



# Can Marijuana Manage Alzheimer's Disease?

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## Alzheimer's Disease

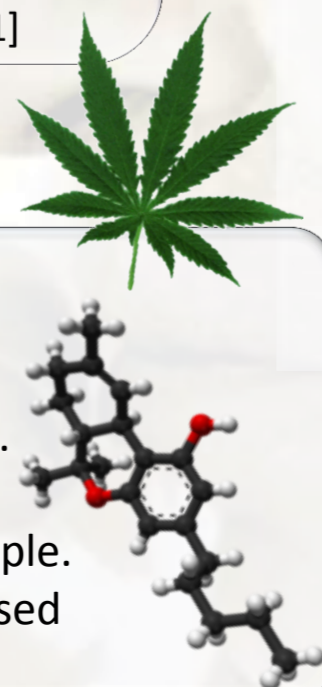
Alzheimer's disease is a neurodegenerative disease, most common cause of dementia, progressive brain disorder that slowly destroys memory and thinking skills and, eventually, the ability to carry out the simplest tasks, due to disruption in signaling between the neurons caused by accumulation of beta-amyloid protein (toxic protein).

## How the accumulation formed ?

Most cases are sporadic, although at least 5% to 10% are familial.. Evidence from familial forms of the disease indicates that the accumulation of a peptide ( $\beta$  amyloid, or  $A\beta$ ) in the brain initiates a chain of events that result in the morphologic changes of Alzheimer disease and dementia. This peptide is derived from a larger membrane protein known as amyloid precursor protein (APP). Generation and accumulation of  $A\beta$  occur slowly with advancing age. Accumulation of  $A\beta$  has several effects on neurons and neuronal function. Aggregates of  $A\beta$  can alter neurotransmission, and the aggregates can be toxic to neurons and synaptic endings, and can also lead to neuronal death, elicit a local inflammatory response that can result in further cell injury. The presence of  $A\beta$  also leads neurons to hyperphosphorylate the microtubule binding protein tau. [1]

## What is Marijuana ?

Marijuana refers to the dried leaves, flowers, stems, and seeds from the Cannabis sativa or Cannabis indica plant. The plant contains the mind-altering chemical Tetrahydrocannabinol (THC) and other similar compounds. Marijuana is the most commonly used illicit drug in the United States.1 Its use is widespread among young people. In 2015, more than 11 million young adults ages 18 to 25 used marijuana in the past year. [2]



## What are Marijuana effects on human ?



The THC that found in Marijuana has effects on both CNS and PNS, but acts mainly on the CNS, producing a mixture of psychotomimetic and depressant effects. The main subjective effects in humans consist of the following:

- Sensations of relaxation and well-being.
- Feelings of sharpened sensory awareness, with sounds and sights seeming more intense and fantastic.

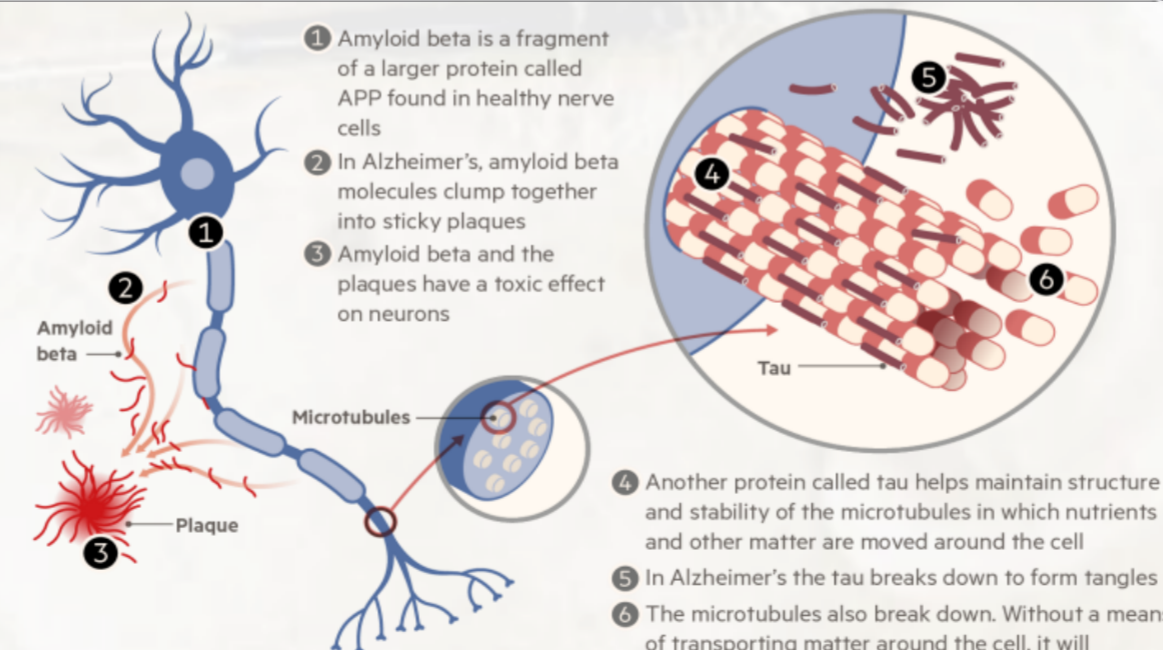
The effects of Marijuana on CNS include: impairment of short-term memory and simple learning tasks-subjective -feelings of confidence and heightened creativity, impairment of motor coordination (e.g. driving performance), antiemetic action, increased appetite. The effects of Marijuana on PNS include: Tachycardia, Vasodilatation, which is particularly marked on the scleral and conjunctival vessels, producing a bloodshot appearance characteristic of cannabis smokers, Reduction of intraocular pressure, and bronchodilatation. [3]

## Good News For Patients With Alzheimer's disease

Researchers from the USF Health Byrd Alzheimer's Institute showed that extremely low doses of THC reduce the production of amyloid beta, found in a soluble form in most aging brains, and prevent abnormal accumulation of this protein -- a process considered one of the pathological hallmarks evident early in the memory-robbing disease. These low concentrations of THC also selectively enhanced mitochondrial function, which is needed to help supply energy, transmit signals, and maintain a healthy brain. Other study, David Schubert, Professor of Salk's Cellular Neurobiology Laboratory and his colleagues found that high levels of amyloid beta were associated with cellular inflammation and higher rates of neuron death. They demonstrated that exposing the cells to THC reduced amyloid beta protein levels and eliminated the inflammatory response from the nerve cells caused by the protein, thereby allowing the nerve cells to survive. [4][5]

## Conclusion

Alzheimer's disease is the most common cause of dementia. The word dementia describes a set of symptoms that can include memory loss and difficulties with thinking, problem-solving or language. These symptoms associated with the accumulation of toxic protein called amyloid beta protein. At present, no disease-modifying therapy for Alzheimer's disease is available. Last Studies, demonstrate that the THC compound that found in marijuana reduces amyloid beta protein levels and eliminated the inflammatory response from the nerve cells in Alzheimer's disease. So Alzheimer's disease may can be managed with Marijuana and may be used as a treatment for Alzheimer's in the following years.



## References

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