Scopus

Back

The use of acute nicotine treatment to ameliorate the ultrastructural changes of neuron in the hippocampus CA1 region due to REM sleep deprivation

Malaysian Journal of Microscopy • Article • 2018

Abd Rashid N. [a]; Hapidin H. [b]; Abdullah A. [b]; Ismail Z. [b]; Long, Idris [b] ✉

[a] Department of Basic Medical Sciences, Kulliyyah of Nursing, International Islamic University Malaysia, Indera Mahkota Campus, Kuantan, Pahang, Malaysia

Show all information

0
Citations 🔔

Full text ⌄   Export ⌄   🔖 Save to list

Document   Impact   Cited by (0)   References (35)   Similar documents

Abstract

Rapid eye movement (REM) sleep deprivation is associated with learning and memory impairment accompanied by changes in the expression of the downstream regulatory antagonistic modulator (DREAM), cAMP response element-binding (CREB) and brain-derived neurotrophic factor (BDNF) proteins in the hippocampus. Acute nicotine treatment has been shown to attenuate this effect. This study was conducted to investigate the effects of acute nicotine treatment on changes of ultrastructural of neuron in the hippocampus CA1 region due to REM sleep deprivation. Sprague Dawley rats were subjected to a normal condition, REM sleep deprivation and control wide platform condition for 72

hours. During this procedure, saline or nicotine (1 mg/kg) was given subcutaneously twice a day. Then, the rats were sacrificed and the brain was harvested for Transmission Electron Microscopy (TEM) analysis. TEM analysis found that REM sleep deprivation for 72 hours significantly changes the ultrastructure of the neurons in the hippocampus CA1 region compared to the other groups. Treatment with acute nicotine significantly ameliorated these changes. This study suggests that acute nicotine treatment can prevent learning and memory impairment by ameliorating the ultrastructural changes in the neurons of the hippocampus CA1 region due to REM sleep deprivation. © Malaysian Journal of Microscopy (2018).

Author keywords

Hippocampus; Nicotine; REM sleep deprivation; Ultrastructural changes

Reaxys Chemistry database information

Reaxys is designed to support chemistry researchers at every stage with the ability to investigated chemistry related research topics in peer-reviewed literature, patents and substance databases. Reaxys retrieves substances, substance properties, reaction and synthesis data.

Substances

View details
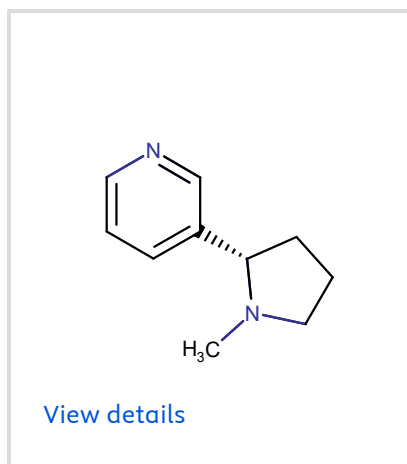
Powered by Reaxys®

Funding details

Details about financial support for research, including funding sources and grant numbers as provided in academic publications.