Using Marijuana to Prevent Alzheimers Disease

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Can smoking marijuana prevent Alzheimer's disease? Yes, but there are some things that you need to know first: 1) Do not use marijuana when the brain is young; 2) Smoke only one puff of marijuana each day between the ages of thirty and sixty; 3) Use the kind of marijuana that was popular in the 1960's, i.e. that has not been genetically altered to enhance the level one or two ingredients; 4) If the signs of dementia have already appeared, it is unlikely that smoking marijuana will be beneficial; doing so might only worsen the symptoms of the dementia. An explanation for each of these points follows.

Ordinarily, we do not view marijuana as being good for our brain. How could a drug that clearly impairs memory while are under its sway protect brains from the consequences of Alzheimer's disease? The answer is due to do a series of changes in brain chemistry that occur during normal aging. PET imaging studies of humans have shown that after age thirty the brain gradually displays increasing evidence of inflammation. With advancing age, brain inflammation continues to worsen leading to a decline in the production of new neurons, called neurogenesis, that are important for making new memories. In contrast, young brains do not display signs of inflammation and are, therefore, more vulnerable to the negative consequences of marijuana use.

Research in my laboratory (copies of publications can be obtained here) has demonstrated that stimulating the brain's marijuana receptors offer protection by reducing brain inflammation and by restoring neurogenesis. Thus, later in life, marijuana might actually help your brain, rather than harm it. It takes very little marijuana to produce benefits in the older brain. My lab coined the motto "a puff is enough" because it appears as though only a single puff each day is necessary to produce significant benefit. [A summary of this research can be viewed in my TED talk)

At least sixty biologically active molecules have been isolated from the marijuana plant. Depending on the concentration of various cannabinoids and other plant components users may be exposed to a variety of active ingredients with quite different pharmacological effects. Increasingly, marijuana plants are being bred to express very high concentrations of tetrahydrocannabinol (THC), the primary psychoactive compound. By contrast, cannabidiol (CBD), a non-psychoactive cannabinoid that dampens down the effects (including the psychoactive effects) of THC, and which was present in significant amounts in cannabis used centuries ago, has been bred out of modern plants. In contrast, some growers are breeding marijuana plants with significantly higher levels of CBD.

Both CBD and THC are capable of interacting with the brain, however, they do not do so with the same degree of effectiveness. Scientists have shown that THC is over one thousand times more potent than is CBD. What this means is that the dose of THC the brain requires in order to experience a typical "high" is a thousand times lower than for a

dose of CBD. This chemical property of CBD has led to the accurate claim that CBD does not make one feel “high.” A person would need to consume 1000 “joints” of the genetically modified CBD-marijuana plant to get high. The effectiveness of CBD at its receptor is so low that it behaves as though it is blocking the effects of THC. What has become quite apparent is that no single component of the plant is entirely good or bad, therapeutic or harmful, or deserving of our complete attention. To date, all of the positive evidence supporting the use of medical marijuana in humans has come from studies of the entire plant or experimental investigations of THC.

Does the balance of THC and CBD matter? A recent study (J of Alzheimers Disease, vol 43, p 977, 2015) suggests that both compounds working together reduced brain inflammation far more effectively than either THC or CBD working alone.

The evidence available from studies of humans and animal models of Alzheimer’s disease do indicate that long-term, low-dose daily exposure, during mid-life, to the complex blend of compounds found in the marijuana plant can effectively slow the brain processes underlying Alzheimer’s disease.