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9 Ayer WA, Browne LM, Orszanska H Alkaloids of *Lycopodium selago*, on the identity of selagine with huperzine A and the structure of a related alkaloid. *Can J Chem* 1989; **67**: 1538-40.

10 Ellroan GL, Courtney KB, Andres V Jr, Featherstone RM. A new and rapid colorimetric determination of acetylcholinesterase activity. *Biochem Pharmacol* 1961; **7**: 88-95.

11 Hunter AJ, Murray PK, Jones JA, Cross AJ, Green AR. The cholinergic pharmacology of tetrahydroaminoacridine *in vivo* and *in vitro*. *Br J Pharmacol* 1989; **98**: 79-86.

12 Liu JH, Hu GY, Tang XC. Facilitatory effect of huperzine A on mouse neuromuscular transmission *in vitro*. *Acta Pharmacol Sin* 1996; **17**: 299-302.

13 Tang XC, Kundel GH, Kozikowski AP, Hanin I. Comparison of the effects of natural and synthetic huperzine A on rat brain cholinergic function *in vitro* and *in vivo*. *J Ethnopharmacol* 1994; **44**: 147-55.

14 McKinney M, Miller JH, Yamada F, Tuckmantal W, Kozikowski AP. Potencies and stereoselectivities of enantiomers of huperzine A for inhibition of rat cortical acetylcholinesterase. *Eur J Pharmacol* 1991; **203**: 303-5.

15 Wang YE, Yue DX, Tang XC. Anti-cholinesterase activity of huperzine A. *Acta Pharmacol Sin* 1986; **7**: 110-3.

16 Tang XC, De Sarno P, Sugaya K, Giacobini E. Effect of huperzine A, a new cholinesterase inhibitor, on the central cholinergic system of the rat. *J Neurosci Res* 1989; **24**: 276-85.

17 Guan LC, Chen SS, Lu WH, Tang XC. Effects of huperzine A on electroencephalography power spectrum in rabbits. *Acta Pharmacol Sin* 1989; **10**: 496-500.

18 De Sarno P, Pomponi M, Giacobini E, Tang XC, Williams E. The effect of heptyl-physostigmine, a new cholinesterase inhibitor, on the central cholinergic system of the rat. *Neurochem Res* 1989; **14**: 971-7.

19 Laganere S, Corey J, Tang XC, Wuller E, Hanin I. Acute and chronic studies with the anticholinesterase huperzine A; effect on central nervous system cholinergic parameters. *Neuropharmacology* 1991; **30**: 763-8.

20 Hallak M, Giacobini E. Physostigmine, tacrine and metrifonate; effect of multiple doses on acetylcholine metabolism in the brain. *Neuropharmacology* 1989; **28**: 199-206.

21 Bowen DM, Allen SJ, Benton JS, Goodhardt MJ, Haan EA, Palmer AM, et al. Biochemical assessment of serotonergic and cholinergic dysfunction and cerebral atrophy in Alzheimer's disease. *J Neurochem* 1983; **41**: 266-72.

22 De Sarno P, Giacobini E. Modulation of acetylcholine release by nicotinic receptors in the rat brain. *J Neurosci Res* 1989; **22**: 194-200.

23 Tang XC, Zhu XD, Lu WH. Studies on the nootropic effects of huperzine A and B; two selective AChE inhibitors. In: Giacobini E, Becker R, editors. *Current Research in Alzheimer Therapy*. New York: Taylor & Francis, 1988; 280-93.

24 Tang XC, Xiong ZQ, Qian BC, Zhou ZF, Zhang CL. Cognitive improvement by oral huperzine A; A novel acetylcholinesterase inhibitor. In: Giacobini E, Becker R, editors. *Alzheimer therapy: therapeutic strategies*. Boston: Birkhauser, 1994; 113-9.

