

# The Anticholinesterase Activity of Three Local Food Spices and Their Anti-Alzheimer Application

Ruqia Bibi<sup>1</sup>, Saima Gul<sup>1</sup>, Abdul Wahab<sup>2</sup>, Mohammad Iqbal Khan<sup>1</sup>, Murad Ali Khan<sup>1,\*</sup>

<sup>1</sup> Department of Chemistry, Kohat University of Science and Technology, KPK, Pakistan;

<sup>2</sup> Department of Pharmacy, Kohat University of Science and Technology, KPK, Pakistan

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\* Address correspondence to this author at the Department of Chemistry, Kohat University of Science and Technology, KPK, Pakistan; Tel: +92-922- 52914449; Email: [drmalikhan@yahoo.com](mailto:drmalikhan@yahoo.com)

**Background:** The incidence of dementia is increasing as the aging population of the world is increasing. Alzheimer's disease (AD) is a neurodegenerative disorder of the central nervous system. There are presently 7.3 million patients of AD and the number may rise to 34 million at this pace in the coming thirty years. In the disease, the level of Acetylcholine is reduced and as a result, causes the loss of cholinergic neurons in the brain. The disease is less common in Asian countries as compared to the western nations of the world. This work aimed to establish the role of the common medicinal and food plants against Alzheimer's.

**Methods:** The enzyme acetylcholinesterase (AChE) is the enzyme responsible for hydrolysis and reduction of Acetylcholine. The anti-acetylcholinesterase activity of different extracts of three local plants used as spices in the daily food, *Curcuma longa*, *Cinnamomum tamala*, and *Zingiber officinale*, was determined using the Microplate Assay method.

**Results:** The phytochemical study of the selected plants revealed the presence of alkaloids, terpenes, flavones, saponins, and tannins in these plants. The chloroform extract of all the three plants presented promising AChE inhibiting activity having  $IC_{50} > 200 \mu\text{g/ml}$ . A probable reason will be the alkaloids and terpenes present in the chloroform extract.

**Conclusion:** The chloroform extract of all three plants presented promising AChE inhibiting activity and can become a reasonable therapy for the cure/prevention of Alzheimer's disease. The frequent use of these spices may be a possible reason for the fever incidence of Alzheimer's in Asian countries. Further in vivo studies are required to find its action and studies to find the exact compound responsible for the action.

**Keywords:** Alzheimer, food spices, *Curcuma longa*, *Cinnamomum tamala*, *Zingiber officinale*, AChE inhibiting activity, chloroform extract.