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

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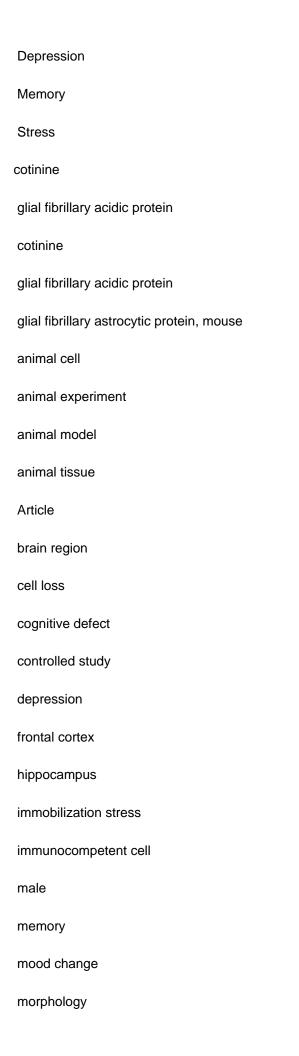
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Posttraumatic stress disorder (PTSD), chronic psychological stress, and major depressive disorder have been found to be associated with a significant decrease in glial fibrillary acidic protein (GFAP) immunoreactivity in the hippocampus of rodents. 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



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Cotinine Depression
Depression
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