MARIJUANA GATEWAY TO HEALTH

HOW CANNABIS PROTECTS US FROM CANCER AND ALZHEIMER'S DISEASE

CLINT WERNER

DACHSTAR PRESS SAN FRANCISCO Copyright © 2011 Clint Werner, all rights reserved. No part of this book may be reproduced, electronically stored, or transmitted in any form by any means, electronic, mechanical, photocopied, recorded, or otherwise, without the prior written permission of the publisher.

Disclaimer

The contents of this book, all text, graphics, images, studies and information are for informational purposes only. The content is not meant to be a substitute for professional medical advice, diagnosis, or treatment. Please do not disregard professional medical advice or delay seeking it because of something you have read in this book.

This information is not meant to prevent, alleviate, or cure any disease or disorder. Always seek the advice of a physician, doctor of chiropractic, or other qualified health provider with any questions you may have regarding a medical condition.

The purpose of this book is to complement, amplify, and supplement other text. You are urged to read all the available material, learn as much as possible, and tailor the information to your individual needs.

Neither the publisher nor the author shall be liable or responsible for any loss or damage allegedly arising from any information or suggestion within these pages or on our websites. Further, if you suspect that you have a medical problem, we urge you to seek professional medical help.

ISBN: 978-0-9834261-8-9 LCCN: 2011931944

Published by Dachstar Press P.O. Box 460681 San Francisco, California 94146-0681

URL: www.marijuanagatewaytohealth.com

Printed in the United States of America

THIS BOOK IS DEDICATED TO my parents, Lee and Mary Werner, for making my education their top priority; and to all those unjustly imprisoned for using, growing or selling marijuana, represented by: Mollie Fry, Dale Schafer, Marc Emery and Eddy Lepp.

CONTENTS

Introduction5	
Part One	High Science7
Chapter 1	The Endocannabinoid System9
Chapter 2	Smoking Out Lung Cancer 17
Chapter 3	Fighting Other Cancers23
Chapter 4	Alzheimer's And Dementia: How Cannabis Helps 31
Chapter 5	Cannabidiol: The Other Side Of The High45
Chapter 6	Cannabinoid Deprivation Syndrome55
Part Two	The Fall And Rise Of Medical Marijuana61
Chapter 7	From Sacred Plant To Evil Weed In Just 6000 Years63
Chapter 8	Higher Learning
Chapter 9	Double-Blinded Trials75
Chapter 10	Just Say "Know"83
Chapter 11	Case Histories
Chapter 12	Ken And Barbie Have AIDS99
Chapter 13	Research And Commerce 105
Chapter 14	Grass Roots Victory 115
Chapter 15	Government Waste 121
Chapter 16	Heightened Immunity 127

CONTENTS

Chapter 17	Unlocking The Gateway 135	
Chapter 18	The Son Of Reefer Madness 141	
Chapter 19	Who Should Not Use Marijuana 167	
Chapter 20	The Marijuana Renaissance 175	
End Notes		
Acknowledgments207		
About the Author		
Index		

INTRODUCTION

IWROTE THIS BOOK AFTER learning of the growing number of scientific studies which reveal that cannabinoids, the unique compounds found in marijuana, have powerful anti-tumor activity and that they guard the brain from the type of damage that results from toxicity, injury and aging. As more and more of these research reports were published in peer-reviewed journals, they were ignored by the mainstream media, treated as an amusing joke, or reported on sporadically without this important data being pulled together to make the logical assertion that using marijuana is good for human health. Science is a tool we use to understand the world around us. It is the most efficient way we have to separate belief from reality and what the science says about marijuana is that using it regularly will reduce your chances of developing an impressive number of serious illnesses.

The "Eureka!" moment for me, the point at which I knew I had to write *this* book, came after hearing a radio report of a study which found that smoking marijuana significantly reduced the brain damage caused by binge drinking alcohol. As I gathered together research reports I turned to the Pubmed website, which was like hitting a jack pot. I found study after study—amazing research—which few in the general public, or the medical field were aware of. The conclusions were nothing short of mind blowing—cannabinoids inhibit tumor growth, THC kills tumors, THC triggers healthy brain cell production, CBD could delay the onset of diabetes. I would research and write and then walk around the house with my head in my hands, hoping it would not explode in amazement. It was hard to keep up with this body of evidence that was expanding faster than I could document it. After completing the manuscript, there was the frustration of new research being published that showed children with residual brain tumors saw no progression of growth in the cancer while they were inhaling marijuana or that cannabinoids might delay the onset of Huntington's disease better than any known treatment.

