

Publication

Akt2 deficiency is associated with anxiety and depressive behavior in mice

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The economic burden associated with major depressive disorder and anxiety disorders render both disorders the most common and debilitating psychiatric illnesses. To date, the exact cellular and molecular mechanisms underlying the pathophysiology, successful treatment and prevention of these highly associated disorders have not been identified. Akt2 is a key protein in the phosphatidylinositol-3 (PI3K) / glycogen synthase 3 kinase (GSK3) signaling pathway, which in turn is involved in brain-derived neurotrophic factor (BDNF) effects on fear memory, mood stabilisation and action of several antidepressant drugs. The present study thus explored the impact of Akt2 on behaviour of mice.; Behavioural studies (Open-Field, Light-Dark box, O-Maze, Forced Swimming Test, Emergence Test, Object Exploration Test, Morris Water Maze, Radial Maze) have been performed with Akt2 knockout mice (akt^{-/-}) and corresponding wild type mice (akt^{+/+}).; Anxiety and depressive behavior was significantly higher in akt^{-/-} than in akt^{+/+} mice. The akt^{-/-} mice were cognitively unimpaired but displayed increased anxiety in several behavioral tests (O-Maze test, Light-Dark box, Open Field test). Moreover, akt^{-/-} mice spent more time floating in the Forced Swimming test, which is a classical feature of experimental depression.; Akt2 might be a key factor in the pathophysiology of depression and anxiety.

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