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Ketamine as a treatment of stress-induced maternal depression in mice: effects on offspring behaviour

Abstract

Maternal depression during pregnancy adversely affects offspring neurodevelopment and behaviour. Typical antidepressants like selective serotonin reuptake inhibitors have limitations due to risks of crossing the placenta. Ketamine has emerged as a promising alternative treatment. This research examined ketamine's effects on offspring of maternally stressed mice. Dams were divided into control, maternal adversity, fluoxetine, and ketamine groups. Open field, sucrose preference, elevated plus maze, and forced swim tests assessed offspring anxiety, anhedonia, and despair. Maternal adversity increased anxiety-like behaviours and ketamine or fluoxetine reversed some effects. However, fluoxetine more effectively mitigated despair in forced swim tests. Ketamine moderately alleviated anhedonia versus controls. Further research on dose-response and timing is needed to optimize ketamine treatment. Mitigating maternal depression is crucial for preventing maladaptive offspring neurobehavioral trajectories.