I've written this book to serve as an accessible and comprehensive guide to this new branch of science and to present evidence to dispel the old reefer madness myths that are used to continue law enforcement policies that derail, wreck and destroy the lives of otherwise decent people just because they use, grow or sell marijuana.

I hope that *Marijuana Gateway to Health* will inform the public that using marijuana or cannabis products can be very beneficial and explain why we have been so mistaken and mislead about its effects on the body. The first part of the book, "High Science," begins by explaining the endocannabinoid system—how it was discovered, how it operates and how the cannabinoids from marijuana interact with its receptors. The next chapters present the stunning evidence that cannabinoids, especially THC and CBD, interrupt a number of disease processes in a variety of surprising ways and therefore inhaling or ingesting marijuana benefits our health and vitality. The weight of the evidence is so great that no one who is considering the issue of marijuana prohibition from a scientific perspective can possibly justify the continuation of this destructive policy.

The second part of the book, "The Fall and Rise of Medical Marijuana" is a history of the medical marijuana movement, an examination of efforts to resuscitate reefer madness fears, a look at real concerns about problematic marijuana use and an overview of the state of the herb.

Ideally people will read this book, learn to talk about the data, begin conversations and work to eradicate the delusion that marijuana is a harmful substance of abuse that must be restricted by invading and brutalizing the lives of those who enjoy or need it. When we reach that point, we can really begin to work with the cannabis plant to create a healthier and happier world with fewer heartbreaking early deaths from cancer and neurological diseases.

PART ONE

HIGH SCIENCE

(1)

THE ENDOCANNABINOID SYSTEM

MARIJUANA HAS BEEN THE OBJECT of scorn and derision for nearly a century. Nicknamed "the evil weed," it has been the target of hysterical, multibillion dollar eradication campaigns intended to destroy the plant and eliminate its use. Yet it endures. Marijuana consumption is more popular than it has ever been. Drug warriors continue trying to persuade the public that marijuana is a dangerous substance, but their task is getting increasingly difficult as science uncovers more data about how marijuana really affects the body. After decades of unsupported fear-mongering, careful scientific research is now showing that marijuana is actually very good for our health. We now know that marijuana is not a gateway to drug addiction or illness. What the latest research makes clear is that, if marijuana is a gateway to anything, it is a gateway to health.

Marijuana is beginning to emerge from under a cloud of contempt because it has been at the center of one of the most exciting and underappreciated developments in biological science in recent times. Research on its psychological effects led directly to the discovery of a new chemical signaling system in the human body which is now recognized as playing a crucial role in regulating our neurology and physiology. It is becoming increasingly clear that this biological communication and regulatory system also powerfully affects the development and progression of numerous illnesses, especially cancer and Alzheimer's disease. In the context of the last hundred years of propaganda and prohibition, it is both ironic and amusing that this system never would have been discovered had it not been for the widespread "recreational" use of marijuana. The discovery of this profoundly important biological regulatory system—this new understanding of how our vital mental and physical functions work and remain in balance—arose from the search to find out how marijuana gets people high. Though the plant is

commonly referred to as marijuana, it is also known by its Latin genus name, cannabis (this book will use the terms interchangeably). *Cannabinoids* are the unique chemical compounds found in marijuana, the most psychoactive and most studied of which is delta-9-tetrahydrocannabinol, or THC. As we will see, many of these compounds appear to have therapeutic applications. *Endocannabinoids* (endogenous cannabinoids) are mol-

Cannabis is the single most versatile herbal remedy on Earth. No other single plant contains as wide a range of medically active herbal constituents.

ecules similar in structure and function to the cannabinoids produced by the cannabis plant, but they differ in that endocannabinoids are produced naturally within our bodies. These molecules act as the triggering and regulating agents for this physiological communications system, the *endocannabinoid system*, in the same way that serotonin or dopamine work in their own respective systems.

