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Effects of Ginseng total saponin (GTS) on changes in the glutamatergic nervous system induced by AF64A

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Effects of ginseng total saponin (GTS) on changes in the glutamatergic nervous system induced by AF64A were studied in rats.

Rats were pretreated with the infusion of AF64A (3mM) into lateral ventricle and were posttreated with GTS (50mg/kg, i.p) for 1 week. Twenty four hrs after the last administration, rats were sacrified and each brain resions was dissected ; striatum, hippocampus and frontal cortex. At each brain regions, 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 AF64-induced increase in the levels of total glutamate in hippocampus were significantly decreased by the administration of GTS. Furthermore, that compared with saline and GTS was decreased in striatum. The levels of total GABA compared with saline and GTS were declined in frontal cortex. Moreover, the AF64A-induced decrease in the levels of total taurine were significantly increased by the administration of GTS to extents of normal states. The numbers of [^{3}H]MK801 binding sites were differently affected in brain resions ; the decrease in hippocampus and no change in both striatum and frontal cortex. Glutamine synthetase activity was significantly increased in hippocampus. In comparision with saline and GTS, that was significantly decreased in striatum These results suggest that GTS may adjust the levels of glutamate, GABA and taurine constantly and may induce increase of glutamine synthetase activity declined.