

Hypoxia-induced neuroinflammation in Alzheimer's disease: potential neuroprotective effects of *Centella asiatica*

ABSTRACT

Alzheimer's disease (AD) is a neurodegenerative disorder that is characterised by the presence of extracellular beta-amyloid fibrillary plaques and intraneuronal neurofibrillary tau tangles in the brain. Recurring failures of drug candidates targeting these pathways have prompted research in AD multifactorial pathogenesis, including the role of neuroinflammation. Triggered by various factors, such as hypoxia, neuroinflammation is strongly linked to AD susceptibility and/or progression to dementia. Chronic hypoxia induces neuroinflammation by activating microglia, the resident immune cells in the brain, along with an increased in reactive oxygen species and pro-inflammatory cytokines, features that are common to many degenerative central nervous system (CNS) disorders. Hence, interests are emerging on therapeutic agents and plant derivatives for AD that target the hypoxia-neuroinflammation pathway. *Centella asiatica* is one of the natural products reported to show neuroprotective effects in various models of CNS diseases. Here, we review the complex hypoxia-induced neuroinflammation in the pathogenesis of AD and the potential application of *Centella asiatica* as a therapeutic agent in AD or dementia.