An Introduction to Cannabinopathic Medicine: Lester Grinspoon, M.D.'s New Coinage

By Sunil Aggarwal

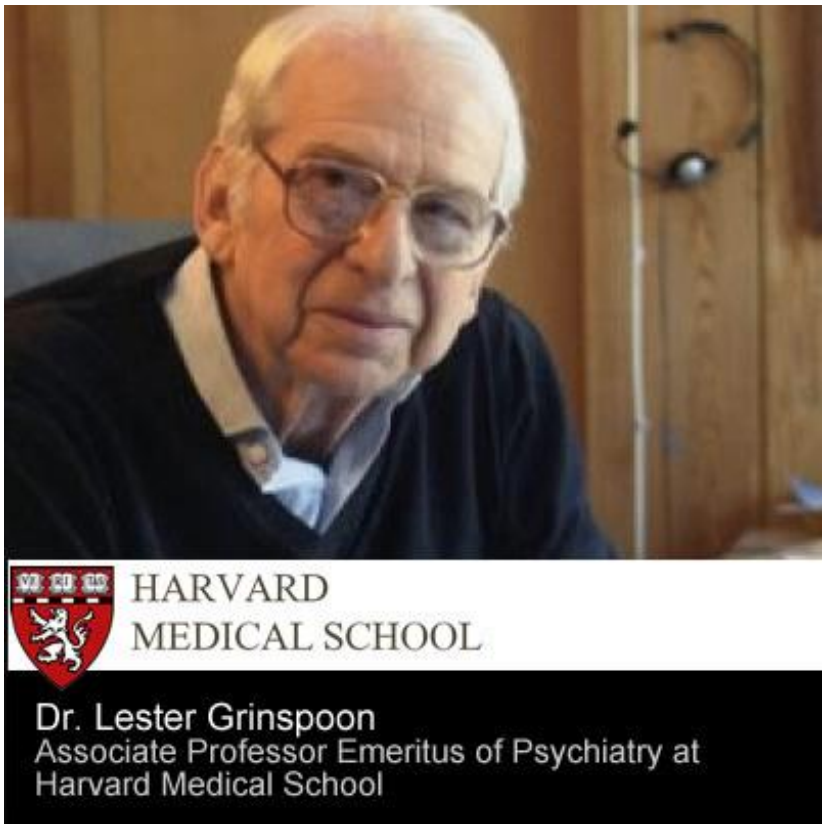
March 14, 2013

I am honored and delighted to be able to publish here for the first time a new comprehensive piece written by Dr. Lester Grinspoon, Emeritus Professor of Psychiatry at Harvard Medical School, entitled "Cannabinopathic Medicine". Dr. Grinspoon started writing this piece in 2012, when I was privileged to read an early draft and give editorial suggestions. He has been looking for a suitable venue for publishing it where it could be read widely. I am grateful that he agreed to allow me to use this blog space to share it. It is approximately 6,000 words and well worth a read.

First, a brief introduction. Dr. Grinspoon, who is in his eighties, is a great physician and researcher who has been a co-author, instructive mentor, and guide of mine. He is known for his pioneering work on the social and medicinal uses of cannabis, but before that, he made significant contributions such as introducing the use of lithium in the treatment of bipolar disorder, the starting of the Harvard Mental Health letter, and many other achievements such as senior psychiatrist at the Massachusetts Mental Health Center in Boston for 40 years, fellow of the American Association for the Advancement of Science and the American Psychiatric Association, founding editor of the The American Psychiatric Association Annual Review, and editor of the Harvard Mental Health Letter for fifteen years, to name a few.

It is a wonderful turn of events that Dr. Grinspoon's home state Massachusetts passed a voter initiative by wide margin to legalize the medicinal use of cannabis for patients with conditions that a physician believes may benefit from its use. That law went into effect this year and now, as of this month, Harvard Medical School-affiliated faculty, in collaboration with the Massachusetts Medical Society, are producing and editing AMA-certified continuing medical education online course series on the medicinal uses of cannabis, vindicating Dr. Grinspoon's remarkable foresight from over 40 years prior.

Without further adieu, here is Dr. Grinspoon's latest piece on cannabis use, where we are going with it as a as society, and where we should be going.



Cannabinopathic Medicine

by Lester Grinspoon, M.D.
March 2013

A native of Central Asia, cannabis (hemp) may have been cultivated as long as 10,000 years ago. It was certainly cultivated in China by 4000 BC and in Turkestan by 3000 BC. It has long been used as a medicine in India, China, the Middle East, Southeast Asia, South Africa, and South America. The first evidence of the medicinal use of cannabis is an herbal published during the reign of the Chinese emperor Chen Nung 5000 years ago. It was recommended for malaria, constipation, rheumatic pains, "absentmindedness", and "female disorders."

