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Marijuana for Diabetic Control

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For centuries, cannabis sativa, more commonly known as marijuana, has been used as a folk remedy to relieve pain, improve mood, and increase appetite.[1]

In 1937, Franklin D. Roosevelt signed the US Marijuana Tax Act that made it illegal to sell or use this herb. Nevertheless, cannabis continued to be used by a small number of citizens in the United States, including jazz musicians, entertainers, and cognoscenti desiring an altered state of mind.

During the 1960s, cannabis use became a symbol for the youth revolution. It was widely used as a mild euphoric on college campuses and among counterculture youth. I remember well coming to parties in Cambridge, Massachusetts, during that heady era and being offered the choice of an alcoholic beverage or a hand-rolled marijuana cigarette. Since then, social use of this herb has continued at a more moderate pace.

In recent years, a synthetic form of its active ingredient, delta-9-tetrahydrocannabinol (THC) (6aR-trans-6a-tetrahydro-6,6,9-trimethyl-3-pentyl-6H dibenzol(b,djpyran-a-01) has been approved by the Food and Drug Administration and is being prescribed to combat chemotherapy and acquired immunodeficiency syndrome−induced anorexia and nausea. This approved agent is named "dronabinol," with several trade names, including Marinol (AbbVie Inc, North Chicago, Ill). On occasion, I have prescribed it to stimulate appetite and improve mood in apathetic, anorexic, and frail elderly patients, in whom it seemed to have a positive effect.

As a result of the 1937 law, as well as further criminalizing legislation passed during the Nixon administration, marijuana has become a major source of income for illegal drug smugglers. A major site of illegal drug importation is the United States−Mexico border. Hardly a week goes by here in Arizona without news reports involving seizures of large quantities of cannabis by US Border Patrol and Drug Enforcement Administration agents, who work constantly to impede the flow of this agent into the United States. The Drug Enforcement Administration has at this time spent more than 100 billion dollars trying to stop the flow of illegal drugs, including marijuana, into the United States. Unfortunately, the country continues to be flooded with illegal pharmaceuticals and marijuana courtesy of powerful drug cartels.

In recent years, 19 states and the District of Columbia, following California's lead in 1996, have passed legislation allowing physicians to prescribe marijuana for patients with severe and difficult to control pain or nausea. Similar legislation is pending approval in other states. Marijuana continues to be widely consumed in the United States. Indeed, I can attest from clinical experience that many patients continue to abuse the use of this herb often alongside more dangerous compounds, such as methamphetamine. Anyone working on the inpatient service of a hospital in the United States today sees a daily stream of patients who admit to marijuana use or who are found to have THC in their "tox screen."

A 2010 ABC news poll found that 81% of Americans favored medical marijuana use and its decriminalization for this purpose. Many other individuals lobby for repeal of the 1937 law forbidding marijuana sale and use. These citizens argue that marijuana should be regulated, sold, and taxed in a manner similar to tobacco and alcohol products.

Despite the ongoing debate, legislation, and current medical use of cannabis, there is a dearth of scientific, pharmacologic, and clinical studies with this agent. I reviewed more than 2070 articles catalogued by PubMed under the heading of medical marijuana and found little about the effect of THC on the metabolome.[2,3] However, there is a modest literature on the cardiovascular effects of THC, but the overwhelming number of investigations involved central nervous system effects and potential addiction.[4]

Much of what we know about cannabis comes from folktales and limited clinical observation. It was in this context that I was pleased to receive the submission published in this edition of ***The American Journal of Medicine***, entitled "The Impact of Marijuana Use on Glucose, Insulin, and Insulin Resistance Among US Adults."[5] This epidemiologic study revealed that current marijuana users had significantly lower levels of fasting insulin and were less likely to be insulin resistant. Penner et al[5] analyzed data obtained during the National Health and Nutrition Survey between 2005 and 2010. They studied data from 4657 patients, of whom 579 were current users of cannabis, 1975 used cannabis in the past

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but were not current users, and 2103 had never inhaled or ingested marijuana. These patients had fasting insulin and glucose levels measured along with a test for insulin resistance. Remarkably, fasting insulin levels were reduced in current cannabis users but not in former or never users. Two additional observations were that waist circumference was smaller and high-density lipoprotein cholesterol blood levels were higher in current cannabis users. These are indeed remarkable observations that are supported, as the authors note, by basic science experiments that came to similar conclusions.

Is it possible that THC will be commonly prescribed in the future for patients with diabetes or metabolic syndrome alongside antidiabetic oral agents or insulin for improved management of this chronic illness? Only time will answer this question for us. Nevertheless, what is very clear is that we desperately need a great deal more basic and clinical research into the short- and long-term effects of this agent in a variety of clinical settings, such as cancer, diabetes, and frailty of the elderly. I would like to call on the National Institutes of Health and the Drug Enforcement Administration to collaborate in developing policies to implement solid scientific investigations that would lead to information assisting physicians in the proper use and prescription of THC in its synthetic or herbal form.

As always, I welcome comments about this editorial and the article referred to on our blog at http://amjmed.blogspot.com.

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