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TERM PAPER

**ISSUES IN THE BIOMEDICAL APPROACH
TO THE USE OF *Cannabis* AS A MEDICATION**

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Introduction

There has been some debate, especially since the 1990s, in countries such as Canada, the United States and the United Kingdom concerning the authorization of the medical use of *Cannabis*ⁱ. This is an interesting discussion, since it reveals many of the fundamental prevailing medical assumptions and preconceptions in those countries concerning the conditions that a pharmaceutical medical agent (a ‘medication’) is expected to comply with. Although the discussion is mostly positioned in terms of assessing and balancing inherent pharmacological properties of the plant, this paper intends to show that the debate actually reveals underlying assumptions of biomedicine concerning the conditions of the ideal medication.

Further, the debate also appears to take pains to construct the medical use of *Cannabis* as very distinct and different to non-medical use. This is especially achieved by presenting arguments that intend to replace consumption behavior patterns that are typical and common to the non-medical use, with consumption behavior that is standard for biomedical practice. Although this is argued in pharmacological terms, the paper suggests that it conceals cultural practices and evaluations concerning *Cannabis* use that may threaten the biomedical structure.

Biomedical advocates of the medicinal use of *Cannabis* recognize the documented antiquity and empirically tested therapeutic use of this plant, but they also present cautions and arguments that reveal an intention to harness and channel *Cannabis* into the standard pharmaceutical canons. They are correct to express that modern medicine has specific requirements for the approval of medications, which *Cannabis* is expected to comply with (e.g. see Bloomquist 1971:109). However, this paper will show

that, as a herbal remedy, *Cannabis* has singular characteristics that make it difficult for it to be harnessed by biomedicine as easily as other medicinal plant-products have been (such as opiates). In contrast, the peculiarities of *Cannabis* make it an ideal remedy that comfortably fits into the expectations of several other long-standing medical traditions, such as Traditional Chinese Medicine. These special characteristics of *Cannabis* reveal several of the common assumptions of biomedicine. As a consequence, biomedical authors have been required to reconstruct the rhetoric concerning the therapeutic potential of *Cannabis*, so that it can be integrated as pharmaceutical agent that fits the expectations of biomedicine.

The elimination from the modern biomedical pharmacopeias

The medicinal use of *Cannabis* has been documented in several cultures, and in many cases it has been used uninterruptedly in this way for thousands of years. Medical applications of *Cannabis* are recorded in ancient Assyria, Egypt, Israel, Greece and Rome and in medieval Christian and Moslem civilizations (Bloomquist 1971:15,17,19; Gunther 1968:390; Perrine 1996:359). In modern Europe, Nicholas Culpeper's herbal (c. 1645) also recommends several medicinal uses of this plant (Aldrich 1972:21). In India and China, the millenary medical use of *Cannabis* has been continuous and remains current (Abel 1980:10-12; Aldrich 1972:16; Bloomquist 1971:15,17; Chinese Academy of Medical Sciences 1970; Huang 1999:236; Nahas 1973:2; Perrine 1996:359).

Until recently in Europe and North America, the plant was continuously recognized and prescribed for medical applications (Furst 1976:35), and recognition of its medicinal uses persisted in publications despite eventual legal proscription concerning its

use (e.g. Krochmal & Krochmal 1973:56-57; Lewis & Elvin-Lewis 1977:428). Perrine states that between 1840 and 1900, more than 100 articles appeared in medical journals describing therapeutic uses of *Cannabis* (Perrine 1996:359). *Cannabis* was medically administered to Queen Victoria of the United Kingdom and dependencies (Abel 1980:169). It was listed as homeopathic medicine in the U.S.A. during the 19th century (Abel 1980:181-182), and included in the United States Pharmacopeia until 1942 (Furst 1976:35). In Canada it was dispensed in pharmacies as an over-the-counter medicine until 1939, and used in prescriptions until 1954 (Abel 1980:234).