Another Chinese herbalist recommended a mixture of hemp, resin, and wine as an analgesic during surgery. In India cannabis had been recommended to quicken the mind, lower fevers, induce sleep, cure dysentery, stimulate appetite, improve digestion, relieve headache, and cure venereal disease. In Africa it was used for dysentery, malaria, and other fevers. Today certain tribes treat snakebite with hemp or smoke it before childbirth. Hemp was also noted as a remedy by Galen and other physicians of the classical and Hellenistic eras, and it was highly valued in medieval Europe. The English clergyman Robert Burton, in his famous work The Anatomy of Melancholy, published in 1621, suggested the use of cannabis in the treatment of depression.

The New English Dispensatory of 1764 recommended applying hemp roots to the skin for inflammation, a remedy that was already popular in Eastern Europe. The Edinburgh New Dispensary of 1794 included a long description of the effects of hemp and stated that the oil was useful in the treatment of coughs, venereal disease, and urinary incontinence. However, in the West cannabis did not come into its own as a medicine until the mid-19th century.

The first Western physician to take an interest in cannabis as medicine was W.B. O' Shaughnessy, a young professor at the Medical College of Calcutta, who had observed its use in India. He gave cannabis to animals, satisfied himself that it was safe, and began to use it with patients suffering from rabies, rheumatism, epilepsy, and tetanus. In a report published in 1839, he wrote that he had found Cannabis Indica, (a solution of cannabis in alcohol, taken orally) to be an effective analgesic. He was also impressed with its muscle-relaxant properties and called it "an anticonvulsive remedy of the greatest value." O'Shaughnessy returned to England in 1842 and provided cannabis to pharmacists. Doctors in Europe and the United States soon began to prescribe cannabis for a variety of physical conditions. Cannabis was even given to Queen Victoria for the treatment of her painful pre-menstrual cramps by her court physician.

It was admitted to the United States Pharmacopeia in 1850 and commercial cannabis preparations soon became widely distributed through drugstores. Pharmacies welcomed the arrival of this "new" medicine, Cannabis Indica, because at that time their shelves held few truly effective drugs to offer the practitioners of allopathic medicine. As its use became increasingly widespread, clinical reports on cannabis accumulated and by the turn of the century, more than 100 papers were published in the Western medical literature recommending it for various illnesses and discomforts and extolling its remarkably limited toxicity.

The decline in the usage of Cannabis Indica began toward the end of the century. Both the potency of cannabis preparations and its absorption from the bowel were too variable, and individual responses to orally ingested cannabis seemed erratic and unpredictable. Another reason for the neglect of research on the analgesic properties of cannabis was the greatly increased use of opiates after the invention of the hypodermic syringe in the 1850s allowed soluble drugs to be injected for fast relief of pain; cannabis products are insoluble in water and so cannot easily be administered by injection.

The end of the 19th century saw the development of such synthetic drugs as aspirin, chloral hydrate, and barbiturates. Two of the most common symptoms for which Cannabis Indica was prescribed were pain and insomnia, and now physicians could prescribe easy-to-take pills of known potency for these two problems, hastening the decline of cannabis as a medicine. But the new drugs had striking disadvantages. More than 1000 people die from aspirin-induced bleeding each year in the United States, and barbiturates are, of course, far more dangerous. But the Marijuana Tax Act of 1937 was the ultimate death-knell for Cannabis Indica.

This law was the culmination of a campaign organized by the Federal Bureau of Narcotics under Harry Anslinger in which the public was led to believe that cannabis, now commonly referred to as marijuana, was addictive and that its use led to violent crimes, psychosis, and mental deterioration; it is now confined to Schedule 1 under the Controlled Substances Act of 1970 as a drug that has a high potential for abuse, lacks accepted medical use, and is unsafe for use even under medical supervision.

The film Reefer Madness, made as part of Anslinger's campaign, may be a joke to the sophisticated today, but it was once regarded as a serious attempt to address a social problem; the atmosphere and attitudes it exemplified and promoted continue to influence our culture, albeit much less so today.

The Marijuana Tax Act was not directly aimed at the medical use of cannabis; its purpose was to discourage recreational marijuana smoking. Almost incidentally the law made medical use of cannabis difficult because of the extensive paperwork and fees required of doctors who wanted to prescribe it. The Federal Bureau of Narcotics followed up with "anti-divergent" regulations that contributed to physicians' disenchantment. Its removal from the United States Pharmacopeia and the National Formulary in 1942 signaled both the end of physicians' interest in and allopathic medicine's institutional embrace of cannabis.

Furthermore, physicians allowed themselves to become ignorant about this drug as they have, since the mid-1930s, been increasingly exposed along with every other citizen to the deceptive propaganda against marijuana propagated by the United States government and such private organizations as the Partnership for a Drug Free America.

The concept of marijuana as a medicine virtually disappeared for several decades. Then in the 1960s, as large numbers of people began to use marijuana recreationally, claims of its medical utility began to appear, not in the medical literature but in the form of letters to popular magazines like Playboy. Typically these accounts were written by surprised and excited recreational users who had serendipitously discovered that marijuana relieved one or another of a variety of symptoms and syndromes.