The endocannabinoid system is made up of the cannabinoids, cannabinoid (CB) receptors, as well as the chemical mechanisms responsible for synthesizing and eliminating both. Endocannabinoids are referred to as "endogenous ligands," molecules that turn certain biological activities on, off, up, and down, in part by binding to "receptor sites" on specific kinds of cells. Think of it in mechanical terms. Let's say you have a light switch with a dimmer, but there's no knob to adjust the dimmer so you're stuck in the dark. By pushing a knob onto the switch peg, you can turn on and adjust the brightness of the lights. Certain cannabinoids are like the knob—they fit the switch and provide a way to adjust its activity. Other cannabinoids regulate our health by influencing the biological activity of various systems, receptors and neurotransmitters. The endocannabinoid system does not act alone, it is a complex signaling network that influences numerous physiological pathways. So what activities do cannabinoids help regulate? According to Dr. Raphael Mechoulam, one of the founding fathers of cannabinoid research, "There is barely a biological, physiological system in our bodies in which the endocannabinoids do not participate." Decades of research have now shown that cannabinoids and endocannabinoids help regulate sleep, appetite, psychological well-being, and many more vital functions. They also help reduce the likelihood of certain kinds of disease—including, as we will see, protecting the brain from Alzheimer's disease and suppressing and preventing cancer growth.

It is not an overstatement to refer to Dr. Raphael Mechoulam as a founding father of cannabinoid research. It was Mechoulam and his partner Dr. Yehiel Gaoni who first identified and synthesized THC, the principal psychoactive component of cannabis, while working at Hebrew University in Jerusalem in 1964. When Mechoulam began his career as a biochemical researcher in the early 1960s, he targeted cannabis as a field of investigation because "it was almost totally neglected," and "the active constituent(s) of cannabis had never been isolated in pure form and no definitive structure(s) had been put forth."²

Up to this point, the search for the agent responsible for the psychoactive effects of cannabis had been difficult. THC is just one member of a large family of similarly-constructed compounds, and it was difficult to tease them apart with the techniques then available to biochemists. It was not until the 1960s that technological advances such as chromatography and nuclear magnetic resonance enabled Mechoulam and his colleagues to isolate specific cannabinoids and determine how they differed from one another.

Mechoulam initiated his investigation into cannabis with "5 kg of superb, smuggled Lebanese hashish" provided by a friend at Police Headquarters.³ The first research that Mechoulam undertook was to examine cannabidiol (CBD), a constituent of marijuana which had been chemically isolated from other cannabinoids but its chemical structure had not yet been defined. Using nuclear magnetic resonance (NMR; a technique that identifies molecular structures) as their primary tool, Mechoulam and colleague Yuval Shvo deciphered the molecular configuration of CBD. Like alchemists in search of the philosopher's stone, they began to dig deeper. As they searched for the elusive chemicals that produce the effects of the marijuana high the team tested molecule after molecule on rhesus monkeys until they finally identified a single psychoactive agent. Mechoulam later recalled that his team was very surprised that "only delta-9-THC affected the rhesus monkeys."⁴

Following this key discovery, Mechoulam continued to explore the nature and activity of cannabinoids. Interest in the field began to expand. Over the next 15 years, Mechoulam's group at Hebrew University and many other scientists in the United States, Europe, and Japan conducted a great deal of work on cannabinoids. Mechoulam recounted that during that time much was learned about the pharmacology, biochemistry, and medicinal effects of cannabinoids, yet their mode of action—how they did what they did—was still "an enigma."

Nearly a quarter century after Mechoulam's discovery of THC, Allyn Howlett, Ph.D., and her graduate student William Devane provided one of the first answers to the riddle of how cannabinoids work in the brain. In 1988, Howlett and Devane marked a synthetic cannabinoid with radioactive tritium in order to follow its path through a rat brain. In doing so, they were able to identify where the drug was binding in the brain. These docking sites were the first cannabinoid receptors to be identified. Howlett and her team published a paper announcing their discovery, affirming that a pharmacologically-distinct cannabinoid receptor had been located in brain tissue. This profound discovery led to the charting of a novel neurotransmitter system and the emergence of an entirely new branch of biological science. These receptor sites were designated CB1 (cannabinoid receptor number 1).

