

Acetylcholinesterase inhibitory activity of *Tribulus terrestris***M.M.C.P.K.B. Mullegama¹, N.R. Amarasinghe² and L. Jayasinghe^{1,*}**¹National Institute of Fundamental Studies, Kandy, Sri Lanka²Department of Pharmacy, Faculty of Allied Health Sciences,
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Acetylcholinesterase (AChE) is the key enzyme that catalyses the hydrolysis of neurotransmitter acetylcholine (ACh) to terminate the nerve impulse transmission process at the cholinergic synapses. Age-related neurodegenerative disease such as Alzheimer's disease can occur due to various reasons including cholinergic neuronal loss in the brain, low levels of ACh near the synapse or low levels of ACh receptors. One of the treatment approaches is to increase retention time of ACh around synapses through inhibiting the activity of AChE. There are limited drugs used in the therapy hence there is still a need for exploring natural AChE inhibitors with high potency, low toxicity and minimal side effects. Present study is aimed at investigating Sri Lankan medicinal plants for their AChE inhibitory activity. Preliminary screening indicated *Tribulus terrestris* possess AChE inhibitory activity. *T. terrestris* is an annual herb known as heen nerenchi or gokatu. The whole plant is used to treat various diseases including dysurea, kidney stones, sexual function problems, urinary infections etc. Roots of this plant are used as a constituent in *dasamularishtaya*. Air-dried fruits, leaves and roots of *T. terrestris* were powdered and sequentially extracted into hexane, ethyl acetate (EtOAc) and methanol (MeOH) using ultrasonication. Dried crude extracts were screened for AChE inhibition activity using Ellman's method with slight modifications. Anti acetylcholinesterase activity was observed in all extracts at 1000 ppm level. Highest AChE inhibitory activity was observed in leaf EtOAc - 62.8%, leaf MeOH - 57.5%, fruit EtOAc - 43.2%, leaf hexane - 42.4% and root hexane - 30.2% extracts (positive control donepezil - 100% inhibition). Leaf EtOAc and MeOH extracts were combined and subjected to activity guided fractionation using various chromatographic techniques to afford three compounds. Structure elucidations of isolates are in progress.

Keywords: *acetylcholinesterase, neurodegenerative diseases, Tribulus terrestris*