Over the next several decades, the grapevine word of these rediscovered medical utilities continued to grow. With the advent of the AIDS epidemic and the discovery of marijuana's ability to reduce the nausea and therefore the threat of the "weight reduction syndrome of AIDS", this reappearance of the concept of cannabis as a medicine gathered enough momentum to be publicly palpable. It was at this time that public pressure on the government to reconsider its obdurately held position developed in earnest, but with little success to date at the federal level.

There is an important difference in the way cannabis was used as a medicine in the latter half of the 19th century and the way it has been generally administered since its reemergence as a sub rosa medicine in the mid-20th century. In its earlier iteration it was dispensed orally as an alcoholic solution; now it is primarily taken through the pulmonary system as smoke. The emergence of cannabis as a recreational drug began in the early part of the 20th century and has continued to grow. One of the reasons it has grown to the point where it can now be considered a part of Western culture is its introduction as a smokable drug.

A good deal of mystery and uncertainty surrounds the story of the "reefer's" debut in the United States. It is generally thought that in the early decades of the 20th century the custom of smoking "the weed" in cigarette form traveled with groups of itinerant Mexican workers across the border in the southern and southwestern states; it is now overwhelmingly the mode of administration used by the millions who use it as a medicine or for any other reason today. This change in the route of administration has greatly enhanced its usefulness as a medicine because it solved the problem of providing the correct dose.

One of the major problems that doctors in the 19th century faced with Cannabis Indica was that there were no reliable bioassays at that time and so physicians could never be sure that they had prescribed the correct dose.

If too much was prescribed, the patient might experience discomfort in the form of anxiety but this would not be immediately evident because it takes about one to two hours for the effects of orally administered cannabis to be experienced.

However, because physicians of the 19th century understood that this was a drug of unusually limited toxicity, they were not as concerned about overdosing as they were about providing an inadequate dose.

The major advantage of smoking is the rapidity with which the medicinal effect appears; symptom relief will occur in a matter of minutes. And perhaps even more importantly, this very rapid feedback allows the patient to titrate his own dose for his particular symptom with much more precision than can his physician. He just leisurely puffs until one of two things happens; he either begins to experience symptom-relief or he becomes somewhat high or anxious at which point he stops.

It is no longer believed that the smoke from marijuana is harmful to pulmonary or oropharyngeal tissues. But, for those patients who prefer not to smoke, there now is the option of using an instrument called a vaporizer which allows one to inhale the cannabinoids free of the combustion products of the cannabis plant.

In what may be the first attempt to reestablish the place of cannabis in mainstream allopathic medicine, the National Organization for the Reform of Marijuana Laws (NORML) in 1972 petitioned the Bureau of Narcotics and Dangerous Drugs, later renamed the Drug Enforcement Administration (DEA), to transfer marijuana to Schedule II so that the research necessary for the Food and Drug Administration (FDA) approval could be undertaken. Without this approval it cannot be clinically researched nor can it be legally prescribed. As the proceedings continued, other parties joined, including the Physicians Association for AIDS Care.

It was only in 1986, after many years of legal maneuvering, that the DEA acceded to the demand for public hearings required by law. During the hearings, which lasted two years, many patients and physicians testified and thousands of pages of documentation were introduced.

In 1988 the DEA's own Administrative Law Judge, Francis L. Young, declared that marijuana in its natural form fulfilled the legal requirement of currently accepted medical use in treatment in the United States. He added that it was "one of the safest therapeutically active substances known to man." His order that the marijuana plant be transferred to Schedule II was overruled, not by any medical authority, but by the DEA itself, which issued a final rejection of all pleas for reclassification in March 1992.

Meanwhile, growing demand forced the FDA to institute the Individual Treatment IND (commonly referred to as a Compassionate IND) for the use of physicians whose patients needed marijuana. The application process was made enormously complicated, and most physicians did not want to become involved, especially since many believed there was some stigma attached to prescribing marijuana. Between 1976 and 1988 the government reluctantly awarded about a half-dozen Compassionate INDs for the use of marijuana. In 1989 the FDA was deluged with new applications from people with AIDS, and the number granted rose to 34 within the year. In June 1991, the Public Health Service announced that the program would be suspended because it undercuts the Administration's opposition to the use of illegal drugs.

After that no new Compassionate IND's were granted, and the program was discontinued in March 1992. Four patients are still receiving marijuana under the original program; for everyone else it is at the federal level an outlaw medicine.

Despite its federal illegality, beginning in 1996 with California's passage of its Proposition 215, 18 states and the District of Columbia have established legislation which makes it possible for patients suffering from a variety of disorders to use the drug legally with a recommendation from a physician. Unfortunately, because each state arrogates to itself the right to define which symptoms and syndromes may be lawfully treated with cannabis, many patients with legitimate claims to the therapeutic usefulness of this plant must continue to use it illegally and therefore endure the extra layer of anxiety imposed by its illegality.