Nahas explains that *Cannabis* was removed from the British pharmacopeia in 1932 because of the variable potency and unexplained variations in response to its use in patients (Nahas 1973:7). This same preoccupation was also in the concerns of North American physicians, in addition to the insolubility in water of *Cannabis* derivatives (Abel 1980:183-184). Therefore, it must be understood that the removal of *Cannabis* from twentieth century Western industrialized medical practice was not based, for example, on the perceived toxicity of the plant, but rather on its incompatibility with what had become the acceptable conditions that a medicinal pharmacological agent should have. It can be inferred that at the time of removal from the official pharmacopeias of these countries, it was being required that pharmacological medications be provided to patients in controlled and exact dosages that elicited standard responses in the patient's organism and additionally, in the case of the U.S.A., that they be water-soluble so that they could be given in an injection (Abel 1980:184).

Thus, it is important to note that *Cannabis* has not been considered a viable medicinal agent essentially only during the second-half of the twentieth century, and

especially in nations that have highly technified biomedicine. The dismissal of the medicinal use of *Cannabis* is a limited geographical, historical and political phenomenon. It is related to the expectations concerning pharmacological medications that prevail in the biomedical paradigm.

Medications should be “magic bullets”

As mentioned above, despite an acknowledgement of the efficacy of *Cannabis* as a medicine (e.g. Joy *et al.* 1999, but also see further references below), one of the preoccupations of physicians was that dosage could not be controlled. Science-based biomedicine in the late nineteenth century had begun resolving this issue with the attempt to isolate ‘active principles’ and separate them from ‘inert’ molecules, in the hope of administering to the patient reliable controlled quantities of the extract, which contained the molecules deemed medicinal. Just before the turn of the twentieth century, in their efforts to turn *Cannabis* into a viable medicinal agent, British and North American chemists had succeeded in isolating several *Cannabis* derivatives and extracts for use in medicinal applications, such as cannabitol, cannabin, cannabindon, cannabine and cannabinon (Abel 1980:169-170, 184).

More than a century after the first isolation of *Cannabis* extracts by British chemists, the position of mainstream biomedicine concerning the centrality of this objective has remained the same. In 1999, the U.S. Institute of Medicine declared that if there is any future for *Cannabis* as a medicine, it lies in its isolated components, the cannabinoids and their synthetic derivatives, because isolated cannabinoids will provide more reliable effects than “crude plant mixtures” (Joy *et al.* 1999:11). These researchers

argue that the amounts of cannabinoids and their relative abundance in *Cannabis* plants vary with growing conditions, including humidity, temperature and soil nutrients; and that the chemical stability of cannabinoids in harvested plant material is also affected by moisture, temperature, sunlight and storage conditions (Joy *et al.* 1999:26). It is interesting to note how the U.S. Institute of Medicine's (1999) statement quoted above also implies that the documented millenary antiquity of medicinal use of *Cannabis* is generally irrelevant to its future, since the current *-and future-* demand is for purified isolated-'active principle' medications. Benson and Watson explain that "plants contain a variable mixture of biologically active compounds and cannot be expected to provide a precisely defined drug effect" (*in* Joy *et al.* 1999:viii-ix).

The search for synthetic derivatives is a logical further step in this direction. The additional advantage would be that new synthetic medications can be produced industrially and are easily integrated into the well-established organization of the pharmaceutical industry and its modes of marketing and distribution. Therefore, while recognizing the therapeutic potential of *Cannabis*, industrialized biomedicine requires that the medical utility of the plant be channeled through the current approved practices for medical prescription and the established economical mechanisms for production and distribution of medications.

Biomedicine is often understood to prefer pharmacological agents that conform to the "magic bullet" model of medication. Briefly, the "magic bullet" is a discrete compound or molecule that causes or facilitates a very specific and known reaction in very specific organic receptor pathways in the patient's body. Thus it has effects which, ideally, exclusively affect and reverse the diagnosed organic casual agent of sickness.

The model of the “magic bullet” is related to an organic causal explanation for disease. Primarily, biomedicine is oriented to allopathically reversing or neutralizing the cause of disease. This can be performed through many mechanisms, such as surgery (e.g. extirpation of a malignant tumor) or single pharmacological medications that seek to counter the cause of illness (e.g. a physiological lack of insulin production is treated with insulin injections).

