**Marijuana and Alzheimer's Disease**

The National Institute on Aging states in its booklet Understanding Alzheimer's Disease (AD): "Alzheimer's disease is an illness of the brain. It causes large numbers of nerve cells in the brain to die. This affects your ability to remember things and think clearly. Doctors don't know what causes the disease. They do know that it usually begins after age 60 and nearly half of people age 85 and older may have Alzheimer's. However, it is not a normal part of aging...

An estimated 26.6 million people worldwide had Alzheimer’s in 2006; this number may quadruple by 2050.

The mechanism involved in causing AD is not known, but there are some theories. The nervous tissue of the brain in people with Alzheimer’s shows an increase in abnormal structures called plaques and tangles. Plaques build up between nerve cells. They contain deposits of a protein fragment called beta-amyloid. Tangles are twisted fibers of another protein called tau. Tangles form inside dying cells. The plaques and tangles tend to form in a predictable pattern, beginning in areas important in learning and memory and then spreading to other regions. In addition, levels of acetylcholine, a neurotransmitter required for nerve conduction, are abnormally low in the brains of Alzheimer's patients.

**Standard Treatment**

There are medicines that can treat the symptoms of Alzheimer's. However, there is no cure. Some medicines keep memory loss and other symptoms from getting worse for a time. These medicines work best if Alzheimer's disease is found early.

Currently, there are four FDA-approved drugs that treat the symptoms of Alzheimer's disease by inhibiting acetylcholinesterase, the enzyme responsible for the degradation of acetylcholine. This serves to maintain higher levels of the deficient neurotransmitter, acetylcholine. Examples of these medicines include donepezil (Aricept), galantamine (Razadyne), and rivastigmine (Exelon). These may temporarily help improve memory and daily functioning in some people who have Alzheimer's disease. Other interventions may address behavioral and social issues such as anxiety, depression and home safety.

**Alternative Treatment**

Alternative treatments include supplements and herbal products that may prevent nerve degradation. A promising herbal product is Huperzine A. This is a moss extract that has been used in traditional Chinese medicine for centuries. It has properties similar to those of cholinesterase inhibitors. Studies have shown that Huperzine A may be as effective as the approved drugs.

Research has suggested that polyphenols -- which are found in high concentrations in tea, nuts and berries, as well as red wine may inhibit or prevent the buildup of toxic plaques that have been associated with Alzheimer's disease.
Omega 3 fatty-acids have long been touted to act as anti-oxidants for brain tissue and may be preventive in slowing the formation of dementia.

**Cannabis and Alzheimer's Disease**

Research has shown that cannabinoids act as neuroprotective agents and anti-oxidants for nerve cells. The effect of cannabinoids on Alzheimer's Disease has been studied in several laboratories globally in the past few years. (Reviewed in reference 1). Their findings concur that cannabinoids may slow the progression of AD. In addition, marijuana has also been shown to help appetite and weight gain in Alzheimer’s patients with anorexia.

Scientists at The Scripps Research Institute, in California have found that the active ingredient in marijuana, THC, inhibits the formation of amyloid plaque, the primary pathological marker for Alzheimer’s disease. In fact, the study said, THC is “a considerably superior inhibitor of [amyloid plaque] aggregation” to several currently approved drugs for treating the disease.” THC inhibits the enzyme acetylcholinesterase, which acts as a "molecular chaperone" to accelerate the formation of amyloid plaque in the brains of Alzheimer victims.(2)

Prof. Raphael Mechoulam, a medicinal chemistry expert who discovered marijuana's active component (THC), conducted a study with researchers in Spain. Their research compared brain tissue from people who had AD before they died with age matched control samples. They found a dramatically reduced functioning of cannabinoid receptors in diseased brain tissue, meaning that patients had lost the capacity to experience cannabinoids' protective effects. Using cell cultures, the investigators confirmed that cannabinoids reduced inflammation in the brain.(3) Because cannabinoids combine both anti-inflammatory and neuroprotective actions, our findings may set the basis for the use of these compounds as a therapeutic approach for AD.(4) Mechoulam said that the discovery was important, since most drugs given for neurodegenerative diseases like Alzheimer's and Parkinson's work merely against symptoms and not the cause and essence of the neurodegeneration.(5)

Dr. Gary Wenk, an expert on aging studied the effect of cannabinoids in rat brains. The studies show that a component in marijuana reversed memory loss in older rats' brains.(6) ProCon.org spoke with Dr. Wenk on Dec. 11, 2008. He explained that in his 30 years of research into improving memory throughout aging, "nothing seemed to work on old brains" but that synthetic "cannabinoids worked." Research on marijuana as a treatment for Alzheimer's disease began because of the drug's success in slowing progression of multiple sclerosis and reducing patients' pain, Wenk said. Alzheimer's affects a similar part of the brain that MS does. "Could people smoke marijuana to prevent Alzheimer's disease if the disease is in the family? We’re not saying that, but it might actually work," he said. "What we are saying is it appears that a safe, legal substance the mimics those important properties of marijuana can work on receptors in the brain to prevent memory impairments in aging. So that's really hopeful."(7)

**References**
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