

Track7

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Brain Metabolic Alterations in Depression Mouse Model by Proton MR Spectroscopy

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Purpose: Contrary to the human study, it has been rarely performed on the animal model of depression by magnetic resonance spectroscopy (MRS). Thus, the purpose of this research was to evaluate the feasibility of metabolic differences between the normal mice and the depression model mice. For the sophisticated analysis of the metabolic concentration, the comparison study of the absolute quantification as well as relative quantification was employed. **Materials and Methods:** Male ICR mice weighing 25 - 30g at the time of testing were utilized. According to the procedure of forced swimming test, each mouse was placed in the cylinder for 6 min; the first 2 min was regarded as a habituation period and the duration of immobility during the last 4 min was recorded. The 2x2x2 mm³ voxel was placed in the left dorsolateral prefrontal cortex (DLPFC).

Results: The reduced immobility time and metabolite change after administrating scopolamine were acquired. The significant metabolic differences between the normal mice and depression model mice were observed.

Discussions: It was confirmed that MR spectrum could show the metabolite concentration changes caused by forced swimming test. According to the human study, absolute and relative metabolite concentration between controls and depressive patients showed different patterns because depressive patients had significantly higher absolute concentration of Cr compared with healthy controls. Based on these all results, it could be deduced the similar results could be obtained in the human study. **Conclusions:** The present study demonstrated the possibility of application to MRS in animal psychiatric research.

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