

论著

仙人掌多糖组分对大鼠脑片氧化应激损伤的保护作用

黄先菊^{1,2}, 郭莲军^{1*}, 曲玲¹, 吕青¹, 徐旭林¹

1. 华中科技大学同济医学院药理学系, 湖北 武汉 430030; 2. 长江大学医学院 药理学教研室, 湖北 荆州 434000

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摘要 目的 研究仙人掌多糖对H₂O₂所致大鼠大脑皮质和海马脑片氧化应激损伤是否有保护作用。方法 大鼠离体皮质和海马脑片与2 mmol·L⁻¹ H₂O₂共孵育30 min造成脑片的氧化应激损伤, 分别于加入H₂O₂前加入仙人掌多糖作用30 min, 与H₂O₂同时加入仙人掌多糖作用30 min或在H₂O₂损伤之后加入仙人掌多糖作用2 h。TTC染色法检测脑片活性, 并检测脑片培养液中乳酸脱氢酶(LDH)、超氧化物歧化酶活性(SOD), 谷胱甘肽(GSH)含量和总抗氧化能力(T-AOC)。结果 H₂O₂孵育30 min明显损伤大鼠海马和皮质脑片, TTC染色A_{490 nm}值下降, LDH释放增加, GSH含量和总抗氧化能力降低。加入H₂O₂前预先加入仙人掌多糖0.333和1.67 mg·L⁻¹作用30 min显著抑制上述H₂O₂所致脑片损伤, 使受损脑片孵育液中GSH含量增加, SOD活性和总抗氧化能力升高。结论 仙人掌多糖能够减轻H₂O₂所致大鼠大脑皮质和海马脑片的氧化应激损伤, 其机制可能与其增强机体的抗氧化能力有关。

关键词 [仙人掌](#) [多糖类](#) [脑片](#) [过氧化氢](#) [氧化应激](#) [乳酸脱氢酶](#) [超氧化物歧化酶](#)

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Protection of cactus polysaccharides against oxidative stress injury of rat brain slices

HUANG Xian-Ju^{1,2}, GUO Lian-Jun^{1*}, QU Ling¹, Lü Qing¹, XU Xu-Lin¹

1. Department of Pharmacology, Tongji Medical College, Huazhong University of Science and Technology, Wuhan 430030, China; 2. Medical College, Yangze University, Jingzhou 434000, China

Abstract

AIM To investigate if cactus polysaccharides (CP) protect rat cerebral cortical and hippocampal slices against oxidative stress injuries induced by H₂O₂. **METHODS** Rat cerebral cortex and hippocampus slices were prepared and incubated in artificial cerebrospinal fluid (ACSF), then the slices were co-incubated with 2 mmol·L⁻¹ H₂O₂ for 30 min to cause oxidative stress injury. These slices were incubated with CP 0.333 and 1.67 mg·L⁻¹ during different duration, pre-incubated with H₂O₂ for 30 min, co-incubated with H₂O₂ for 30 min and post incubated with H₂O₂ for 2 h, respectively. Injury of brain slices was determined by TTC method. Lactate dehydrogenase (LDH), superoxide dismutase (SOD) activities, glutathion (GSH) content and total antioxidation capability (T-AOC) in incubation medium were detected. **RESULTS** Incubated with H₂O₂ 2 mmol·L⁻¹ for 30 min, rat cerebral cortical and hippocampal slices were significantly damaged, indicated by decreased A_{490 nm} value of TTC staining. Meanwhile, the release of LDH in supernatant increased, but GSH and T-AOC decreased. CP 0.333 and 1.67 mg·L⁻¹ pre-incubation for 30 min significantly inhibited the decrease in TTC value and the elevation of LDH release, and increased the contents of GSH, SOD and T-AOC in supernatant. **CONCLUSION** CP can protect rat cerebral cortical and hippocampal slices against injury induced by H₂O₂, which may relate to strengthening the ability of anti-oxidative stress.

Key words [cactus polysaccharides](#) [brain slices](#) [hydrogen peroxide](#) [oxidative stress](#) [lactate dehydrogenase](#) [superoxide dismutase](#)

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· [郭莲军](#)

· [曲玲](#)

· [吕青](#)

· [徐旭林](#)

通讯作者 郭莲军 gljyl@yahoo.com.cn