Neuroprotective effect of *Persea americana* for the treatment of Alzheimer’s disease

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**Keyword:**

Alzheimer disease, amyloid beta, antioxidant, Persea americana

**Abstract:**

AD is the first common progressive of ND. It can cause memory loss to the patient. This chronic disease can be more progressive beta amyloid and neurofibrillary tangle formation into the brain cell. Also researcher observed same another cause associative to the Alzheimer patient. Loss acetylcholine in cerebral cortex and hippocampus due to Neurodegeneration of the brain neuronal cell. Neuronal inflammation and oxidative stress also important factor for the AD. In this review article we discussed about *Persea americana* also called avocado and butter fruit. This plant leaf and seed are very reach nutrient. *Persea americana* leaf and seed extract are showed antioxidants, anti-inflammatory, reduce the level and beta amyloid and inhibition of AChE and BChE level in different part of the brain.

**Introduction:**

Alzheimer’s disease (AD) is the first common progressive of neurodegenerative disease (ND). It can cause memory loss to the patient (1). The group of symptoms which can affects mental cognitive faction is called dementia. And it can affect memory and reasoning. Under dementia term that AD can fall. Patient can have one or more than one type of dementia(2). AD is one of the leading dementing disorder which accounts for 70% of dementia, causes severe and permanent loss of intellectual function(3). It is the most prevalent ND, affecting the cortex and the limbic system. Two main neuropathological hallmarks of familial and sporadic AD are neurofibrillary tangle and amyloid plaques(4). Amyloid beta is a broken part of amyloid precursor protein (APP). It is larger protein which present in APP that transmembrane protein and penetrates into neuronal membrane. Breakdown of proteolytic cleavage form alpha, beta and gama part. Beta cleavage of APP responsible in the formation of plaques, which predominantly consist of aggregates of neurotoxic Aβ40-42(5, 6). This process for Neurodegeneration of the brain cell. And enhance the AD symptoms. Tau is protein which are present into the neuron and responsible for the transportation of nutrients for the graving neuronal cell but Hyperphosphorylated tau protein convert neurofibrillary tangle. This neurofibrillary tangle toxic for the neuronal cell and causing neurodegeneration of the brain neuronal cells(7-9).
Plant name: *Persea americana*

Proposed hypothesis

*Persea americana* (avocado) is a dicotyledonous tree came under family of Lauraceae. 100 gram of Avocado contains vitamin B, C, K and E. Avocado also contains rich nutrients like potassium, lutein and zeaxanthin are phytosterols and carotenoids(10). The plant was reported for acetylcholinesterase inhibitor (AChE) (11), analgesic, anti-inflammatory(12), anticonvulsant(13), hypotensive(14), antioxidant (11, 15), wound healing activities(16). The fruit of the plant reported to contain omega 3 fatty acid, which was reported to be a neuroprotective as it reduces the inflammation and decreases the amyloid plaques secretion. However the neuroprotective activity of the fruits of *Persea americana* was not assessed. In vitro study of *Persea Americana* leaves and seeds extract showed dose dependent inhibitory effect against AChE and butyrylcholinesterase (BChE) enzyme into the brain. And also study showed antioxidant effects(15). Synaptic AChE and BChE inhibition prevent the breakdown of ACh and enhance the ACh in post synaptic receptor. This process can increase communication between neuron cells (15, 17). Inhibition of AChE and BChE showed by Avocado leaf and seed extracts. This process can reduce the symptom of AD. This Extract inhibit of BChE due to that reduce certain neurotoxic plaques(18). Generation of radical species and body antioxidant system has been linked largely to these ailments. *Persea Americana* contain phytochemicals that can produce antioxidant activity such as polyphenols and vitamin C(19). *Persea Americana* fruit and seed show significant dose dependent anti-inflammatory and antioxidant activity(20).

Conclusion:

Acceding literature to *Persea americana* seed, fruit and leave extract are show inhibition of AChE and BChE, Anti-inflammatory and antioxidant. *Persea Americana* also reduce the formation of beta amyloid. This plant content varies phytoconstituents that have high nutrition values.
Reference: