ATPase活性,减少LDH漏出,提高心肌SOD活性,增加NO含量,降低MDA含量,增加心肌和肝脏MT含量,增加心肌HSP70阳性细胞百分数。结论 GSLs预适应对心肌I-R损伤具有保护作用,其作用机制与改善SHR心肌舒缩功能,改善心肌代谢,增强抗氧化活性和诱导内源性心肌保护物质的释放有关。

关键词 [皂苷类](#), [人参属](#) [心肌缺血](#) [心肌再灌注损伤](#) [大鼠](#), [自发性高血压](#) [预适应](#)

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Protective effects of preconditioning with ginseng stem and leave saponin against myocardium ischemia and reperfusion injury in spontaneously hypertensive rats

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Abstract

AIM To investigate the cardioprotective effects of pharmacological preconditioning with ginseng stem and leave saponin (GSLs) against myocardium ischemia and reperfusion (I-R) injury in spontaneously hypertensive rats (SHR) and its possible mechanisms. **METHODS** The SHR were subjected to 40 min ischemia followed by 30 min reperfusion, pharmacological preconditioning groups were administered GSLs 50 or 100 mg·kg⁻¹·kg⁻¹ for 3 weeks before I-R. The blood pressure, heart rate and parameters of cardiac function and the hemodynamics involving left ventricular systolic pressure (LVSP) and $\pm dp/dt_{max}$ were recorded continuously through the process of I-R. The activities of ATPase, lactate dehydrogenase (LDH), superoxide dismutase (SOD), and also contents of nitric oxide (NO) and malondialdehyde (MDA) in myocardium were determined by biochemistry methods. The metallothionein (MT) content in liver and myocardium was detected, the expression of heat shock protein 70 (HSP70) in myocardium was measured by immunohistochemistry method. **RESULTS** Compared with I-R model group, GSLs preconditioning group significantly improved heart rate, LVSP and $\pm dp/dt_{max}$ in SHR hearts. Furthermore, the activities of ATPase and SOD increased, the release of LDH reduced, and the content of NO increased, while the MDA content decreased in myocardium. The contents of MT in liver and myocardium enhanced and the expression of HSP70 in myocardium increased. **CONCLUSION** Preconditioning with GSLs has protective effects on I-R injured myocardium in SHR, which may be related to improving the systolic and diastolic function and hemodynamics indexes, promoting antioxidization capacity, and inducing increment of endogenous protective protein MT and HSP70.

Key words [saponins](#) [Panax](#) [myocardial ischemia](#) [myocardial reperfusion injury](#) [rats](#) [inbred SHR](#) [preconditioning](#)

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