25 Vincent GP, Rumennik L, Curran R, Martin J, Sepinwall J. The effects of huperzine A, an acetylcholinesterase inhibitor, on the enhancement of memory in mice, rats and monkeys. *Neurosci Abs* 1987; **13**: 844.

26 Lu WH, Zhou J, Tang XC. Improving effect of huperzine A on discrimination performance in aged rats and adult rats with experimental cognitive impairment. *Acta Pharmacol Sin* 1988; **9**: 11-5.

27 Zhu XD, Tang XC. Improvement of impaired memory in mice by huperzine A and huperzine B. *Acta Pharmacol Sin* 1988; **9**: 492-7.

28 Tang XC, Han YF, Chen XP, Zhu XD. Effects of huperzine A on learning and retrieval process of discrimination performance in rats. *Acta Pharmacol Sin* 1986; **7**: 507-11.

29 Guan LC, Chen SS, Chu QG, Lu WH, Tang XC. The effects of huperzine A on behavior and ECG in animals. *Acta Psychol Sin* 1991; **23**: 404-11.

30 Xiong ZQ, Tang XC. Effect of huperzine A, a novel acetylcholinesterase inhibitor, on radial maze performance in rats. *Pharmacol Biochem Behav* 1995; **51**: 415-9.

31 Zhu XD, Tang XC. Facilitatory effects of huperzine A and B on learning and memory of spatial discrimination in mice. *Acta Pharm Sin* 1987; **22**: 612-7.

32 Xiong ZQ, Han YF, Tang XC. Huperzine A ameliorates the spatial working memory impairments induced by AF64A. *Neuro Report* 1995; **6**: 2221-4.

33 Cheng DH, Ren H, Tang XC. Huperzine A, a novel promising acetylcholinesterase inhibitor. *Neuro Report* 1996; **7**: in press.

34 Liu JH, Hu GY, Tang XC. Comparison between huperzine A, tacrine, and E2020 on cholinergic transmission at mouse neuromuscular junction *in vitro*. *Acta Pharmacol Sin* 1997; **18**: in press.

35 Zhang GB, Wang MY, Zheng JQ, Tang XC. Facilitation of cholinergic transmission by huperzine A in toad paravertebral ganglia *in vitro*. *Acta Pharmacol Sin* 1994; **15**: 158-61.

36 Wang YE, Fang J, Lu WH, Tang XC. Pharmacokinetics of huperzine A in rats and mice. *Acta Pharmacol Sin* 1988; **9**: 193-6.

37 Qian BC, Wang M, Zhou ZF, Chen K, Zhou RR, Chen GS. Pharmacokinetics of tablet huperzine A in six volunteers. *Acta Pharmacol Sin* 1995; **16**: 396-8.

38 Hattvig P, Wiklund L, Aqilomas SM, Lindström B. Clinical pharmacokinetics of centrally acting cholinesterase inhibitors. In: Becker R, Giacobini E, editors. *Cholinergic Basis for Alzheimer Therapy*. Boston: Birkhauser, 1991; 69-73.

39 Cheng YS, Lu CZ, Ying ZL, Ni WY, Zhang CL, Sang GW. 128 cases of myasthenia gravis treated with huperzine A. *Acta Pharmacol Sin* 1986; **7**: 197-9.

40 Zhang RW, Tang XC, Han YY, Sang GW, Zhang YD, Ma YX, et al. Drug evaluation of huperzine A in the treatment of senile memory disorders. *Acta Pharmacol Sin* 1991; **12**: 250-2.

41 Liu FG, Fang YS, Gao ZX, Zuo JD, Su ML. Double-blind control treatment of huperzine A and placebo in 28 patients with Alzheimer disease. *Clin Pharmacother* 1995; **4**: 196-8.

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石杉碱甲(双益平): 一种有望治疗老年性痴呆症的药物

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关键词 石杉碱甲; 双益平; 胆碱酯酶抑制剂; 记忆; 乙酰胆碱; 认知障碍; 药物动力学; 他克林; 毒扁豆碱; 阿耳茨海默病

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