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The topic of Research: Pharmacological studies on the therapeutic efficacy of plants *Olea ferruginea* and *Asplenium caudatum* for Alzheimer's disease

Findings

Alzheimer's disease is widely recognized as the prevailing neurodegenerative disorder. It occurs due to the progressive and irreversible loss of function and eventual death of nerve cells. *Olea ferruginea* and *Asplenium caudatum* are traditionally used by tribes for inflammation, fever, epilepsy, and memory enhancement. We researched their inhibitory effects on AD-associated enzymes and oxidative stress biomarkers in $AlCl_3$ -induced AD. The plants exhibited significant radical scavenging activity and improved cognitive function by reducing oxidative stress and inhibiting enzyme activity in a dose-dependent manner. *In silico* studies showed phytochemicals binding to AD biomarkers, indicating potential in preventing and inhibiting AD. The study demonstrates the anti-Alzheimer's ability of different fractions.

We've used bioinformatic tools to identify DEGs from 7 microarray datasets, aiming to understand the molecular mechanism behind AD. We get 7 key genes, six upregulated (*ATP5B*, *CTNNB1*, *DYNC1H1*, *GDI2*, *ITGB1* and *HIST1H2BK*) and one downregulated (*PAK3*) along with 4 mRNAs three upregulated (*CTNNB1*, *DYNC1H1*, *ITGB1*) and one downregulated (*PAK3*) + 11 associated were identified. In the FFL study, two of the seven key genes were identified to play regulatory and inhibitory roles and can act as significant biomarkers in AD based on the prioritization of candidate genes.