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Hippocampal memory enhancing activity of Gongjin-Dan in scopolamine-induced mouse model

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We evaluated the neuropharmacological effects of Gongjin-Dan (GJD) on the memory impairment caused by scopolamine injection. BALB/c mice were orally treated with GJD (100, 200, or 400 mg/kg, daily) or tacrine (THA, 10 mg/kg) for 10 days, and scopolamine (2 mg/kg) was injected intraperitoneally. The radial arm maze and passive avoidance tests were performed to evaluate the animal's learning and memory. Scopolamine increased the time to complete the task, the number of total errors (reference and working memory error) in the radial arm maze task, and the latency time in the passive avoidance test, which were significantly ameliorated by treatment with GJD. The GJD treatment also ameliorated the scopolamine-induced hyperactivation of acetylcholinesterase activity, and suppression of the expression of brain-derived neurotrophic factor (BDNF), nerve growth factor (NGF) and their receptors in the hippocampus. These effects of GJD were supported by both the doublecortin (DCX)-positive staining, which was used to detect hippocampal neurogenesis, and Nissl staining, which was used as a measure of hippocampal atrophy. These findings strongly suggest that GJD exerts a potent anti-amnesic effect and its underlying mechanism might involve the modulation of cholinergic activity.

Biography

Chang Gue Son graduated from Oriental Medical College of Daejeon University, and then finished a clinical training course for Internal Medicine Specialist in Daejeon Oriental Hospital, and PhD degree in Daejeon University. He had studies in Oncology branch, NCI, NIH, USA as a Post-doctoral fellow from 2002 to 2004. Currently, he is a Professor and Director of Institute of Traditional Medicine & Science, Daejeon University. He has focused his research on a broad range of Traditional Oriental Medicine in both laboratory and clinical studies.

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