Some other medical systems would find biomedical allopathic logic reductionist, and insufficient for treating the patient’s illness adequately. Traditional Chinese Medicine serves as a useful example, since it has supported the medicinal value of the *Cannabis* plant for thousands of years; for example, the text of the *Herbal Classic* (c. 101 B.C. – though attributed to knowledge developed c. 2800 B.C.) (Huang 1999:7) lists *Cannabis* as a mild laxative used to treat constipation of debilitated or elderly persons (Huang 1999:236). In contrast to the “magic bullet” notion, practitioners of Traditional Chinese Medicine typically prescribe four or more herbs together, believing that drug interactions synergize the major action of the principal herb or smooth its possible “side effects” (Huang 1999:3). The Chinese Academy of Medical Sciences (1970) confirms *Cannabis* as a treatment for constipation, for which it should be decocted with three other herbs (that differ whether there has been fever or following labor).

As has been seen, coherent with the “magic bullet” notion, biomedical pharmaceuticals prefers to dispense with even a single plant or plant parts, under the assumption that ‘inert’ or even harmful molecules are also being administered to the patient. For example, the U.S. Institute of Medicine warns that smoking *Cannabis* plant parts “is a crude THC [tetrahydrocannabinol] delivery system that also delivers harmful

substances” (Joy *et al.* 1999:4). Despite this, empirical research has found that the majority of those who have used *Cannabis* to self-medicate such conditions as chemotherapy nausea or paraplegic spasticity seem to prefer smoking *Cannabis* to oral capsules of Δ^9 -THC which they find unpleasant and anxiety-provoking (Perrine 1996:349; see also Joy *et al.* 1999:4). Perrine suggests that the smoked plant parts contain additional cannabinoids, such as CBD (cannabidiol), which contribute to the pleasant effects of smoked *Cannabis* and that are unavailable to patients solely administered with isolated THC (Perrine 1996:349; see also Goldstein 2001:204).

Similarly, Perrine also quotes a survey of oncologists who expressed that smoking *Cannabis* plant parts produced better results than an oral dose of dronabinol (industrially produced Δ^9 -THC in pill form (Joy *et al.* 1999:16)), and suggests that this “is in no small part due to the erratic absorption of the highly lipophilic drug from the intestinal tract – particularly the enteric system of a nauseated, vomiting patient” (Perrine 1996:362). Perrine also considers the additional therapeutic presence of CBD in *Cannabis* smoke (Perrine 1996:362).

Therefore, despite the “magic bullet” ideal of biomedicine, the empirical comparison of smoked chemically-composite plant products *versus* the administration of isolated chemical compounds indicates that both patients and physicians find that smoking parts of the plant is more effective and satisfactory. Although *Cannabis* smoke may contain some harmful chemicals, it also appears to contain chemicals that enhance the therapeutic benefits.

“Magic bullet” therapies are also problematic for certain diseases in which a multitude of complex alterations occur in the patient’s organism. Just as Traditional

Chinese Medicine recognizes that medicinal herbs promote desirable reactions that are evaluated as ‘therapeutic’ and undesirable reactions that, in biomedicine, are commonly labeled as “side effects”, biomedicine also finds itself needing to address this issue. For certain complex illnesses the patient is often administered a variety of discrete pharmacological agents, which intend to interact with each other to enhance or minimize certain effects caused by the other medications. One example of this is the nausea and vomiting that are induced by chemotherapy given to cancer patients, and is usually treated by administering anti-emetic medications. In practice, this is a concession to the ancient wisdom of the synergism of several compounds, and a pragmatic recognition of the insufficiency of a simplistic “magic bullet” ideal.

“Side effects” are iatrogenic illnesses caused by therapeutic practice. That they are viewed as problematic is coherent with the biomedical paradigm for which specific diseases require specific treatment (Moerman 1979 *in* Etkin 1992:100); where there this is a ‘primary’ effect of treatment, to which all others are subordinated (Etkin 1992:100) and not considered to be therapeutic in themselves. When biomedicine seeks to ameliorate the impact of “side effects”, in practice, it allies with the understanding of other medical systems -such as Traditional Chinese Medicine- that often indeed it is not only the disease itself which needs to be treated. With this understanding, *Cannabis* has been repeatedly recommended over the past decade in Western industrialized nations as an *adjunct therapy* to standard biomedical treatments of cancer, AIDS and certain neurological diseases (see Joy *et al.* 1999; Iversen 2000; Institute of Medicine 1982). The medicinal value of *Cannabis* for these cases is to alleviate the “side effects” of the central treatment.

