

论著

## **$\gamma$ -氨基丁酸对急性不完全性全脑缺血大鼠脑组织氨基酸和钙离子含量的影响**

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**摘要** 目的 进一步探讨 $\gamma$ -氨基丁酸(GABA)类药物对脑缺血保护作用的机制。方法 结扎双侧颈总动脉制备大鼠不完全性全脑缺血模型, 高效液相法和原子吸收分光光度法分别测定脑组织氨基酸和钙离子含量。结果 脑缺血4 h显著增加大鼠海马和皮层区的谷氨酸(Glu)和天冬氨酸(Asp)含量及海马GABA含量, 增高皮层细胞钙离子水平和含水量。脑缺血前30 min给予GABA 100 mg/kg, iv, 能逆转缺血诱导的Glu和Asp等兴奋性氨基酸释放增加, 减轻脑组织含水量。此外尚能增加内源性GABA含量。结论 外源性给予GABA可逆转脑缺血诱导的兴奋性氨基酸释放, 升高抑制性氨基酸水平, 减轻脑水肿。

**关键词** [脑缺血](#)  [\$\gamma\$ -氨基丁酸](#) [钙](#)

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## **Effects of $\gamma$ -aminobutyric acid on amino acids and calcium levels in rat brain of acute incomplete global cerebral ischemia**

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### **Abstract**

**AIM** To explore further protection mechanism of GABAergic drugs on cerebral ischemia. **METHODS** The acute incomplete global cerebral ischemia model was induced by ligation of bilateral common carotid arteries. The contents of amino acids were determined by high performance liquid chromatography combined with fluorescent detection,  $Ca^{2+}$  level was measured with atom absorption spectrometry. **RESULTS** Cerebral ischemia for 4 h increased glutamate(Glu) and aspartate(Asp) contents in hippocampus and cortex, and GABA content in hippocampus; elevated  $Ca^{2+}$  level; increased brain water content. Pretreatment with exogenous GABA (100 mg/kg, iv, 30 min before ischemia) markedly suppressed ischemia-induced release of Glu and Asp, reduced brain water content in cortex. Moreover, exogenous GABA increased endogenous GABA content in hippocampus. **CONCLUSION** GABA inhibits excessive efflux of excitatory amino acids, increases inhibitory amino acid level, and alleviates brain edema.

**Key words** [cerebral ischemia](#)  [\$\gamma\$ -aminobutyric acid](#) [calcium](#) [brain edema](#) [hippocampus](#) [cortex](#)

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