Howlett's discovery wasn't just a breakthrough for researchers interested in cannabis and cannabinoids—it also said something about the nature of biological signaling systems in general. "Receptors are not built into our brains or anywhere in our bodies because there is a plant out there that will produce a compound that acts on them, that just doesn't work that way," Raphael Mechoulam later explained. "Receptors are found in our bodies because we produce compounds that act upon those receptors."⁵ In the wake of Howlett's discovery, scientists intensified their search for the endogenous cannabinoids that they knew would match the newly discovered CB1 receptor sites.

In 1992 Czech chemist Lumír Ondřej Hanuš and William Devane were working at Mechoulam's lab at Hebrew University when they identified an endogenous compound that fit the CB1 receptor like a key in a lock. They named this new endocannabinoid anandamide after the Sanskrit word *ananda*—"ecstasy" or "supreme bliss." The discovery of anandamide was trumpeted in the media with sensational headlines about "the body's own marijuana" and stories that tended to discount the profundity of the discovery with a dismissive air of stoner whimsy.

Nevertheless marijuana and cannabinoid research was gaining respect among a growing number of clinical investigators. In 1993, a research group at Cambridge University's Medical Research Council led by Sean Munro, Ph.D., identified and successfully cloned the second cannabinoid receptor, CB2. Two years later, in 1995, Mechoulam made another historic discovery when he isolated a second endocannabinoid, 2-arachidonoylglycerol (2AG) from spleen tissue. Other scientists began plotting the distribution (or "expression") of the corresponding receptors throughout the body and soon uncovered the surprising extent of the endocannabinoid system's regulatory functions.

It is now increasingly recognized that the discovery of the existence and scale of the endocannabinoid system represents a significant advancement in our understanding of human biology. According to Professor Leslie Iversen of the Department of Pharmacology at the University of Oxford in the U.K., "These discoveries shed entirely new light on the pharmacology of cannabis. From the original goal of studying a psychotropic plant cannabinoid, we now see instead the opportunity of revealing a wholly novel physiological control system in the body."⁶ As author Michael Pollan writes in his immensely popular and influential book *The Botany of Desire*, "Someday soon Mechoulam and Howlett will almost surely receive the Nobel Prize, for their discoveries opened a new branch of neuroscience that promises to revolutionize our understanding of the brain and lead to a whole new class of drugs."⁷

Cannabinoid and cannabinoid receptor research is still in an early phase but, as Pollan points out, a revolution is underway. This new branch of biological science is still in its embryonic stage and important revelations lay ahead, such as the possible discovery of other endocannabinoids and their receptors, how they influence the regulation of various body systems, and how they may themselves be affected by other cannabinoids and cannabis compounds such as terpenes (which are responsible for the distinct odor of cannabis and its preparations). Although this field of research has been limited to a small number of labs worldwide, scientists already have a fairly strong grasp of how cannabinoid receptors and endocannabinoids function and what they regulate. Cannabinoid receptors belong to a class of biological structures known as G protein-coupled receptors (GPCRs) which relay signals through the cell membrane into the cell in order to influence its activity. Cannabinoids activate specific kinds of these receptors to convert extracellular stimuli into intracellular signals.

Endocannabinoids are not the only compounds that act on the endocannabinoid system. Cannabinoids found outside the body are known as exocannabinoids, and these include the naturally-occurring chemicals we have already discussed such as THC and CBD. Cannabinoids found in the marijuana plant are also known as phytocannabinoids. Scientists are also producing synthetic cannabinoids with names like WIN-55212-2. Cannabinoids work by bonding to the cannabinoid receptors in the body, which then send signals into cells that alter their activity. The CB1 receptor is most abundantly expressed in the central nervous system (CNS), but it is also found in many other parts of the body. CB1 receptors are also concentrated in adipose tissue (fat) as well as the stomach, placenta, lungs, uterus, and liver.