Chemotherapy in cancer patients, for example, typically provokes nausea, appetite loss, chronic pain and psychological discomfort and depression (Perrine 1996:360). *Cannabis* is especially advantageous over other existent medications precisely because, unlike focally target-oriented “magic bullets” (such as the approved anti-emetics), it can treat all of these varied “side effects” simultaneously. *Cannabis* is further recommended in these cases because it has been shown to have sufficiently negligible (at least for these situations) undesirable “side effects” of its own. It has been suggested that combined with other medications, it would allow for greater therapeutic efficacy without cumulative toxicity (Institute of Medicine 1982:150).

The putative risks of long-term use for chronic conditions

In view of the discussion so far, a primary distinction needs to be made concerning the medical use of *Cannabis*: rather than cure disease, *Cannabis* appears to be therapeutically effective for the relief of symptoms –which themselves can be caused by disease and also by treatments for disease (Joy *et al.* 1999:30, 137-138). Although relief of symptoms is not an objective that is foreign to biomedical practice, the point to be made is that the therapeutic use of *Cannabis* does not fit into a basic biomedical ideal that therapy should cure disease. Instead, the therapeutic potential of *Cannabis* is more coherent with other medical systems that primarily treat the patient and the illness, and do not necessarily attempt to seek or to neutralize singular causal agents (e.g. see Ohnuki-Tierney 1984).

It has been reported that within medical pluralism in Asia, people tend to perceive Western biomedicine as aggressive and especially appropriate for severe and pathogen-

specific diseases, whereas Traditional Chinese Medicine, for example, is adequate for treating symptoms and especially chronic diseases and is a generally benign intervention (e.g. see Kleinman 1980). This view has also begun to be held in the West in support of the expansion of so-called ‘alternative therapies’ (see Sharma 1990). In this vein, biomedical researchers are now advocating the use of *Cannabis* for chronic conditions such as certain neurological disorders (e.g. muscle spasticity and multiple sclerosis) in which remission of symptoms and improved quality of life can be observed, even though the disease itself is not eliminated (see Joy *et al.* 1999:159ff; Institute of Medicine 1982:147; Iversen 2000:155ff).

The long-term use of *Cannabis* that is implicit in its prescription for chronic illnesses, however, is a matter of discrepancy among researchers. Although *Cannabis* has been found to be beneficial for a variety of conditions, there is some concern that long-term use may involve its own risks. One concern is that *Cannabis* may have a potential for dependence (e.g. see Joy *et al.* 1999:6). There has been much research on this matter over the past decades since the generalized prohibition of use in the second-half of the twentieth century. Findings have been contradictory, but the latest views appears to indicate that if there is a potential for dependence it is less than that of benzodiazepines, opiates, cocaine, nicotine and other commonly prescribed medications and legal substances (Joy *et al.* 1999:3). Joy *et al.* (1999) state that withdrawal symptoms can be observed, but they are mild when compared to opiates or benzodiazepines (Joy *et al.* 1999:3,6). Whereas it is quoted that death can occur from benzodiazepam dependence withdrawal (Relkin 1972:362), no such similar situation has been documented ever for *Cannabis*. In addition, a ceiling effect has been noted for *Cannabis* use in humans (see

Hepler *et al.* 1976 in Institute of Medicine 1982:142), which also appears to preclude the risk of overdose.

Therefore, the issue of *Cannabis* dependence, of itself, is not justifiable as an argument against long-term medical use. Biomedicine approves of authorizing chemical dependence in many cases (e.g.: hormone therapies, cardiac prescriptions, methadone therapy, psychiatric medications, etc.) when it is perceived that the benefits outweigh the risks of dependence. Further, in many cases, currently authorized chemical dependences entail risks that are often higher than those alleged for long-term *Cannabis* use.

A second important argument that has not been resolved concerns the long-term risks of smoking plant products. Generally speaking, most biomedical researchers are in agreement that although *Cannabis* smoke delivers a variety of therapeutic cannabinoids to the patient, it also contains substances that have been identified as harmful in tobacco (*Nicotiana* sp.) smoke (e.g. Goldstein 2001:202; Benson & Watson in Joy *et al.* 1999:viii). For example, the U.S. Institute of Medicine has stated that, “except for the harms associated with smoking, the adverse effects of [*Cannabis*] use are within the range of effects tolerated for other medications” (Joy *et al.* 1999:5).