California and Colorado are the two states in which the largest number of patients for whom it would be medically useful have the freedom to access it legally. New Jersey appears to be shaping up as one of the most restrictive, and for that reason it is likely that only a small fraction of the pool of patients who would find marijuana to be as or more useful than the invariably more toxic conventional drugs it will displace will be allowed legal access to it.

The framers of the New Jersey legislation may fear what they see as chaos in the distribution of medical marijuana in California and Colorado, a fear born of their concern that the more liberal parameters of medical use adopted in these states have allowed its access to many people who use it for other than strictly medical reasons. Because so many people are now having an opportunity to observe relatives or friends who are successfully, safely and relatively inexpensively using marijuana as a medicine, it will not be long before an overwhelming majority of citizens demand the same rights.

There are now six other states working on medical marijuana legislation; this is a reflection of recent polls which show that more than 70% of American citizens now support the legal availability of marijuana as a medicine. These additional states and their citizens will inadvertently become part of an ongoing large social experiment in how best to deal with the reinvention of the "cannabis as medicine" phenomenon.

Already we have learned a great deal from this ongoing experiment; one of the most important is that the states which have the more restricted and limited medical indications for allowable use of marijuana as a medicine have the largest number of patients who are compelled to use it illegally, while those which are the least restricted with respect to allowable medical indications unintentionally provide it to many people who use it for other purposes. Shortly after O' Shaughnessy introduced cannabis as a new medicine, modern Western medicine (allopathic medicine) signaled its acceptance when it was entered into the various Western pharmacopeia in the mid-19th century.

It was expected, certainly by the 1990s, that it would be readmitted as a legitimate medicine, given the mountain of largely anecdotal evidence which establishes both its efficacy and safety, and its potential (once free of the prohibition tariff) to be much less expensive than pharmaceutical industry products it will replace. The two major agencies of this resistance to its readmission are the US government and the medical/pharmaceutical establishment.

Today drugs must undergo rigorous, expensive and time-consuming research to win approval by the FDA before they can be marketed as medicines. The first step made in trying to move the federal government was to petition it to move cannabis from its Schedule I status in the Controlled Substances Act to Schedule II so that it would then be possible to do the kinds of controlled studies essential to the presentation of any new drug to the Food and Drug Administration (FDA) for approval in accordance with the protocol used by the pharmaceutical industry.

As noted above, the first attempt to petition the FDA and DEA to move marijuana to Schedule II was initiated in 1972 and after two decades of hearings and delays the DEA rejected all pleas for reclassification.

Another two decades have passed and, with the exception of a handful of small-to-medium sized randomized controlled trials of smoked cannabis in chronic pain, spasticity, and wasting syndrome, the federal government continues to block the possibility of demonstrating that marijuana could satisfy the FDA criteria for a safe and efficacious addition to the pharmacopeia by continuing to insist, against overwhelming evidence to the contrary, that it is properly placed in Schedule I.

In actuality it is now clear that marijuana no more belongs in Schedule I than does aspirin. The purpose of the FDA testing is to protect the consumer by establishing both safety and efficacy. First, the drug's safety (or rather, limited toxicity) is established through animal and then human experiments. Next, double-blind controlled studies are conducted to determine whether the drug has more than a placebo effect and is more useful than an available drug. As the difference between drug and placebo may be small, large numbers of patients are often needed in these studies for a statistically significant effect.

Medical and governmental authorities insist that before marijuana is made legally available to patients, this kind of study should be performed for each of the indications for which it is proposed to be used. At the same time, the government refuses to reconsider its inappropriate assignment of marijuana to Schedule I, therein making it impossible by imposing a tight and heavily controlled monopoly on research-approved cannabis production and distribution to undertake the kind of studies presently demanded by the FDA for its reintegration into modern Western medicine.

But with the accumulation of an enormous amount of anecdotal evidence, it has now become doubtful whether these FDA rules should apply to marijuana. . There is now little question about its safety. It has been used for thousands of years by millions of people with very little evidence of significant toxicity. Similarly, no further double-blind studies are needed to prove marijuana’s efficacy. Any astute clinician who has some knowledge of the accumulated clinical experience of patients who have used marijuana as a medicine knows that it is efficacious to some degree for many people with various symptoms and syndromes.

Anecdotal evidence commands much less attention than it once did, yet it is the source of much of our knowledge of synthetic medicines as well as plant derivatives. Controlled experiments were not needed to recognize the therapeutic potential of chloral hydrate, barbiturates, aspirin, curare, insulin, or penicillin -- pharmaceuticals introduced before the double-blind controlled study was invented.

Anecdotes present a problem that has always haunted medicine: the anecdotal fallacy or the fallacy of enumeration of favorable circumstances (counting the hits and ignoring the misses). If many people suffering from, say, muscle spasms caused by multiple sclerosis take marijuana and only a few get much better relief than they could get from conventional drugs, those few patients would stand out and come to our attention.

