



Pharmacol Biochem Behav. 2012 Apr 28;102(2):196-202.

# Melamine induced cognitive impairment associated with oxidative damage in rat's hippocampus.

An L, Li Z, Yang Z, Zhang T.

## Source

College of Life Sciences, Nankai University, Tianjin 300071, PR China.

## Abstract

Previous studies reported that melamine could affect hippocampal function and cause spatial cognition impairment. Moreover, some evidences implied that there might be an oxidative damage pathway linking melamine to the function of hippocampus in vitro, but there was a paucity of data about this adverse effect in vivo. The aim of this study was to investigate the toxicology of melamine induced by oxidative damage in hippocampus in vivo. Male Wistar rats were randomly divided into two groups: control group (n=8) and melamine group (n=8). The animals were treated with melamine at a dose of 300mg/kg/day in 1% carboxymethylcellulose (CMC) solution as a suspension by oral administration, while rats received the same dose of solution of 1% CMC in control group. Melamine was given once a day and for 28 consecutive days. The MWM experiment and histopathological examination were performed. MWM results showed that there were significant deficits of spatial learning and memory in melamine group. The levels of superoxide anion radical, hydroxyl free radical and malonaldehyde (MDA) were significantly increased by melamine, which also reduced the activities of superoxide dismutase (SOD) and glutathione peroxidase (GSH-Px). The analysis of hippocampal energy metabolism showed that melamine caused significant decrease in the content of adenosine-triphosphate (ATP), implying the reduction of energy synthesis in hippocampal neurocytes. The results suggest that the selective neurotoxicity of melamine in hippocampus may be in part associated with oxidative damage.

Copyright © 2012 Elsevier Inc. All rights reserved.

PMID: 22564861 [PubMed - as supplied by publisher]