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The anti-Alzheimer potential of ethyl acetate fraction of onion peel extract

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Introduction: Alzheimer's disease (AD) is the most common form of dementia in elderly people. It is a progressive neurodegenerative disorder that prominently affects memory and other cognitive functions. So far no drug has been able to eradicate the disease completely. Plants are proving valuable in curbing different pathological hallmarks of the disease. In this context, we have investigated anticholinesterase, the antioxidant and anti-inflammatory potential of ethyl acetate fraction of Allium cepa extract.

Materials and Methods: Different fractions (Petroleum ether, chloroform, ethyl acetate, butanol and remaining fraction) were prepared by sequential partitioning of a hydro-methanol extract of onion peel. The fractions were standardized with respect to phenolic and flavonoid content. DPPH radical scavenging and ferric reducing assays were employed for antioxidant evaluation. Anticholinesterase prospective was evaluated using the Ellman method. Lipopolysaccharide (LPS) activated U-87 MG glioblastoma cell culture system was used for anti-inflammatory effects. The concentrations of TNF-α released were measured.

Results: Ethyl acetate fraction was found to be rich in phenolic and flavonoid content. It displayed significant antioxidant activity in DPPH assay (IC50 value: 8.67±0.15µg/ml) as compared to other fractions. Reducing ability was also significantly high for ethyl acetate fraction. In Ellman assay, the fraction came out to be an outstanding acetylcholinesterase inhibitor (IC50 value: 18.33±1.36µg/ml). The concentration of TNF-α was also effectively decreased by ethyl acetate fraction.

Conclusion: EAF of A. cepa has noteworthy antioxidant, acetylcholinesterase inhibitory and anti-inflammatory potential. Thus, the plant can be considered as a promising candidate for developing as a drug for the management of AD.

Biography

Ravinder Kaur is a PhD Scholar (Research fellow in UGC BSR Fellowship Scheme 2013-14) in the Department of Pharmaceutical Sciences and Drug Research, Punjabi University, Patiala. She is doing her research on evaluation of various plant species that may have the potential for the management of Alzheimer's disease. She has published two papers in reputed journals.

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