

Medical Marijuana Revisited

Michael Koger, Sr.

The University of Alabama, Tuscaloosa

Abstract

The use of marijuana as a medicinal agent is an old practice in many parts of the world. In recent decades it has gained increased attention of the general public and of the medical profession. Ten states and Canada have legalized medical marijuana; physicians prescribe it for nausea and vomiting in patients receiving cancer chemotherapy. They also prescribe it for appetite loss and wasting in patients with acquired immunodeficiency syndrome. Controversies exist about its use in the treatment of glaucoma, spasticity or chronic intractable pain. Though state governments have passed laws authorizing physicians to prescribe marijuana, the federal government contends that the drug is a Schedule I agent with no medicinal use, a high potential for abuse and no accepted safety for use in medically-supervised treatment. There are legal issues regarding its use as a medicinal agent, and the United States Supreme Court has provided rulings on these matters. This paper will explore those controversies, the history of medical marijuana and the implications for its future use as a therapeutic agent in this country.

© 2006 Californian Journal of Health Promotion. All rights reserved.

Keywords: hemp, tetrahydrocannabinol, cannabis, marijuana

Introduction

The medical use of marijuana is not new. For centuries people have believed that the hemp plant *Cannabis sativa* has healing properties. It is one of the oldest plants that we know, and thousands of years ago people used it for its medicinal properties. In 1753, Linnaeus classified *Cannabis* as having only one species. He wrote about *Cannabis sativa* which is the most well-known species. It is this latter species from which we derive marijuana. It is conceivable that some cultures grew the hemp plant for food. Research also indicates that six thousand years ago people used it for fiber to make cloth, ropes, fishing nets and paper. The plant originated from Asia. Archaeologists have located samples of hemp more than three thousand years old in Egypt. People considered it to be a grain, and they extracted oil from the seeds. Other grains at that time were millet, rice barley and soybeans. Between 110AD and 207AD, physicians boiled hemp with wine to create an anesthetic for use during major surgery. Chinese physicians utilized hemp as a therapeutic agent too, but because of the plant's mind-altering qualities abandoned its use.

Nevertheless, physicians have used the plant for fever, arthritic pain and treatment of pus-forming infections. Some have used marijuana for relaxation and to enhance their social or sexual lives or to have religious experiences. Soaking hemp in rum appears to bring relief from arthritic and other musculoskeletal aches and pain. In 1842, marijuana became part of Western medicine, but 100 years later the United States Pharmacopoeia ceased to list it. Many twentieth century investigators have said that there may be additional species of the plant. Examples of those species are *Cannabis indica* and *Cannabis ruderalis*. Today the plant grows in the United States, the Himalaya Mountains, Canada and Africa. The only legal supply in the United States is a National Institute on Drug Abuse operated farm in Mississippi (Vastag, 2003). Illegal use of the drug is its most common employment (Walker, 1997). People use marijuana more today than any other illicit drug (Watson, 2000).

Medicinal Properties of Hemp

The cannabinoids are the psychoactive chemicals in the hemp plant. Specifically, 9-

tetrahydrocannabinol (THC) has antiemetic, analgesic, antianxiety, sedative and appetite-stimulating properties (Kane, 2001; Watson, 2000). Identification of these chemicals occurred during the 1960s. In 1996, the California Compassionate Use Act enabled people with certain medical conditions to grow and use marijuana with a physician's recommendation. Those conditions included cancer, multiple sclerosis, acquired immunodeficiency syndrome, glaucoma and chronic intractable pain. Several states have passed similar laws. The Canadian government proposed similar laws in 2001. The United States Congress has contended that marijuana is an illegal drug with no appropriate medical use. The US Food and Drug Administration has approved dronabinol, a synthetic form of THC, to treat nausea and vomiting which results from cancer chemotherapy and for AIDS wasting (Kane, 2001; Vastag, 2003).

For human immunodeficiency virus infection (HIV) some have used marijuana to stimulate the appetite in wasting patients (Kane, 2001; Watson, 2000). In 1992 the Food and Drug Administration approved the use of synthetic dronabinol for the treatment of appetite loss in patients with acquired immunodeficiency syndrome. Dronabinol is an oral form of the psychoactive component of marijuana (Vastag, 2003). Administering oral dronabinol to treat nausea and vomiting from cancer chemotherapy is not always successful as the patient may regurgitate the tablets. Also oral dronabinol can take up to an hour to render its effect. Therefore, some have recommended smoked marijuana, which elicits results in only a few minutes, to treat nausea and vomiting in cancer patients (Vastag, 2003). There may be benefit in the treatment of peripheral neuropathy in these patients. Drugs, including protease inhibitors which physicians prescribe to treat human immunodeficiency virus, undergo the same metabolism method as does marijuana. This gives rise to the question as to whether adjustment in protease inhibitor dosage will be necessary in marijuana smokers who are HIV positive (Kane, 2001; Abrams, 2003). Most scientists believe that THC is the chemical in marijuana which gives hemp its effects. Others,

