

# 左、右归丸对肾虚质大鼠学习记忆 及海马 ERK 蛋白表达的影响<sup>\*</sup>

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**摘要:**目的 探讨左、右归丸对肾虚质大鼠学习记忆能力及大脑海马组织中细胞外信号调节激酶(ERK)含量的调节作用。方法 采用“猫吓鼠”的方法, 建造肾虚质大鼠模型, 待大鼠产子后, 将子代鼠分为空白组、模型组、左归丸组、右归丸组, 继续对子代鼠进行恐吓, 同时用补肾药物进行干预治疗。结果 ①Morris 水迷宫测试: 与空白对照组比较, 肾虚质模型组在逃避潜伏期、总路程、首次穿越目标时间均延长, 目标区域停留时间减少( $P < 0.05$ ); 与肾虚质模型组比较, 左归丸组和右归丸组在逃避潜伏期、总路程、首次穿越目标时间均缩短, 目标区域停留时间增加( $P < 0.05$ )。②酶联免疫吸附测定 ERK 蛋白表达: 与空白组比较, 肾虚质模型组大鼠大脑海马组织中 ERK 蛋白含量显著降低( $P < 0.05$ ), 与肾虚质模型组比较, 左、右归丸组 ERK 蛋白含量明显升高( $P < 0.05$ )。结论 补肾方药左、右归丸通过调节大脑海马组织中细胞外信号调节激酶(ERK)的表达, 从而改善肾虚质大鼠学习记忆能力。

**关键词:** ERK; 肾虚质; 学习记忆; 左归丸; 右归丸

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## Effects of Zuogui and Yougui Pills on Learning and Memory and ERK Protein Expression in Hippocampus of Rats with Kidney Deficiency

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**Abstract Objective** To investigate the effects of Zuogui and Yougui Pills on learning and memory ability and extracellular signal-regulated kinase (ERK) content in hippocampus of rats with kidney deficiency. **Method** The rat model of kidney deficiency was established by the method of "cat frightening mice". After the rats gave birth, the offspring were divided into blank group, model group, Zuogui pill group and Yougui pill group, and were continued to be intimidated and treated with kidney tonifying drugs. **Result** (1) Morris water maze test: Compared with the blank control group, the escape latency, total distance and the first time to cross the target of kidney deficiency model group were prolonged, and the residence time of target area was decreased ( $P < 0.05$ ); Compared with kidney deficiency model group, the escape latency, total distance and first time to cross the target of Zuogui pill group and Yougui pill group were shortened, and the residence time of target area was increased. ( $P < 0.05$ ). (2) Enzyme-linked immunosorbent assay (ELISA) for ERK protein expression: Compared with the blank group, the content of ERK protein in the hippocampus of rats in the kidney deficiency model group was significantly lower ( $P < 0.05$ ), and the content of ERK protein in Zuogui and Yougui pills group was significantly higher than that in the kidney deficiency model group ( $P < 0.05$ ). **Conclusion** Zuogui and Yougui Pills with the function of tonifying kidney can improve the learning and memory ability of rats with kidney deficiency by regulating the expression of extracellular signal-regulated kinase (ERK) in hippocampus.

**Key words** ERK; kidney deficiency; learning and memory; Zuogui Pill; Yougui Pill

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