

# Intranasal cotinine improves memory, and reduces depressive-like behavior, and GFAP + cells loss induced by restraint stress in mice

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Posttraumatic stress disorder (PTSD), chronic psychological stress, and major depressive disorder have been found to be associated with a significant decrease in glial fibrillary acidic protein (GFAP) immunoreactivity in the hippocampus of rodents. Cotinine is an alkaloid that prevents memory impairment, depressive-like behavior and synaptic loss when co-administered during restraint stress, a model of PTSD and stress-induced depression, in mice. Here, we investigated the effects of post-treatment with intranasal cotinine on depressive- and anxiety-like behaviors, visual recognition memory as well as the number and morphology of GFAP + immunoreactive cells, in the hippocampus and frontal cortex of mice subjected to prolonged restraint stress. The results revealed that in addition to the mood and cognitive impairments, restraint stress induced a significant decrease in the number and arborization of GFAP + cells in the brain of mice. Intranasal cotinine prevented these stress-derived symptoms and the morphological abnormalities GFAP + cells in both of these brain regions which are critical to resilience to stress. The significance of these findings for the therapy of PTSD and depression is discussed. © 2017 Elsevier Inc.

Astrocytes

Cotinine

Depression

Memory

Stress

cotinine

glial fibrillary acidic protein

cotinine

glial fibrillary acidic protein

glial fibrillary astrocytic protein, mouse

animal cell

animal experiment

animal model

animal tissue

Article

brain region

cell loss

cognitive defect

controlled study

depression

frontal cortex

hippocampus

immobilization stress

immunocompetent cell

male

memory

mood change

morphology

mouse

nonhuman

posttraumatic stress disorder

priority journal

visual memory

animal

astrocyte

brain chemistry

C57BL mouse

complication

depression

drug effects

exercise

intranasal drug administration

Memory Disorders

mental stress

metabolism

motor activity

pathology

psychology

recognition

swimming

Administration, Intranasal

Animals

Astrocytes

Brain Chemistry

Cotinine

Depression

Glial Fibrillary Acidic Protein

Male

Memory Disorders

Mice

Mice, Inbred C57BL

Motor Activity

Recognition (Psychology)

Restraint, Physical

Stress, Psychological

Swimming