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Changes in the glutamatergic nervous system following AF64A injection into lateral ventricle in rats

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Changes in the glutamatergic nervous system following AF64A injection into lateral ventricle were studied in rats.

Rats were treated with the infusion of AF64A (3mM) into lateral ventricle. At a week after the infusion of AF64A into lateral ventricle, rats were sacrified and each brain resions was dissected ; striatum, hippocampus and frontal cortex. At these resions, total glutamate and other amino acids levels, [^{3}H]MK801 binding sites and glutamine synthetase activity were measured using HPLC-ECD, ligand binding assay and enzyme activity assay, respectively.

The levels of total glutamate were decreased in striatum, hippocampus and frontal cortex. Also, the levels of total glycine and taurine were decreased in all examined regions. Furthermore, the levels of total aspartate and GABA were decreased in both hippocampus and frontal cortex but these didn't alter in striatum. Additionally, the levels of total glutamine were decreased in both striatum and frontal cortex. The numbers of [^{3}H]MK801 binding sites were differently affected in each brain resions ; the decrease in striatum, the increase in frontal cortex and no change in hippocampus. Glutamine synthetase activity in striatum was significantly decreased. But, that in both hippocampus and frontal cortex didn't alter. These results suggest that changes in the glutamatergic nervous system in three regions are induced by following AF64A injection into lateral ventricle in rats.