They and their physicians would understandably be enthusiastic about marijuana and might proselytize for it. These people are not dishonest, but they are not dispassionate observers. Therefore, some may regard it as irresponsible to suggest on the basis of anecdotes that cannabis may help people with a variety of disorders. That might be a problem if cannabis were a dangerous drug but, in fact, it is remarkably safe.

Even in the unlikely event that only a few people with multiple sclerosis find that it provides relief from muscle spasm, it can be argued that cannabis should be available to them because it costs so little to produce and the risks are so small. The benefits of any medicine must be weighed against the risks. Fortunately, there is unusually good evidence on the potential health hazards of marijuana---far better than the evidence on most prescription drugs. Not only has cannabis been used for thousands of years by many millions of people, but there is much recent research on its safety inspired by the federal government's interest in discovering toxic effects to justify its policy of prohibition.

The potential dangers of marijuana when taken for pleasure and its possible usefulness as a medicine are historically and practically interrelated issues: historically, because the arguments used to justify the suppression of recreational use have had a disastrous influence on views of its medical potential; practically, because it is more likely to be safe as a medicine if it is relatively safe as a euphoriant.

As the evidence makes it increasingly clear that cannabis is relatively benign, it is becoming more and more difficult to deny that a risk-benefit analysis now satisfies all requirements for medical use. Penicillin was discovered in 1929, but the discovery was ignored by the medical establishment for more than a decade until the first clinical trial with six patients who suffered from a variety of infections; all were successfully treated.

After this debut in 1941, penicillin rapidly earned the reputation as the wonder drug of the 1940s. It earned that reputation for three reasons: it was remarkably non-toxic, even at high doses; it could be produced inexpensively on a large scale; and it was extremely versatile, acting against microorganisms that cause a great variety of diseases, from pneumonia to syphilis. In all three respects cannabis suggests parallels: it is remarkably safe; once it is free of the prohibition tariff it will be inexpensive; and it is effective against a large number of symptoms and syndromes.

Penicillin did not undergo modern FDA approval scrutiny because its safety and efficacy had been well established by the time the FDA adopted the present protocol for approving new drugs. Marijuana is now in the same position vis-à-vis the FDA; it has accumulated, both from recreational and medicinal use, more than enough evidence of its safety and efficacy.
As its reputation as a medicine grew, so did the demand for legal access.

In 1996, California became the first state to provide legal (as far as the state was concerned) access for specified signs and symptoms and under controlled conditions. Over the next 15 years 16 other states and the District of Columbia followed suit, but the defined parameters of availability, particularly the rules for distribution and the medical reasons for which use would be allowed, have generally become more constricted.

In these states the only involvement with the medical establishment is the requirement that the patient receive a note from a physician stating that he believes the patient's condition would be helped by cannabis; these notes allow the patient to receive a state-issued medical marijuana registration card which may cost $100 or more annually.

Each state establishes its own rules for the growing and dispensing of medical marijuana. These states now allow thousands of people to legally purchase a growing variety of marijuana products upon the presentation of these cards or, in some states, the physician's letter to one of the state-sanctioned dispensaries. It is estimated that 2 1/2 to 3% of the residents of California are now credentialed to buy marijuana legally in what is estimated to be between a 1 1/2 to 2 1/2 billion dollar business.

One has only to visit one of the California dispensaries to see how sophisticated this industry is becoming, with a range of newly developed cannabis products; beyond having perhaps a dozen or more different strains of herbal cannabis to choose from, there is a large choice of edible and even topical marijuana medications.

The patient who wants to use a pipe, bong or vaporizer will find a large and growing selection to choose from. There now exist a few laboratories equipped to measure the percentage of individual cannabinoids and terpenes, and to provide assurance against contamination with insecticides or fungi. The rapidly increasing number of patients who are now seeking cannabis as a medicine is fueling a burgeoning medical marijuana enterprise which is becoming increasingly sophisticated.

There are the growers who are becoming more adept at breeding new strains which may be more beneficial to patients with particular needs, as for example the present effort to develop strains high in cannabidiol (CBD,a non-psychoactive cannabinoid). There are now a number of publications aimed at the medical marijuana community, most notably *O'Shaughnessy's*, *the Journal of Cannabis Clinical Practice,* published in San Francisco. The recently formed physicians' professional organization, the Society of Cannabis Clinicians (SCC), promotes clinical cannabis research.

Despite harassment by the federal authorities, especially in California, all aspects of this alternative medicine which is beginning to look like a new school or philosophy of medicine will continue to grow and become more sophisticated as it is embraced by more and more patients, legally or illegally.

This new medicine, bolstered by the fundamental understandings in biology and physiology that have come from the discovery and study of the endogenous cannabinoid signaling system, which might be called "cannabinopathic medicine", joins other alternative schools of medicine such as naturopathic medicine, homeopathic medicine and osteopathic medicine.