CB2 receptors are also widespread, existing in the liver, spleen, gastrointestinal tract, heart, kidney, bones, endocrine glands, lymph and immune cells, and the peripheral nervous system. Although the scope of their activity is only beginning to be appreciated, it is clear that CB2 receptors are involved with everything from digestion to bone strength to the perception of pain. Claims of marijuana's broad therapeutic effectiveness were easier to dismiss before we learned about the wide distribution of cannabinoid receptors in the body. Now, those claims are starting to make a lot more sense.

The wide distribution of cannabinoid receptors explains why they can have such powerful effects on appetite, blood pressure, cerebral blood flow, digestion, nausea, immune function, memory, mood, movement, neurological health, pain, reproduction, stress response and more. It seems that everywhere in the body cannabinoid receptors are regulating activity and maintaining health. The sheer ubiquity of the endocannabinoid system and the immense diversity of cannabinoids that exist both inside and outside the body has convinced many experts of marijuana's medical potential. One of these experts, Dr. Ethan Russo, has said, "Cannabis is the single most versatile herbal remedy on Earth. No other single plant contains as wide a range of medically active herbal constituents."⁸

Science has completely altered our understanding of marijuana. It no longer makes sense to criminalize marijuana users and demonize the plant as a toxic menace or the devil's weed. The new scientific reality is in fact just the opposite: marijuana is a natural ally of the human body, capable of interacting with any number of body systems to protect us from a variety of terrible, degenerative diseases. Given the extensive influence of cannabinoids in the body, it should not surprise us that marijuana has numerous beneficial effects. But what are those beneficial effects, and how might they be maximized?

PART TWO

THE FALL AND RISE OF MEDICAL MARIJUANA

(7)

FROM SACRED PLANT TO EVIL WEED IN JUST 6000 YEARS

THE CANNABIS PLANT HAS BEEN utilized and revered for thousands of years for its diverse health effects and numerous utilitarian applications. It seems that it was first cultivated in approximately 4000 B.C.E in China close to the Hindu Kush region that was most likely the area of its birth. Around 2300 B.C.E., the Chinese emperor-physician Shen Nung declared cannabis to be one of the "Supreme Elixirs of Immortality" and recommended it for many of the same maladies for which people use it today. The range of products derived from this remarkable plant—food, fuel, medicine, sacraments, textiles, and rope—seems to have granted it a special place in human culture. Despite the fact that cannabis has been an important part of medicine and spirituality for so many millennia, for the last 100 years it has been irrationally prohibited. If science has not convinced us that cannabis is beneficial to our health, then history should.

In the late 1980s, farmers tilling the earth for planting in China's Gobi Desert uncovered an extensive 2700-year-old cemetery containing about 2500 graves. The combination of cold and dry weather and alkaline soil conditions had worked to naturally mummify the bodies, giving archaeologists a wealth of information about the former lives of their owners, members of the Gushi culture. Along with the bodies the graves also contained various artifacts such as tools, equestrian equipment, and food including wheat, barley, and capers. In one tomb, archaeologists discovered the skeleton of an approximately 40-year-old male of high social status. He had been buried with a bridle, archery equipment, a harp, and ceremonial tools typical of a shaman. At his feet was a large basket filled with over a pound and a half of high-quality marijuana.

When samples of the ancient plant material were sent to a laboratory for testing, analysts discovered that it was not a wild plant but that it had actually been cultivated. This conclusion was based on the fact that it had a higher ratio of THC to CBD than wild varieties, indicating that the cannabis had been bred for psychoactive potency. In addition, the material had been cleared of twigs and stems, which is another sign that it was used for its psychoactive properties. The archaeologists also reasoned that since the Gushi used wool for clothing and reed fiber for rope, it was unlikely that the cannabis found in the tomb was intended for

other uses. Based on these results, the analysts concluded that the Gushi culture cultivated cannabis for pharmaceutical, psychoactive, and/or divinatory purposes.¹⁰¹ Reverence for cannabis reached its apex in India after its introduction to the region by invading Aryan tribes. As a result of this influx,

The legislation in relation to marihuana was ill-advised... it branded as a menace and a crime a matter of trivial importance.

cannabis became associated with the worship of the Hindu god Shiva, whose devotees ingest cannabis as sacramental rites. In these rituals, worshippers use the drug in several forms: *bhang* (consisting of the leaves of the plant), *ganja* (the flowering tops or buds), and *charas* (the concentrated resin). The sunny and warm climate of India enabled its inhabitants to produce potent cannabis plants which in time became integral to the medicine, spirituality, and commerce of the region. Charas (in Arabic, *hashish*) induced rapturous states of bliss and spiritual reverie in devotees while bhang and ganja were employed as medicines for many of the same illnesses that medical marijuana is used for today.

