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Alzheimer disease and acetylcholinesterase inhibitors

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EDITORIAL

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Alzheimer's disease (AD) or Alzheimer's is a chronic neurodegenerative disorder. It's characterized by loss of neurons and synapses in the cerebral cortex and certain subcortical regions. AD patients are identified by problems with memory and language, getting lost and desorientation. AD affects about 6% of people 65 years and older but 4% to 5% of cases are younger.¹ It is one of the most costly diseases in the world. In 2015, there were about 48 million people worldwide with AD.

To prevent AD, intellectual activities such as reading and playing chess are recommended. In muslim countries, learning quran is linked to a reduced risk of AD. The cause for most Alzheimer's cases is still mostly unknown except for 1% to 5% of cases linked to genetic factors.

AD has been identified as a protein misfolding disease (proteopathy), caused by plaque accumulation of abnormally folded amyloid beta protein in the brain.² However, there is another hypothesis which proposes that AD is caused by reduced synthesis of the neurotransmitter acetylcholine.³ The enzyme Acetylcholinesterase breaks acetylcholine down after acetylcholine is used in the brain.

Galanthamine, a natural product isolated from *Galanthus nivalis*, *G. woronowii* and some other Amaryllidaceae plants and rivastigmine which is a natural derived compound and Donepezil which is a synthetic compound are used as cholinesterase inhibitors.

Polyphenols which have been shown to possess antioxidant activity are the principal constituents of the mediterranean diet which is known to decrease the risk of AD. Antioxidants may slow the progression of AD and minimise neuronal degeneration.⁴ The compounds that exhibit anticholinesterase activity are also related to radical scavenging activity.⁵ Polyphenols and terpenoids from Lamiaceae plants possess antioxidant and anticholinesterase activities.^{6,7}

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