

***In vivo* Cholinergic and antioxidant property of *Cucurbita pepo* (pumpkin seed) ethanolic extract in Aluminium chloride-induced Alzheimer's disease in Sprague Dawley rat model**

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Alzheimer's disease (AD) pathogenesis begins a-way before the appearance of symptoms. Early diagnosis and treatment can slow down the disease progression and improves the prognosis. For AD treatment, several synthetic agents are available and are prone to greater side effects than the plant-derived compounds, and these derivatives should be investigated for their use. Decreased acetyl choline, antioxidants and polyunsaturated fatty acids, enhances the progression of AD. *C.pepo* leaves, fruit is used in food preparation and seeds are discarded. Phytochemicals present in the *Cucurbita pepo* plants may have anti-cholinesterase activity. Therefore, this study was performed using ethanolic extract of pumpkin seeds in the AlCl₃ induced AD in Sprague Dawley rats. These rats were categorized into five groups, i.e., control, disease control (AlCl₃), standard (Rivastigmine), and two treatment groups, one with 100mg/kg and the other with 200 mg/kg of the pumpkin seed extract which was given once daily orally for 28days. The rats were assessed for the behavioral and biochemical parameters such as antioxidant enzymes and acetyl-cholinesterase levels in brain homogenate. There was statistically significant (p<0.005) improvement in behavioral parameters and increase antioxidant levels and decrease acetylcholinesterase levels in the seed extract treatment groups compared to the AD rats. GC-MS analyzes of *C.pepo* seeds showed presence of polyunsaturated fatty acids (Fig 1), which have a significant role in neurite outgrowth activity. To conclude, 80% ethanolic extract of *Cucurbita pepo* (pumpkin seeds) has anticholinesterase, antioxidant, and anti-inflammatory activity and has the ability to prevent memory impairment.

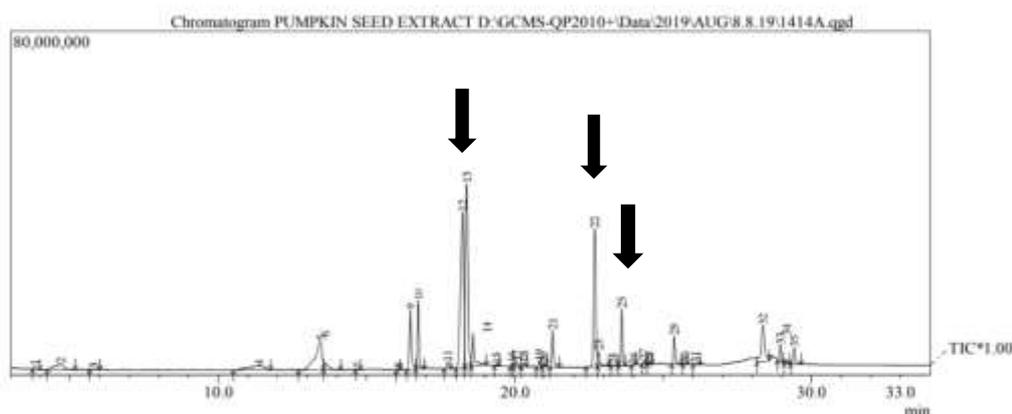


Fig.1 – GC-MS chromatogram for 80% ethanolic extract of pumpkin seed (arrows indicating Polyunsaturated fatty acid peaks)

Reference:

1. Deture MA, Dickson DW. The neuropathological diagnosis of Alzheimer's disease. *Mol Neurodegener.* 2019;14(1):1–18.
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