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Determination of anti-acetylcholinesterase activity of *Hibiscus rosa-sinensis L.* ethanolic extract

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Structured Abstract

Background: Alzheimer's disease (AD) is a prevalent form of dementia characterized by a deficiency of acetylcholine (ACh) in the brain. *Hibiscus rosa-sinensis L.* has shown promising potential as an alternative treatment for AD due to its anti-AChE activity. However, limited research has been conducted on its chemical composition and related compounds with anti-AChE properties

Methods: In this study, the ethanolic extract of *Hibiscus rosa-sinensis L.* was prepared through a thorough extraction process, and the percentage yield was determined. The anti-AChE activity was evaluated using a method based on Ellman *et al.* (1961), and the IC_{50} value was obtained through graph analysis using Microsoft Excel. GC-MS analysis was employed to identify the chemical compounds present in the extract.

Results: The ethanolic extraction of *Hibiscus rosa-sinensis L.* exhibited a percentage yield of 36%, confirming the success of the extraction process. The extract displayed concentration-dependent anti-AChE activity, with the IC_{50}value measured at 1.68 mg/mL, indicating low inhibitory potency. GC-MS analysis revealed the presence of 11 chemical compounds, with n-hexadecanoic acid as the major component, showcasing significant area percentage in the mass spectra.

Conclusion: This study demonstrated that the ethanolic extract of *Hibiscus rosa-sinensis L.* possesses anti-AChE activity despite low inhibitory potency. This suggests its potential as an alternative treatment for AD subjected to future studies in using lower extract concentrations. The presence of n-hexadecanoic acid, a compound with reported moderate inhibitory potential, further supports its role in inhibiting AChE activity.

Keywords: *Hibiscus rosa-sinensis L.,* anti-AChE activity, Alzheimer's disease, ethanolic extract

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