



The Protective Effect of Thai Herbal Wattana Formula on Chronic Cerebral Hypoperfusion Induced by Bilateral Common Carotid Artery Ligation

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ABSTRACT

Introduction: As the association between cognitive impairment and cerebral hypoperfusion in different types of dementia has been established, it is important to unravel the hypoperfusion-related neurodegenerative and cognitive correlates. Components of Thai herbal Wattana formula (WNF) have been proven to exhibit anti-oxidant and anti-inflammatory actions and to reduce amyloid pathology-related neurotoxicity and cognitive dysfunction.

Objective: We aimed to explore neuroprotective effects of WNF in the 2-VO (2 vessel occlusion) model and to examine its therapeutic potential as an alternative option for chronic cerebral hypoperfusion (CCH).

Methods: The adult male Wistar rats (n=5/group) underwent bilateral common carotid artery ligation. The WNF recipe (300 mg/kg) was administered orally after surgery for 60 days. The Morris Water Maze test was performed between day 61 and 70 followed by Cresyl Violet staining of the brain tissue on day 71.

Results: We found that WNF tended to aid memory retrieval ($p < 0.6396$, 2-VO versus 2-VO + WNF) but did not improve memory acquisition after CCH ($p < 0.0997$, 2-VO versus 2-VO + WNF). The impaired survival of neurons was improved by WNF in the right CA3 subregion ($p < 0.05$ 2-VO versus 2-VO + WNF).

Conclusion: This will be the first time that our study explored the potential therapeutic efficacy of WNF and opened a therapeutic window to ameliorate neurodegeneration in conditions that cause CCH such as vascular dementia.

Keywords: chronic cerebral hypoperfusion; Thai herbal Wattana formula; WNF; Alzheimer's disease; neurodegeneration.