However, despite the finding that chemicals present in *Nicotiana* smoke are also found in *Cannabis* smoke (Joy *et al.* 1999:111), numerous investigations have not yielded substantive data to indicate that *Cannabis* smoke, of itself, is associated to respiratory diseases (Joy *et al.* 1999:111-119). Moreover, long-term *Cannabis* users do not display significant differences in this matter with those users who have been smoking *Cannabis* for less than ten years (Joy *et al.* 1999:113). Further, studies of populations that have smoked *Cannabis* for many years do not reveal obvious illnesses that can be linked to

this (Weil 1993 *in* Perrine 1996:356). The U.S. Institute of Medicine consistently explains that research is inconclusive concerning the putative harmful effect of *Cannabis* smoke on the respiratory system, and that such a connection cannot be established (Joy *et al.* 1999:119).

In contrast, there is some evidence that *Cannabis* smoke may be therapeutic for the respiratory system. For example, *Cannabis* smoke generally elicits bronchodilation (Institute of Medicine 1982:3; Stimmel 1993:122). This may help understand why it is considered as an effective treatment for asthma (Carroll 1993:347), a finding that has been confirmed experimentally (see Institute of Medicine 1982:147-148). This coincides with the claim of long-term smokers themselves who assert that *Cannabis* “clears out the lungs” (Bloomquist 1971:99), promoting expectoration. Researchers have suggested that CBN (cannabinol) and CBD (cannabidiol) may be responsible for the bronchodilator activity (e.g. Carroll 1993:347; Institute of Medicine 1982:148). Therefore, it is possible that despite *Cannabis* smoke containing substances that are deemed plausible for causing respiratory obstructions, irritations and diseases, it may also contain substances that neutralize these noxious effects, and actually override them, promoting a clearing of airways.

It has already been mentioned that smoking may be a preferred drug-delivery mode for patients that have upset digestive systems. Smoking is also known for allowing a rapid onset of effects, as molecules enter the circulatory system almost immediately. Thus, smoking is not only more fast-acting and reliable than oral pills (of THC, for example), but the dosage, therefore, can be controlled more effectively (see e.g. Brounstein 1995). Smoking, as a drug-delivery mode, adequately addresses biomedical

concerns about the ideal medication delivery system which should be “rapid-onset, reliable, and safe” (Joy *et al.* 1999:4). It was already mentioned above that both patients and physicians, in practice, find smoking *Cannabis* to be more effective and pleasant than taking oral THC pills.

However, despite this, some researchers insist that smoking eventually should be replaced by a non-smoked rapid-onset cannabinoid delivery system (e.g. Joy *et al.* 1999:11). Generally speaking, they justify this on the putative harmfulness of smoking unpurified plant products, which remains to be conclusively proven. It is possible, therefore, that the grounds for rejecting smoking as an acceptable drug-delivery system are not based on purely medical grounds but also, importantly, on cultural aspects related to the aesthetics and epistemology of biomedical practice.

The effects on the respiratory system of smoking *Nicotiana* have been heavily studied over the past decades in the West. Such studies probably numerically outnumber those that have been performed concerning the smoking of other plants, including *Cannabis*. It is noticeable in reports that the effects of *Nicotiana* smoke have been used as a model to anticipate the possible harmfulness of *Cannabis* smoking, in particular because some of the same compounds are found in both.

Studies performed on the cellular level have been the most effective in showing that prolonged exposure to *Cannabis* smoke may cause a variety of types of tissue damage and malformation (e.g. see Joy *et al.* 1999:118-119; Schlaadt & Shannon 1990:255), though in no cases cancer or other severe diseases (Joy *et al.* 1999:119). However, it is also noted by researchers that prolonged exposure to any kind of substance will inevitably provoke irritation and damage in tissue samples (Perrine 1996:356). In

contrast, clinical and epidemiological studies of actual habitual *Cannabis* smokers have not been conclusive to determine respiratory damage (see e.g. Joy *et al.* 1999:118). Therefore, at best, researchers have suggested that *Cannabis* smoke may be a “risk factor” (Joy *et al.* 1999:119) in the development of respiratory diseases, but at this stage cannot be considered a pathogenic causal agent in itself (see e.g. Institute of Medicine 1982:3).

