

论著

牛磺酸对急性染锰大鼠空间学习记忆能力的改善作用

陆彩玲, 吴元桢, 唐付华, 刘楠楠, 黄玲, 郭松超

(广西医科大学公共卫生学院营养与食品卫生学教研室, 广西 南宁 530021)

收稿日期 2010-12-27 修回日期 网络版发布日期 2011-5-31 接受日期 2011-4-28

摘要 目的 探讨急性染锰对大鼠学习记忆能力的影响及牛磺酸的干预作用。**方法** (1) 牛磺酸预防实验: 染锰组大鼠每日ip给予 $MnCl_2 \cdot 4H_2O$ 15 mg · kg⁻¹, 连续4周。染锰+牛磺酸预防组大鼠染锰的同时ip牛磺酸200 mg · kg⁻¹, 持续4周。(2) 牛磺酸治疗实验: 每日ip给予 $MnCl_2 \cdot 4H_2O$ 15 mg · kg⁻¹染锰, 4周后再ip牛磺酸200 mg · kg⁻¹, 持续4周。水迷宫实验检测逃避潜伏时间及平台搜索次数。分离大鼠海马组织并测定乙酰胆碱酯酶(AChE)活力及胆碱O-乙酰转移酶(ChAT)活力。**结果** (1) 牛磺酸预防实验: 与正常对照组逃避潜伏时间(29.5 ± 2.5) s相比, 染锰对照组明显延长为(39.8 ± 2.3) s, 与染锰对照组相比, 牛磺酸预防组逃避潜伏时间明显缩短为(29.4 ± 2.3) s ($P < 0.05$)。与正常对照组相比, 染锰对照组海马组织 AChE活力无显著性差异, 但牛磺酸预防组酶活力则显著下降 ($P < 0.05$)。三组间ChAT活力无明显差异。(2) 牛磺酸治疗实验: 与染锰对照组逃避潜伏时间(56.6 ± 3.0) s相比, 牛磺酸治疗组显著缩短为(27.8 ± 2.3) s ($P < 0.05$), 平台搜索次数无显著性差异。与染锰对照组AChE和ChAT活力显著增加 ($P < 0.05$)。**结论** 牛磺酸预防或治疗可明显改善急性染锰诱导大鼠空间学习记忆能力下降, 其机制可能与海马内乙酰胆碱含量有关。

关键词 [锰](#) [牛磺酸](#) [学习](#) [记忆障碍](#) [乙酰胆碱](#)

分类号 [R964](#), [R977.4](#)

Effects of taurine on spatial memory of rats exposed to manganese chloride

LU Cai-ling, WU Yuan-zhen, TANG Fu-hua, LIU Nan-nan, HUANG Ling, GUO Song- chao

(Department of Nutrition and Food Hygiene, School of Public Health, Guangxi Medical University, Nanning 530021)

Abstract

OBJECTIVE To explore the effect of taurine on spatial memory of rats exposed to manganese chloride ($MnCl_2$).

METHODS (1) Pretreatment experiment: the rats were ip given taurine 200 mg·kg⁻¹ together with $MnCl_2 \cdot 4H_2O$ 15 mg·kg⁻¹ once daily for 4 weeks. (2) Taurine treatment experiment: the rats in taurine treatment group were ip given taurine 200 mg·kg⁻¹ for another 4 weeks after given $MnCl_2 \cdot 4H_2O$ 15 mg·kg⁻¹ for 4 weeks. The spatial learning ability was evaluated with the average escape latency to the platform when rats were placed randomly into the swimming pool on the first 5 d. The spatial memory ability was evaluated by the times crossing the target platform on the sixth day. Hippocampus was collected to detect the activity of acetylcholine esterase (AChE) and choline O-acetyltransferase (ChAT). **RESULTS** (1) Pretreatment experiment: compared with normal control group (29.5±2.5)s, the escape latency in $MnCl_2$ exposed group markedly prolonged to (39.8±2.3)s ($P < 0.05$), compared with $MnCl_2$ exposure group, the escape latency in taurine pretreatment group significantly decreased to (29.4±2.3)s ($P < 0.05$). There was no significant difference in AChE and ChAT activities between normal control and $MnCl_2$ exposure group. Pretreatment with taurine could decrease AChE activity significantly compared with $MnCl_2$ exposure group ($P < 0.05$). (2) Taurine treatment experiment: there was no significant difference in escape latency and the times crossing the target platform between $MnCl_2$ exposure group and taurine treatment group. The activities of AChE and ChAT were increased in taurine group compared with $MnCl_2$ exposure group ($P < 0.05$). **CONCLUSION** Taurine can improve the impaired spatial learning ability induced by $MnCl_2$, possibly related to the acetylcholine content.

Key words [manganese](#) [taurine](#) [learning](#) [memory disorders](#) [acetylcholine](#)

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(370KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中包含“锰”的相关文章](#)

▶ 本文作者相关文章

- [陆彩玲](#)
- [吴元桢](#)
- [唐付华](#)
- [刘楠楠](#)
- [黄玲](#)
- [郭松超](#)

