Screening of Various Phenolic Acids and Flavonoid Derivatives for their Anticholinesterase Potential

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Alzheimer's disease (AD), the most common form of dementia, is a neurodegenerative disease characterized by progressive cognitive deterioration together with declining activities of daily living and neuropsychiatric symptoms or behavioural changes. The oldest, on which most currently available drug therapies are based, is known as the "cholinergic hypothesis" and suggests that AD begins as a deficiency in the production of the neurotransmitter acetylcholine. Therefore, acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) inhibitors have gained a great popularity for the treatment of AD. In this study, we screened *in vitro* inhibitory activities of a number of phenolic acids (chlorogenic, caffeic, gallic, and quinic acids) as well as of various flavonoid derivatives (genistein, biochanin A, naringin, apigenin, quercetin, luteolin-7-*O*-rutinoside, kaempferol-3-*O*-galactoside, diosmin, silibinin, and silymarin) against AChE and BChE at 1 mg/ml concentration using a microplate-reader assay based on the Ellman method. Among them, only quercetin showed a substantial inhibition (76.2%) against AChE, while genistein (65.7%), luteolin-7-*O*-rutinoside (54.9%), and silibinin (51.4%) exerted a moderate inhibition on BChE.

Key words: Phenolic Acid, Flavonoid, Alzheimer's Disease, Acetyl-/Butyrylcholinesterase