

Abstract

As total life expectancy increases, the prevalence of age-related diseases such as Alzheimer's is also increasing. Many hypotheses about Alzheimer's disease have been developed, including cholinergic neuron damage. Acetylcholine is a major neurotransmitter in the brain and cholinergic deficits leads to cognitive dysfunction and decline. Despite decades of research and advances in our understanding of its aetiology and pathogenesis, current pharmacotherapeutic options for AD are still very limited and represent an area of need that is currently unmet. In abnormal activation of AChE, acetylcholine will degrade rapidly, especially in the brain and this is associated with Alzheimer's disease (AD). It has been shown that therapy with essential oils from medicinal plants can improve cognitive performance in Alzheimer's disease patients. Eugenol from these essential oils is reported to inhibit acetylcholinesterase, both in vitro and in vivo. This paper is set to Determine inhibitory/stimulatory effect of tested extracts on acetylcholine esterase (AChE) activity. The sampled out plant extracts include *Thymus vulgaris*, *Berberis vulgaris* and *Calluna vulgaris* with which inhibition or activation by different chemical catalysts is performed to establish their effects in the tested natural extracts. Experimental design is used where the reagents are determined and chemical reactions performed in the procedures as outlined in the methodology section. The results of the cholinergic/ anti-cholinergic effect of tested natural extracts are then recorded. This study reflects that most of the extracts inhibited AChE activity with *berberis vulgaris* showing highest inhibitory effect.