Protective effect of acteoside enriched fraction against streptozotocin-induced cognitive dysfunction and inflammatory damage in rats

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Alzheimer's disease (AD) is an age-associated, irreversible, progressive neurodegenerative disease that is characterized by severe memory loss, unusual behavior, personality changes, and a decline in cognitive function. The drugs currently available to treat the disease have limited effectiveness. It is believed that therapeutic intervention that could postpone the onset or progression of Alzheimer's disease would dramatically reduce the number of cases in the coming years. This study demonstrates the protective effect of acteoside enriched fraction from the leaves of Colebrookia oppositifolia on Intracerebroventricular-streptozotocin (ICV-STZ) induced Alzheimer's in rats. Chronic treatment with AEF (5, 10 and 20 mg/kg) on a daily basis for a period of 21 days, beginning 1 h prior to first ICV-STZ injection, significantly improved cognitive impairment. Oxidative stress and neuroinflammation have been implicated in pathophysiology of sporadic type of dementia. Besides, improving cognitive dysfunction, administration of AEF significantly reduced elevated malondialdehyde, nitrite levels and restored reduced glutathione reductase levels in brain tissues. The ICV STZ injection showed a significant decline in the brain acetylcholine levels. However, administration of ASF (5, 10 and 20 mg/kg) significantly reversed the elevation in acetylcholine esterase activity STZ induced Alzheimers altered peripheral T lymphocyte subset distribution and corresponding cytokine secretion patterns in experimental animals. Oral administration of AEF decreased the over expressed cell population of CD4+ and CD8+ T cell evident by significant decrease in expression of IFN-γ. This preclinical study establishes the unique potential of AEF suggesting its use in AD. Such plant products are sort after to carry out the treatment and prevent the cognitive impairment. There is an urgent need for the implementation of combined and coordinated research endeavors for the development of such herbal moieties for therapeutic interventions and prevention of AD, thus, improving the quality of life of the patients.

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