Cannabinopathic medicine is being practiced all over this country, openly in the states which have made it legal, and clandestinely in those which have yet to do so. Osteopathic medicine, which was first practiced in the latter part of the 19th century, has now moved so close to allopathic medicine in its training and practice that it has become integrated with modern Western medicine. In the early days of medical marijuana it was assumed that it would become integrated into Western medicine as a new therapeutic; thus the effort which began in 1972 to persuade the federal government to change its Controlled Substances Act Schedule I status to Schedule II as the essential first step toward collecting the kind of data necessary for the FDA's medicinal drug approval process.

While the government has in the past made tentative moves in the direction of accepting the reality of marijuana's medical capacities, including the now defunct Compassionate IND program and the relatively recent decisions to move synthetic THC (Marinol) from Schedule I to Schedule II, and several years later to Schedule III (less harmful than drugs in Schedules I and II), it has steadfastly refused to release herbal marijuana from its Schedule I restrictions.

Today, even if it were free of its Schedule I chains, its path to legitimacy as a pharmaceutical faces other obstacles. A big one is the availability of funding for the kind of research which would allow it to be presented to the FDA. The cost of this research runs to upwards of $800 million per drug. Pharmaceutical companies do not undertake such costly research unless they have been awarded the 20 year new drug patent and are reasonably sure that, once approved, the drug will sell for the price they will need to charge during that exclusive period to cover these costs and make a profit.

The pharmaceutical companies, however, have no interest in herbal marijuana because it cannot be patented. Only in the case of some orphan drugs does the government support these developmental costs. An exception to this rule occurred in the early 1980s when the government provided major funding to a small pharmaceutical company, Unimed, towards its development of a synthetic THC which was called dronabinol (Marinol). The government assumed that with Marinol’s legal availability it would then be possible to assert that there was no longer a need for medicinal marijuana as there was now a commercially available cannabinoid pharmaceutical product.

The problem with this strategy became obvious to every patient who tried to substitute Marinol for smoked or ingested marijuana; it simply did not work nearly as well as herbal marijuana. The primary reason that some patients use Marinol today is because it is legal. The vast majority of people who use cannabis as a medicine must suffer the anxiety, uncertainty, and risk associated with obtaining and using an illegal substance. The responses of physicians, as indicated by patients’ stories, vary a great deal.

With the exception of a small minority of physicians, such as those who comprise the Society of Cannabis Clinicians, physicians’ attitudes toward marijuana as a medicine generally range from outspokenly negative to varying degrees of skepticism; a few are hostile or contemptuous, some are indifferent or unconvinced, and a growing number offer at least some encouragement or moral support. Unfortunately, even the most sympathetic are either afraid to do more because of the law or are unable to provide advice because they have been misinformed about cannabis and simply know too little about its therapeutic value.

Physicians of a century ago knew much more about cannabis than do contemporary physicians whose education about new drugs comes largely from the pharmaceutical industry. Today's physicians are often introduced to therapeutic marijuana by their patients, but even those physicians who become educated about this drug may be afraid to recommend what they know or suspect to be the best treatment out of fear that they might lose their reputations, licenses, and careers.

Even if marijuana were available as a Schedule II medicine, pharmacies would be reluctant to carry it and physicians would hesitate to prescribe it. Through computerized monitoring, the DEA could know who was receiving prescription marijuana and how much. It could hound physicians who, by its standards, prescribed cannabis too freely or for reasons it considered unacceptable. The potential for harassment would be extremely discouraging.

Unlike other Schedule II drugs, such as cocaine and morphine, cannabis has many potential medical uses rather than just a few.

Many people would undoubtedly try to persuade their doctors that they had a legitimate claim to a prescription. Doctors would not want the responsibility of making such decisions if they were constantly under threat of discipline by the DEA. Furthermore, many doctors would not consider prescribing cannabis at all because they are victims of the government's misinformation campaign. Some still believe and promote such hoary myths as the notion that marijuana is addictive or leads to the use of more dangerous drugs.

Despite the growing appreciation of its safety and usefulness as a medicine there is, after more than three decades of effort, little hope that herbal marijuana will soon be integrated into modern Western medicine. And even if it were, there would be enormous problems in controlling the distribution of a controlled medicine which has now become an established and popular Western culture recreational drug.

The pharmaceutical industry will continue to develop cannabinoid products and the government will make Control Substances Act scheduling accommodations, as they did with Marinol, to make them available as prescription drugs. Some of them will be very useful and a few may, for specific symptoms or syndromes, be more useful than herbal marijuana, but it is unlikely that they will ever displace it; herbal marijuana will always provide more choice, be less expensive and more readily available.

Because the commercial success of its cannabinoid products will vary directly with the severity of the prohibition, the pharmaceutical industry will predictably put even more pressure on the government to maintain or even strengthen its prohibition.

