

Cotinine reduces depressive-like behavior and hippocampal vascular endothelial growth factor downregulation after forced swim stress in mice

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Cotinine, the predominant metabolite of nicotine, appears to act as an antidepressant. We have previously shown that cotinine reduced immobile postures in Porsolt's forced swim (FS) and tail suspension tests while preserving the synaptic density in the hippocampus as well as prefrontal and entorhinal cortices of mice subjected to chronic restraint stress. In this study, we investigated the effect of daily oral cotinine (5 mg/kg) on depressive-like behavior induced by repeated, FS stress for 6 consecutive days in adult, male C57BL/6J mice. The results support our previous report that cotinine administration reduces depressive-like behavior in mice subjected or not to high salience stress. In addition, cotinine enhanced the expression of the vascular endothelial growth factor (VEGF) in the hippocampus of mice subjected to repetitive FS stress. Altogether, the results suggest that cotinine may be an effective antidepressant positively influencing mood through a mechanism involving the preservation of brain homeostasis and the expression of critical growth factors such as VEGF.

Depressive disorders

Forced swim

Neurogenesis

Vascular endothelial growth factor

cotinine

vasculotropin

antidepressant agent

bungarotoxin receptor

cotinine

cyclic AMP responsive element binding protein binding protein

Dlgh4 protein, mouse

guanylate kinase

membrane protein

messenger RNA

tubulin

vasculotropin A

adult

animal experiment

animal model

animal tissue

antidepressant activity

Article

brain metabolism

controlled study

depression

down regulation

drug efficacy

drug mechanism

forced swim test

hippocampus

male

mouse

nonhuman

protein analysis

protein expression

animal

C57BL mouse

complication

depression

disease model

drug effects

genetics

mental stress

metabolism

psychology

swimming

time

alpha7 Nicotinic Acetylcholine Receptor

Animals

Antidepressive Agents

Cotinine

CREB-Binding Protein

Depression

Disease Models, Animal

Down-Regulation

Guanylate Kinase

Hippocampus

Male

Membrane Proteins

Mice

Mice, Inbred C57BL

RNA, Messenger

Stress, Psychological

Swimming

Time Factors

Tubulin

Vascular Endothelial Growth Factor A