Although there is evidence that cannabis derivatives were employed as folk remedies in Europe around the 14th century, the vast bulk of European cannabis cultivation at the time was intended to produce hemp fiber, not the resinous flowers. It is now thought that the popular use of cannabis as a euphoric agent (particularly in the form of hashish) was introduced into Europe by Napoleon's troops as they returned from Egypt, where it had long been used for such purposes. By the 18th century, hashish had become particularly popular among literary figures and libertines who had developed a passion for Orientalia.

The first major western proponent of cannabis as a medicinal agent was W.B. O'Shaughnessy, a professor of chemistry at the Medical College of Calcutta, who was impressed by the many effective applications of the plant. After establishing the safety of cannabis on dogs and other animals, O'Shaughnessy began conducting trials on humans, whereupon he found it especially effective against convulsions and seizures. O'Shaughnessy's reports on his experiments eventually helped to establish cannabis products as prominent medicines in both Great Britain and the United States.

The cannabis medicines of the late 1800s and early 1900s were mostly tinctures and pills, although the raw plant material was also utilized as a remedy for toe calluses. Marijuana cigarettes were also manufactured for use by asthmatics as bronchodilators. Due to the difficulty of standardizing the potency of cannabis medicines, the impossibility of administering the drug via the newly-developed hypodermic needle, and the emergence of highly effective synthetic drugs, cannabis-based medicines eventually fell out of favor with physicians. However, they continued to be utilized for many illnesses from depression to indigestion until propaganda campaigns led to their prohibition in the early 20th century.

While middle-class, white American society was using cannabis remedies to relieve pain and psychic ills, descendants of slaves in the American South and around the Caribbean were using marijuana for their own spiritual and medicinal purposes. Migrant workers from Mexico were also bringing marijuana along with them as they traveled northward. For the Mexican laborers, marijuana was cheaper, easier to transport, and less physically devastating than alcohol. Seeing these various dark-skinned people smoking marijuana, however, frightened many European-Americans. Their fear grew even greater when media baron William Randolph Hearst launched a smear campaign touting the plant as a cause of homicidal madness. Many citizens also began associating marijuana with Chinese immigrants and the infamous opium dens.

The demonization of marijuana escalated when Harry J. Anslinger, the first Commissioner of the Federal Bureau of Narcotics (FBN) after its establishment in 1930, launched a campaign on behalf of the federal government to criminalize cannabis. At first, Anslinger was reluctant to take on such an enormous task, especially given the fact that hemp was a common weed that grew wild throughout the country—including on the grounds now occupied by the Pentagon. He soon realized, however, that federal agents left jobless after the repeal of alcohol prohibition would benefit from the continuing work generated by marijuana prohibition and the commissioner threw himself into the job with gusto.

Taking a lead from Hearst, Anslinger wrote and circulated a lurid essay entitled "Marihuana: Assassin of Youth," and tirelessly campaigned to convince the public that cannabis was an evil weed, a toxic poison that corroded the brain and led to homicidal insanity.

"How many murders, suicides, robberies, criminal assaults, holdups, burglaries, and deeds of maniacal insanity it causes each year, especially among the young, can be only conjectured," Anslinger wrote.

The first laws against marijuana were enacted at the state level in areas with large numbers of Mexican migrant workers. The laws served a dual purpose, not only demonizing and criminalizing marijuana but also making the migrant users—for whom the plant continued to be an important part of their culture—vulnerable to persecution by the police.