However, the realities of human need are incompatible with the demand for a legally enforceable distinction between medicine and all other uses of cannabis.

Marijuana simply does not conform to the conceptual boundaries established by 20th century institutions. It is truly a *sui generis* substance; is there another relatively benign drug which is capable of heightening many pleasures, has a large and growing number of medical uses and has the potential to enhance some individual human capacities?

The only workable way of realizing the potential of this remarkable substance, including its full medical potential, is to free it from the present dual set of regulations – those that control prescription drugs in general and the special criminal laws that control psychoactive substances. These mutually reinforcing laws establish a set of social categories that strangle its uniquely multifaceted potential. The only way out is to cut the knot by giving marijuana the same status as alcohol – legalizing it for adults for all uses and removing it entirely from both the medical and criminal control systems.

Perhaps in part because so many Americans have discovered for themselves that marijuana is both relatively benign and remarkably useful, moral consensus about the evil of cannabis is becoming uncertain and shallow. The authorities pretend that eliminating marijuana traffic is like eliminating slavery or piracy, or eradicating smallpox or malaria. The official federal government view is that everything possible has to be done to prevent everyone from ever using marijuana, even as a medicine.

But there is also an informal lore of marijuana use that is far more tolerant. Many of the millions of cannabis users in this country not only disobey the drug laws but feel a principled lack of respect for them. They do not conceal their bitter resentment of laws that render them criminals. They believe that many people have been deceived by their government, and they have come to doubt that the "authorities" understand much about either the deleterious or the useful properties of this drug.

This undercurrent of ambivalence and resistance in public attitudes towards marijuana leaves room for the possibility of change, especially since the costs of prohibition are so high and rising. *Because multifaceted marijuana is now here to stay as a very useful and safe medicine, as a superior recreational drug, and as an enhancer of a variety of human capacities, this more than 70-year-old destructive prohibition cannot endure much longer*. It is reasonable to assume that had there never been a marijuana prohibition, smoked marijuana, because it is both more reliable and easier to titrate, would have displaced *Tincture of Cannabis* as the cannabinoid medicine of choice.

Without prohibition, marijuana would have become as easily accessible as aspirin. It would have provided the first opportunity for herbal marijuana to compete with pharmaceutical products and its success would have assured its place as an integral part of modern allopathic medicine. However, can we now assume that the end of the prohibition against herbal marijuana, which must come sooner or later, will see it regain its rightful place in modern medicine?

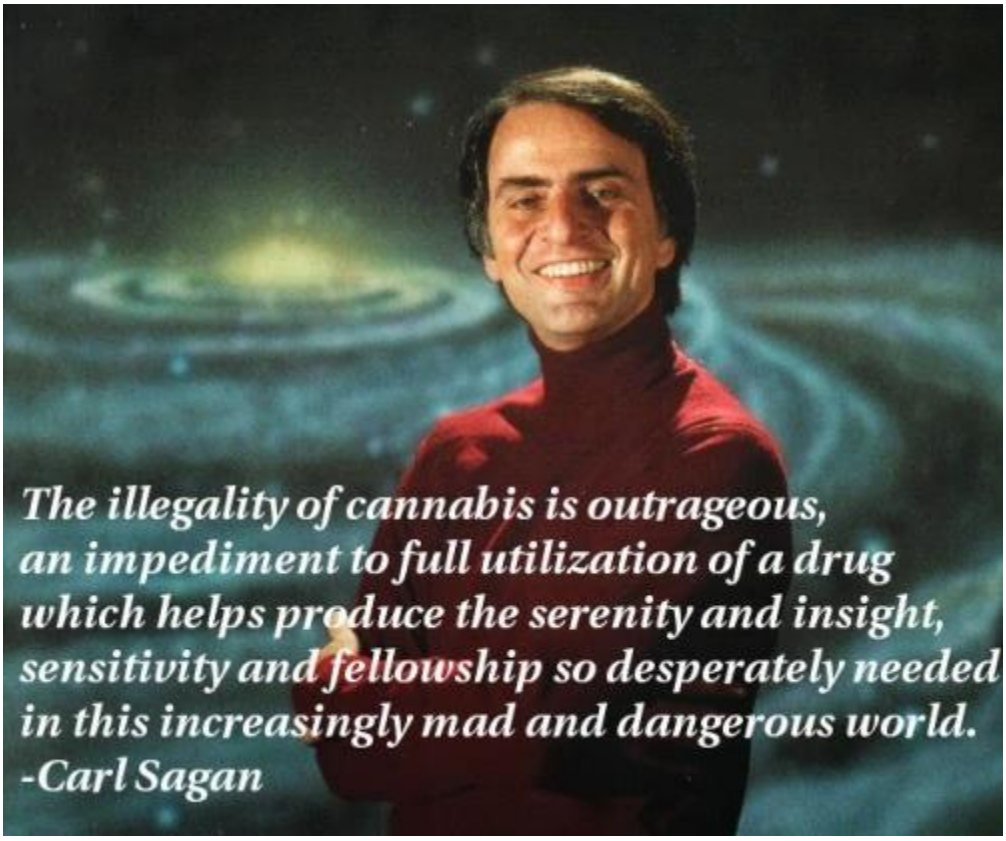
Given the enormous influence of contemporary big Pharma on the medical establishment and the government, this is not so clear. It is not just a matter of big Pharma losing out on the enormous profits to be made with cannabis in its herbal form, but also, what it would lose from the diminished sales of many of its products which will have to compete with herbal marijuana.

