

Social avoidance and altered stress axis in a mouse model of anxious depression

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Abstract

Prevalence of stress-related disorders, such as depression, is raising in modern societies. Indeed, current neurobiological research aims to elucidate the link between deregulation of the hypothalamic-pituitary-adrenal (HPA) axis among vulnerable individuals and the onset of depressive symptoms, such as social withdrawal. Herein, we seek to determine the role of LPA1 receptor in social behaviour and the performance of maLPA1-null mice, a model of anxious depression, in the dexamethasone (DEX) suppression test. For that purpose, we used the three-chamber test for social preference. Also, we administered vehicle or DEX 0.1mg/kg to wild-type (WT) mice and maLPA1-null mice, analysed corticosterone (CORT) response by ELISA method and determine glucocorticoid receptor (GR) expression and serum/glucocorticoid regulated kinase 1 (SGK1) in the hippocampus by Western-Blot analysis. We found that maLPA1-null mice lack preference for the social chamber as compared to WT animals. Additionally, mice lacking the LPA1 receptor did not suppress CORT after DEX treatment and increased significantly hippocampal SGK1 expression despite unaltered GR protein levels. These results provide further insight on the role of LPA1 receptors in depressive-like behavior and the pathological intracellular signals involved in stress regulation.

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