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论著

知母总皂苷对老年大鼠学习记忆行为和海马突触相关蛋白表达的影响

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摘要 目的 探讨知母总皂苷(SAaB)对老年大鼠学习记忆能力及突触相关蛋白表达的影响。方法 ig给予18个月龄SD大鼠SAaB 100和200 mg·kg^{-1}，每天1次，连续9周，第8周开始进行Morris水迷宫实验，记录逃避潜伏期及各象限游泳时间。免疫组织化学法观察海马突触素蛋白（SYP）分布。Western 印迹法检测CA3区SYP、突触后致密蛋白95 (PSD95)、磷酸化蛋白激酶B（p-Akt）和磷酸化雷帕霉素靶蛋白（p-mTOR）蛋白分布。 结果 与青年大鼠对照组比较，老年对照组大鼠逃避潜伏期显著增加，原平台象限游泳时间占总时间的百分比显著缩短（P<0.05），海马SYP, PSD95, p-Akt和p-mTOR表达显著降低（P<0.01）。与老年对照组相比，给予SAaB后，青年大鼠逃避潜伏期显著缩短，原平台象限游泳时间占总时间的百分比显著增加（P<0.05）；海马SYP, PSD95, p-Akt和p-mTOR表达显著增加（P<0.01）。 结论 SAaB能显著改善老年大鼠学习记忆能力，可能与上调SYP和PSD95表达及激活Akt/mTOR信号通路有关。

关键词 知母总皂苷 突触素小泡蛋白 突触后致密蛋白95 蛋白激酶B 雷帕霉素靶蛋白

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Effects of saponins from Anemarrhena asphodeloides Bge. on learning and memory behavior and expression of synaptic associated proteins in aged rats

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Abstract

Abstract: OBJECTIVE To investigate the effect of saponins from Anemarrhena asphodeloides Bge. (SAaB) on the spatial learning and memory ability in aged rats and the mechanisms responsible. *METHODS* Eighteen-month-aged SD rats were administrated with SAaB 100 and 200 mg·kg^{-1}, ig, for nine weeks. Morris water maze test was used to record the escape latency and the percentage of time spent in the target quadrant from the 8th week. Immunohistochemical staining was used to examine the distribution of synaptophysin (SYP) in rat hippocampus. The protein expressions of SYP, postsynaptic density protein 95(PSD-95), phosphorylated protein kinase B (p-Akt)and phosphorylated mammalian target of Rapamycin (p-mTOR) were determined by Western blotting in rat hippocampus of CA3 region. RESULTS Compared with 3-momth-aged rats, the escape latency increased and percentage of time spent in the target quadrant decreased (P<0.05), the expression of SYP, PSD95, p-Akt and p-mTOR decreased (P<0.05) significantly in aged rats. Compared with aged control rats, the treatment with SAaB 100 and 200 mg·kg^{-1}significantly decreased escape latency, increase the percentage of time spent in the target quadrant,