



无患子皂苷对自发性高血压大鼠主动脉血管内皮功能调节作用的实验研究

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中文摘要:目的:通过研究无患子皂苷对自发性高血压大鼠(spontaneously hypertensive rats, SHR)离体主动脉血管对于不同血管收缩剂和舒张剂反应性以及其对血管内皮活性物质血清含量的影响,考察无患子皂苷对SHR内皮功能的调节作用,为进一步研究其作用及机制提供实验依据。方法:取16周龄SHR 40只,随机均分为5组,即SHR模型组、阳性对照组(卡托普利 $27\text{ mg}\cdot\text{kg}^{-1}$)、无患子皂苷低、中、高($27.54, 108\text{ mg}\cdot\text{kg}^{-1}$)剂量组,另取8只健康WKY大鼠作为正常对照组,按剂量连续给药8周,检测指标如下:①对胸主动脉血管对于不同血管收缩剂KCl($20\text{--}120\text{ mmol}\cdot\text{L}^{-1}$),PE($1\times 10^{-8}\text{--}1\times 10^{-4}\text{ mol}\cdot\text{L}^{-1}$),Ang II($1\times 10^{-9}\text{--}10^{-5}\text{ mol}\cdot\text{L}^{-1}$)反应性的影响;②对ACh($1\times 10^{-10}\text{--}1\times 10^{-5}\text{ mol}\cdot\text{L}^{-1}$)血管内皮依赖性血管舒张反应的影响;③ELISA法检测对血管活性物质NO、6-KPG_{1a}、ET-1、TXB₂血清含量的影响。结果:SHR模型组内皮损伤、功能失衡,表现为主动脉环对KCl、PE、Ang II诱发的血管收缩反应性增强,对ACh诱发的内皮依赖性舒张反应减弱,对SNP诱发的非内皮依赖性舒张反应未见明显变化;其血清TXB₂、ET-1含量增加,而NO、6-KPG_{1a}含量减少;无患子皂苷各剂量组可抑制主动脉对KCl、PE、Ang II的收缩反应,增强对ACh的内皮依赖性舒张效应,降低血清TXB₂、ET-1含量,增加NO、6-KPG_{1a}含量,上述指标与SHR对照组有显著性差异($P<0.05$ 或 $P<0.01$)。结论:无患子皂苷对SHR内皮功能具有一定的保护作用,其机制与恢复血管内皮活性物质TXB₂、ET-1/NO、6-KPG_{1a}平衡状态有关。

中文关键词:无患子皂苷 自发性高血压 内皮功能

Research of sapindus saponins on endothelial function in spontaneously hypertensive rats

Abstract: Objective: To investigate the regulation on endothelial function of sapindus saponins in spontaneously hypertensive rats by studying the reactivity on different vasoconstrictor and dilator, and the content of the active substances. **Method:** Forty 16-week-old spontaneously hypertensive rats were randomly divided into five groups, one with placebo as model group, one with captopril tablets ($27\text{ mg}\cdot\text{kg}^{-1}$) as positive control, one with low-dose sapindus saponins ($27\text{ mg}\cdot\text{kg}^{-1}$), one with medium-dose ($54\text{ mg}\cdot\text{kg}^{-1}$), one with high-dose ($108\text{ mg}\cdot\text{kg}^{-1}$). And another eight healthy Wistar-Kyoto strain (WKY) rats were used as the normal group. The animals were treated for eight weeks, and the indicators to be detected were as follows: ① the response of thoracic aorta on different vasoconstrictors Ang II ($1\times 10^{-9}\text{--}1\times 10^{-5}\text{ mol}\cdot\text{L}^{-1}$), PE ($1\times 10^{-8}\text{--}1\times 10^{-4}\text{ mol}\cdot\text{L}^{-1}$), KCl ($20\text{--}120\text{ mmol}\cdot\text{L}^{-1}$); ② the endothelium-dependent or non-endothelium-dependent vasodilation response of horacic aorta on ACh ($1\times 10^{-10}\text{--}1\times 10^{-5}\text{ mol}\cdot\text{L}^{-1}$) or SNP ($1\times 10^{-8}\text{--}1\times 10^{-3}\text{ mol}\cdot\text{L}^{-1}$); ③ the content of NO, 6-KPG_{1a}, ET-1 and TXB₂ in serum was determined by Elisa. **Result:** In SHR model group, the response of thoracic aorta on Ang II, PE and KCl was increased, the endothelium-dependent vasodilation on ACh was reduced, but the effects on SNP was not obvious, the content of ET-1 and TXB₂ was increased, and the content of NO and 6-KPG_{1a} was reduced. Vs the normal control group, there were significant differences ($P<0.05$ or $P<0.01$); in the treatment groups, the response of thoracic aorta on Ang II, PE and KCl was reduced, the endothelium-dependent vasodilation of horacic aorta on ACh was improved, the content of ET-1 and TXB₂ was reduced, and the content of NO and 6-KPG_{1a} was increased. Vs the SHR model group, there were significant differences ($P<0.05$ or $P<0.01$). **Conclusion:** Our findings suggested that sapindus saponins protected the endothelial function in SHR, the mechanisms were relevant to the protection of endothelial function.

keywords: sapindus saponins spontaneously hypertension endothelial function

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