

论文

石杉碱甲和乙促进小鼠的空间辨别学习和记忆

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摘要:

石杉碱甲和乙是从石杉科石杉属植物蛇足石杉[*Huperzia serrata*(Thunb.)Trev.]中分得的二个新生物碱。“Y”迷宫实验表明,ip Hup-A 0.075~0.125 mg/kg或Hup-B 0.4~0.8mg/kg,均能明显促进小鼠的空间辨别学习,并能显著预防CO₂产生的短时识别障碍,促进记忆保持和记忆再现。ig Hup-A 0.1~0.3 mg/kg或Hup-B 0.8 mg/kg也有促进学习的作用。促进作用Hup-A>Phys>Hup-B。剂量与效应曲线呈倒U型。

关键词: 石杉碱甲 石杉碱乙 毒扁豆碱 辨别学习 记忆

FACILITATORY EFFECTS OF HUPERZINE A AND B ON LEARNING AND MEMORY OF SPATIAL DISCRIMINATION IN MICE

ZHU Xiao-Dong and TANG Xi-Can

Abstract:

Both huperzine A (Hup-A) and B (Hup-B)are new alkaloids isolated from the Chinese herb *Huperzia serrata*. It has been demonstrated in our laboratory that these two alkaloids exhibited more selective inhibitory activity on AChE than physostigmine (Phys) (2). By using Y maze method, the facilitatory effect on learning and memory of spatial discrimination task in mice was studied. Mice were placed on an electrified grid in a Y maze and learned to run to a safe area which was the counter arm defined according to the mice run directly into the arm during the first electric shock. The criterion of learning, memory retention and memory retrieval was met when the mice had chosen the safe area in 10 consecutive trials.Hup-A (0.075 mg/kg) and Hup-B (0.5 mg/kg) injected intraperitoneally before training caused significant decrease in the number of trials. Administration of Hup-A (0.075~0.125 mg/kg) or Hup-B (0.6~0.8 mg/kg) 10 min before hypercapnia significantly prevented the CO₂-induced impairment of acquisition. These facilitatory effects on acquisition were also seen after oral Hup-A doses of 0.1 mg/kg and Hup-B doses of 0.8 mg/kg. Hup-A (0.075~0.15 mg/kg ip) or Hup-B (0.4~1.2 mg/kg ip) facilitated memory retention and retrieval when administrated immediately after training or 6 h and 12 h after training. Generally, the dose-response curves were bell-shaped. When Phys was used for comparison, it was active in all the above mentoned experiments and was less potent than Hup-A, but about 3~5 times more potent than Hup-B. Based on the present results, it is suggested that Hup-A and Hup-B should be of therapeutic value in humans for improving cognitive functions impaired by various noxious influences. Initial clinical studies on Hup-A has revealed various degrees of positive results shown by improvement in memory.

Keywords: Huperzine B Physostigmine Discrimination learning Memory Huperzine A

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