Even the cannabinoid products that the pharmaceutical industry has and will continue to develop are unlikely to win many if not most clinical contests on a level playing field with cannabinopathic medicine's gold standard, herbal marijuana, for which, as a product of nature, there are no exclusive rights.

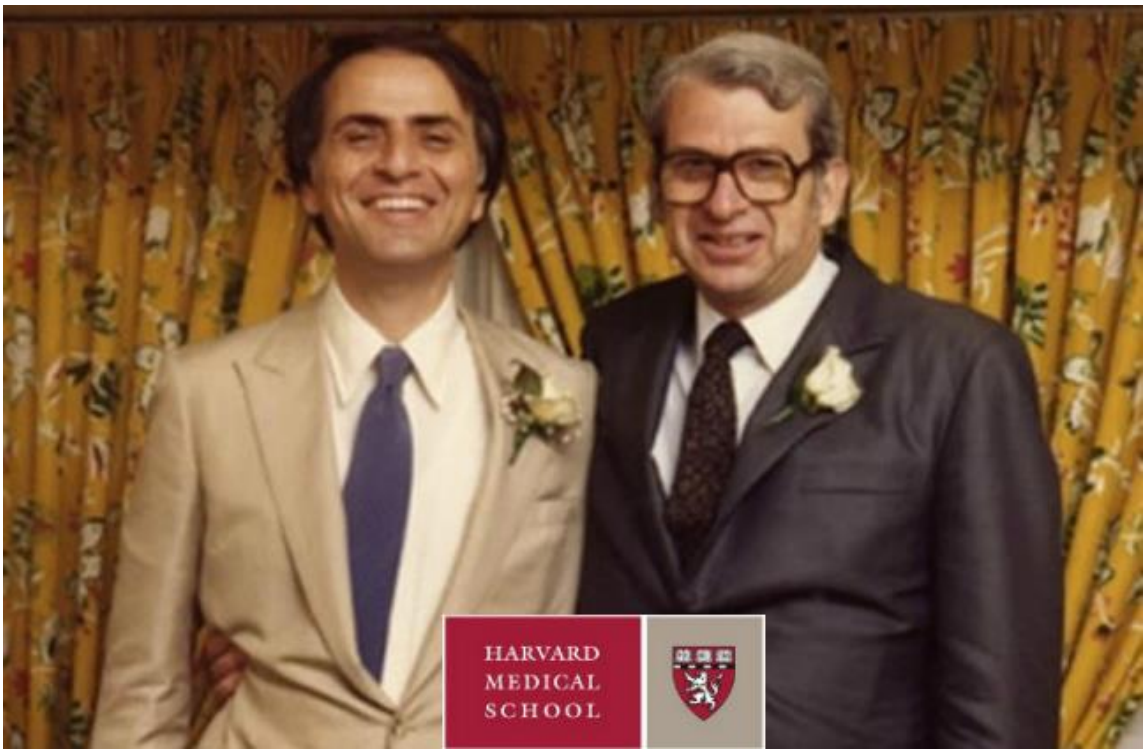
In the face of the ongoing prohibition cannabinopathic medicine will continue to grow and develop. It will continue to collect data to help it discover new medicinal uses; to develop new strains to more effectively target particular symptoms and illnesses; to generate new modifications of herbal products to facilitate topical application, ingestion and smoking or inhaling; and it will continue to train people in the newest and best ways to use these products.

In states which have not legalized the use of cannabis as a medicine, all aspects of the practice of cannabinopathic medicine will continue to be subterranean. In the states which have already made it more or less legally available as a medicine (depending on the comprehensiveness of the list of symptoms and syndromes for which the state allows it to be used as a medicine) cannabinopathic practice continues to be only partially transparent.

Because it is unlikely that any state will ever include pre-menstrual syndrome or intractable hiccups, for example, as indications for which cannabis may be useful, patients suffering from these and many other disorders will have to continue to use cannabis covertly or wait until after the prohibition comes to an end as it recently has in Colorado and Washington. This is consistent with my belief that it will be impossible to realize the full potential of this plant as a medicine, not to speak of the other ways in which it is useful, in the setting of this destructive prohibition.



Carl Sagan
Professor of Astrophysics



Professors Sagan, Greenspoon and Gupta (below)

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