however, have stated that natural hemp leaf has many chemicals, and one must have the natural product in order to experience those psychoactive or other effects. We do know that cannabinoids affect movement control, balance, coordination, sensation of pleasure and perception of pain. These chemicals also affect learning functions and memory. Cannabinoid brain receptors exist in the cerebellum, the amygdala, the hippocampus, the hypothalamus and basal ganglia (Kane, 2001; Watson, 2000). Cannabinoids and opiates have similar signaling pathways in the human nervous system (Kane, 2001).

Administering tetrahydrocannabinol takes thirty to sixty minutes to bring the effect of the drug. Smoking marijuana will yield an effect in three to five minutes or sooner (Kane, 2001; Vastag, 2003). The pharmaceutical industry has considered giving the drug by transdermal patch, rectal suppository, nasal sprays or smokeless inhaler. Researchers in the United Kingdom have produced hybridized or cross-breeding forms of marijuana. The latter products have higher concentrations of tetrahydrocannabinol than does the naturally-grown plant (Kane, 2001).

Objections to Medical Marijuana

Arguments against the medicinal use of marijuana largely consider the drug's harmful effects on the body. Those effects include the potential for addiction and its mind-altering properties. Marijuana damages the respiratory system. When smoking marijuana, it is difficult to measure what dose of the drug one receives (Watson, 2000; Kane, 2001). Tolerance develops with continued use of marijuana, and one will require larger doses each time to obtain the effects. Physicians also find it difficult to monitor pain relief in light of the euphoria or "high" which smokers experience from the drug's use. There are other established medications to treat pain, and their existence makes many scientists hesitant to believe that using marijuana for pain management is advantageous (Kane, 2001).

Marijuana and the Court

The United States Supreme Court has ruled that taking marijuana for medicinal purposes can prompt federal prosecution regardless of individual state law. The federal government can arrest and prosecute patients who use marijuana and those who supply the drug. The United States Inspector General has also brought action against physicians who prescribe marijuana and excluded them from being Medicare providers. The regulation of interstate commerce of illegal drugs is the authority of the federal government under the Controlled Substances Act. The following states have legalized marijuana: California, Alaska, Colorado, Hawaii, Maine, Montana, Nevada, Oregon, Vermont and Washington (Okie, 2005; Vastag, 2003). Canada legalized marijuana in 2001; the plant grows there in an underground mine in Manitoba (Vastag, 2003). Federal agents visited San Francisco's medical marijuana dispensaries after the Supreme Court ruling. In California there are approximately 100,000 people who use medical marijuana. The United States District Court for the Northern District of California ruled that physicians who prescribe marijuana have protection from prosecution. The requirement for protection is that the physician cannot help the patient get the drug. Nevertheless, there has been objection from some residents of California to the use of medical marijuana. California state officials have considered a program to register patients who use medical marijuana; however, concern about federal prosecution has caused those state officials to withhold the development of a patient registration program (Okie, 2005).

The United States Supreme Court has ruled in *Gonzalez v. Raich* that federal law enforcement authorities can prosecute patients who use physician-prescribed marijuana. This is true even if state law authorizes the physician to prescribe the drug. Seriously ill patients in California have access to marijuana for their illness; this is a result of the California Compassionate Use Act of 1996. This act protects prescribing physicians from prosecution (Gostin, 2005). Physician prescribing of marijuana becomes a commerce clause matter before the United States Supreme Court (Annas, 2005). The conflict between the federal

Controlled Act and state law has resulted in the Raich suit. Angel Raich has an inoperable brain tumor, and federal agents have destroyed her cannabis plants. Marijuana is a schedule I drug which includes those agents that have no medicinal use, a high potential for abuse and no accepted safety for use in treatment which is medically supervised. Heroin and lysergic acid diethylamide are also Schedule I substances. Unless one prescribes marijuana in a Food and Drug Administration approved research study, marijuana is a criminally prohibited drug. President Nixon initiated the federal Controlled Substances Act in 1970 with his "war on drugs" (Gostin, 2005).

Federalism means that individual states place some powers in the hands in the hands of a national government. Interstate commerce and foreign affairs are examples of those powers which the national government regulates. It is controversial how many powers the states will delegate to the federal government (Gostin, 2005). Individual states have police powers and sovereign authority to protect the safety, health and welfare of its residents. Congress regulates commerce among the states; it also regulates commerce with foreign nations and with Indian tribes. Other areas which Congress regulates include currency, the postal service and patenting. The United States Constitution determines the government's authority. Individual states have had authority to regulate areas which Congress does not supervise; this latter authority of the states existed before and after the writing of the United States Constitution (Annas, 2005). The Drug Enforcement Administration, the National Institute on Drug Abuse and the Food and Drug Administration are the three federal agencies which assume responsibility for medical marijuana. Medical marijuana is only one example of an individual state creating a courageous social experiment. Oregon's physician-assisted suicide is another case of an individual state bringing innovative ideas to the country (Gostin, 2005).

