Agmatine prevents LPS-induced spatial memory impairment and hippocampal apoptosis.

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Abstract

Neuroinflammation is associated with a number of neurodegenerative diseases. It is known that lipopolysaccharide (LPS) treatment induces neuroinflammation and memory deterioration. Agmatine, the metabolite of arginine by arginine decarboxylase, is suggested to be a neuroprotective agent. The aim of this study was to explore if agmatine can prevent LPS-induced spatial memory impairment and hippocampal apoptosis. Adult male Wistar rats (200-250 g) were trained in water maze for 4 days (3 days in hidden platform and the last day in visible platform task). Saline, LPS (250 microg/kg/ip) or (and) agmatine (5 or 10 mg/kg) were administered 4h before every training session. LPS treatment impaired water maze place learning while agmatine co-administration prevented it. Also western blot studies revealed that LPS induces hippocampal caspase-3 activation while agmatine treatment prevented it.