The federal law banning marijuana was modeled on an earlier law intended to restrict the sale of machine guns by imposing an exorbitant sales tax. Although the machine-gun tax was challenged as duplicitous in the U.S. Supreme Court, it was nevertheless upheld. With the machine-gun tax upheld, the Marihuana Tax Act of 1937 passed quickly in Congress. The American Medical Association (AMA) protested, realizing that a de facto ban on marijuana would also effectively criminalize the production, distribution, and use of cannabis-derived medicines. The protests were ignored, and when the law took effect agents from the FBN immediately began prosecuting marijuana users (referred to as "vipers" and "hemp heads") for possessing marijuana without having purchased the required tax stamp—despite the fact that the Treasury Department was not actually making the stamps available.

Since a large proportion of these arrests were being made in New York City, the city's mayor, Fiorello LaGuardia, became concerned about whether marijuana or incarceration was more harmful to his fellow citizens. LaGuardia commissioned a state-of-the-art scientific study to answer the question. The study conducted by the LaGuardia Commission took nearly four years to complete, and produced a report entitled *The Marihuana Problem in the City of New York*. The results took LaGuardia by surprise. The study refuted Anslinger's hysterical claims about associations between smoking marijuana and criminality, antisocial behavior, changes in personality, and sexual deviance. In fact, the scientific results were so striking in their invalidation of Anslinger's propaganda that one of the authors concluded that "the legislation in relation to marihuana was ill-advised... it branded as a menace and a crime a matter of trivial importance."¹⁰²

Scientific findings meant nothing to Anslinger who denounced the conclusions of the LaGuardia Commission. He then used the significant power of his office to bully the AMA, which had previously argued against the Marihuana Tax Act, into denigrating the results of the commission and accepting his unsubstantiated propaganda as science. Anslinger's allegations that marijuana induced homicidal madness was a calculated and effective deceit. Yet he changed his strategy quickly after the passage of the Marihuana Tax Act. Concerned that his claims about links between smoking marijuana and psychosis would be used as insanity defenses by violent criminals, Anslinger began squelching the very kinds of stories that he had so vigorously promoted. Defense attorneys were already beginning to argue that their clients were not responsible for murdering people since their brains had been destroyed by marijuana.

By the 1950s, the federal campaign against marijuana had begun to cluster all illegal drugs under the umbrella term "dope." The term had long been used to refer to heroin and morphine, and despite enormous differences in their physiological effects, the mere fact that marijuana was illegal placed it in the same category. As the decade unfolded, the use of dope was increasingly depicted as a threat to the nation, a Communist plot intended to render citizens too intoxicated to resist. While just 15 years earlier government agents had portrayed marijuana as a drug that transformed men into superhuman killers, it was now seen as leaving them weak and passive, too sapped of strength and drive to survive the pending Communist onslaught. Marijuana was now much more than a demon weed; it was labeled as a threat to the very survival of the nation. In 1948, Congress funded the establishment of the National Institute of Mental Health (NIMH) for the purpose of (among other things) directing research into illegal drugs. In the early 1960s, a young doctor named Tod Mikuriya was appointed as the director of non-classified marijuana research for the organization. When he reviewed the research grants that the agency was funding, Mikuriya was disappointed to learn that it was only "funding searches for harmful effects and detection methods and some mechanisms of action studies" but that it seemingly had "no interest in beneficial effects."¹⁰³ Interestingly, however, the research that was being done was not finding any significant physical or mental threats arising from marijuana use. Some of them, in fact, seemed to suggest that it might actually have therapeutic qualities.

As a result, and against the wishes of his superiors at NIMH, Mikuriya began advocating for the legalization of marijuana and its regulation by the FDA. Consequently he became alienated from the NIMH bureaucrats who saw no alternative apart from the status quo of prohibition. After bringing a kilogram of marijuana back to the laboratory from a field research trip, Mikuriya was pressured to leave the agency.

During his tenure at NIMH, Mikuriya photocopied every piece of research he found on marijuana. In 1973, he combined this data with material from O'Shaughnessy's earlier studies and the LaGuardia report, and published the *Marijuana Medical Papers*, an exhaustive compendium of research on the medical benefits and hazards of ingesting cannabis. His conclusion was that marijuana is not addictive and that it has numerous medical applications that deserve careful scientific study.