The 1999 Institute of Medicine Report

The White House Office of National Drug Control Policy requested that the Institute of

Medicine evaluate the possible benefits and uses of marijuana as a therapeutic agent (Watson, 2000). There is evidence that this drug can produce analgesia and that it can relieve the nausea and vomiting resulting from cancer chemotherapy. One must recognize, however, that there are other traditional agents that physicians successfully utilize to treat pain or to treat nausea and vomiting. These latter agents are as effective as marijuana. Marijuana is beneficial in treating the wasting, cachexia, and weight loss in patients with acquired immunodeficiency virus syndrome. Some have contended that cannabinoids relieve spasticity; however, the evidence for this benefit is not clear. The 1999 Institute of Medicine report does not strongly recommend the use of marijuana for the treatment of Parkinson's Disease or other movement disorders. Marijuana has an antianxiety effect, and the presumed benefit which some describe in treating movement disorders may be relief of anxiety rather than direct effect on the basal ganglia of the brain. The basal ganglia of the brain are the anatomic focus of many movement disorders such as Parkinson's Disease. The Institute of Medicine also does not recommend further research on use of cannabinoids to treat seizures. The hippocampus and amygdala of the brain participate in partial seizures, and there are cannabinoid receptors in these parts of the brain. This has enabled some to conclude that marijuana will be useful in treating epilepsy, but the Institute of Medicine investigation does not support this. There are also many agents which are not controlled substances available to successfully control epileptic seizures. The same is true when using marijuana to treat glaucoma. Although there is some transient benefit in administering marijuana to glaucoma patients,

References

- Abrams, D. Hilton, J., Leiser, R., Shade, S., Elbeik, T., & Aweeka, F. et al. (2003). Short term effects of cannabinoids in patients with HIV-1 infection: A randomized, placebo-controlled clinical trial. *Annals of Internal Medicine*, 139, 258-266.
- Annas, G. (2005). Jumping frogs endangered toads and California's medical marijuana law. *New England Journal of Medicine*, 353, 2291-2296.
- Gostin, L. (2005). Medical marijuana, American federalism, and the supreme court. *Journal of the American Medical Association*, 294, 842-844.
- Kane, B. (2001). Medical marijuana: The continuing story. *Annals of Internal Medicine*, 134, 1159-1162.

the more familiar pharmacologic agents are equally beneficial and much easier to monitor for side effects and dosage requirements. When using smoked marijuana, it is difficult to monitor the dose that one receives (Kane, 2001; Watson, 2000). Traditional drugs to treat seizures or glaucoma are easily dispensed and measured in the amount that one gives to the patient (Watson, 2000). The hemp plant will have varying amounts of the drug in each plant, and this makes it difficult to know how much of the drug one administers to the patient.

Smoking marijuana irritates the lining of the respiratory tract and increases the risk of cancer. Smoking it during pregnancy can be detrimental to the fetus. The Institute of Medicine recommends that use of marijuana occur only in a controlled clinical research trial with Institutional Review Board approval and for a period not more than six months. The Institute of Medicine conclusion is that cannabinoids may be effective in treating chronic pain, nausea and vomiting and for appetite stimulation (Watson, 2000).

Conclusion

Medical marijuana has gained increased attention of the medical community and of the general public. The medicinal value of this drug is well-known throughout history, and the best researchers in the area acknowledge marijuana's effects. There are, however, traditional drugs which can effectively treat many of the same conditions for which some have used marijuana, and monitoring the dose of marijuana may be difficult. More research is necessary to further delineate the benefit of legalizing the hemp plant in the United States and in other countries.

- Okie, S. (2005). Medical marijuana and the supreme court. *New England Journal of Medicine*, 353, 648-651.
- Vastag, B. (2003). Medical marijuana center opens doors. *Journal of the American Association*, 290, 877-879.
- Walker, E. (1997). Cannabis: The hemp plant. Retrieved on November 28, 2005, from <http://www.siu.edu/~ebl/leaflets/hemp.htm>
- Watson, S., Benson, J. Jr., & Joy, J. (2000). Marijuana and medicine: Assessing the science base. *Archives of General Psychiatry*, 57, 547-552.

Author Information

Michael Koger, Sr., MD
Department of Health Science
205 East Annex
The University of Alabama, Tuscaloosa
Tuscaloosa, AL 35487
Ph.: 205-348-2486
E-Mail: koger002@bama.ua.edu