

论著

人参皂苷Rg1对铅所致大鼠海马CA1区长时程增强损伤的影响

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摘要 目的 研究人参皂苷Rg1对铅引起的大鼠海马CA1区长时程增强(LTP)的损伤是否有修复作用。方法 Wistar大鼠从出生至断奶通过母乳摄入铅(母鼠每天饮用0.2%醋酸铅溶液20 mL), 在出生后的20~25 d记录其海马CA1区兴奋性突触后电位并诱导长时程增强。结果 人参皂苷Rg1($50 \mu\text{mol} \cdot \text{L}^{-1}$)灌流对照组和铅暴露组大鼠海马脑片20 min均能诱导出LTP, 铅暴露组大鼠的LTP幅度较对照组低。在铅暴露组大鼠的海马脑片上, 高频刺激(HFS, 1 s, 100 Hz)诱导的LTP较对照组显著降低, $50 \mu\text{mol} \cdot \text{L}^{-1}$ 人参皂苷Rg1灌流20 min, HFS诱导的LTP幅度提高47.1%。结论 人参皂苷Rg1能够提高基础的突触传递, 并能部分修复铅损伤的HFS-LTP。

关键词 [人参皂苷Rg1](#) [铅](#) [长时程增强](#) [海马](#)

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Effect of ginsenoside Rg1 on long term potentiation impaired by lead in CA1 region of rat hippocampus

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Abstract

AIM To investigate whether ginsenoside Rg1 can reverse chronic lead-induced impairment of long-term potentiation (LTP) in the CA1 region of rat hippocampus. **METHODS** Neonatal Wistar rats were exposed to lead from parturition to weaning via milk of dams whose drinking water (20 mL per day) contained 0.2% lead acetate. Field excitatory postsynaptic potentials (fEPSP) were recorded and LTP was induced in the CA1 region in rat hippocampal slices on postnatal 20-25 d. **RESULTS** In hippocampal slices from both control and lead-exposed rats, perfusion with ginsenoside Rg1 $50 \mu\text{mol} \cdot \text{L}^{-1}$ for 20 min induced enhancement of fEPSP (LTP), while the amplitude of LTP in lead-exposed rats was lower than that of controls. In hippocampal slices from chronic lead-exposed rats, LTP induced by high-frequency stimulation (HFS, 1 s, 100 Hz) was significantly reduced, while perfusing with ginsenoside Rg1 ($50 \mu\text{mol} \cdot \text{L}^{-1}$) for 20 min increased the amplitudes of LTP induced by HFS by 47.1%. **CONCLUSION** Rg1 can increase basic synaptic transmission and partially reverse chronic lead-induced impairment of HFS-LTP.

Key words [ginsenoside Rg1](#) [lead](#) [long-term potentiation](#) [hippocampus](#)

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