Thus, the practice has been to use the knowledge developed concerning the health risks of *Nicotiana* smoke as an analogy to anticipate the risks of *Cannabis* smoke (see Iversen 2000:259). So far, however, research has shown that the analogy is weak. *Cannabis* smoke does not affect tissues in the same pathological way that *Nicotiana* smoke does, despite sharing some of the same compounds. Therefore, the anticipation that *Cannabis* smoke is harmful to the respiratory system is based on an evaluative preconception. Harm is assumed, rather than proven.

This has been a common underlying assumption in much of the research which has been performed to assess the health risk of non-medical *Cannabis* use. For example, research has typically operated by exposing cannabinoids to healthy human or animal cells (e.g. Braude 1972), specifically in order to assess damage and toxicity. Whereas there are numerically less investigations that expose cannabinoids to unhealthy cells or tissues, in order to assess their restitutive and therapeutic effects (for example, the studies of tumor-suppression effects, quoted in Schlaadt & Shannon 1990:266). There appears to be an epistemological assumption that *Cannabis* smoke is harmful, because *Nicotiana* smoke is.

In addition to the epistemological assumptions surrounding the practice of smoking, it is also possible that a contemporary smoking of *Cannabis* in hospitals and biomedical clinics may clash with current therapeutic aesthetics, partly due to connotations related to this practice that are external to the medical context. The therapeutic smoking of plant products is acceptable in many non-Western medical practices. For example, tobacco (*Nicotiana* sp.) is smoked by indigenous and mestizo Amazonian healers (Londoño-Sulkin personal communication; Luna & Amaringo 1999), and the smoke itself is blown over the patient and objects, since it is considered to be intrinsically therapeutic and purifying (a contrast with the current Western evaluations of *Nicotiana* smoke, which is perceived to be polluting and noxious). Opium (derived from *Papaver somniferum*) was used medically since antiquity and began to be smoked in the seventh century A.D. in the Islamic cultures of Asia Minor, and in China in the seventeenth century (www.heroin.org 2004). In the past, therapeutic smoking was also acceptable in the West. For example, the smoking of *Datura* sp. to relieve asthma was introduced into England in 1802 by General Gent who learned this use in India (Felter & Lloyd 1898).

In order to understand the resistance to therapeutic smoking, it may be reasonable to assume that patients, family and other parties may question the therapeutic potential of a practice which in other contexts has often been portrayed as damaging. Since the widespread prohibition of *Cannabis* in the second half of the twentieth century, there have been innumerable investigations and publications which have not only attempted to establish that *Cannabis* use is harmful (e.g. Giannini & Slaby 1989), but also portray *Cannabis* consumption behavior itself as pathological (e.g. Nahas 1973:15; Schlaadt &

Shannon 1990:38). However, this paper has shown that recent research supports the therapeutic potential of *Cannabis* for certain treatments. The objection to smoking in this case concerns the effects of the literature that has portrayed the non-medical use of *Cannabis* as harmful. This is in addition to the widespread alert that smoking *Nicotiana* is harmful.

However there also may be challenging aesthetic issues at stake surrounding the therapeutic smoking of *Cannabis*. The reader is adverted that the following hypothesis presented below requires being assessed with ethnographic data concerning the medical use of *Cannabis* within the clinical and hospital environment, which is unfortunately lacking in the numerous medical reports concerning the therapeutic inclusion of *Cannabis* into the biomedical context.

Non-medical *Cannabis* smokers habitually engage in certain ritual practices that frame consumption behavior. A singular distinguishing characteristic of common non-medical *Cannabis* use is the sharing of the cigarette (this is widely cross-cultural, but see Green & Miller 1975:510 for a reference to Canadian users), a practice that is quite unusual when compared to the non-medical consumption of other substances, such as cocaine, LSD, or psychiatric pills. The sharing of the *Cannabis* cigarette, like the sharing of sacred Tobacco (*Nicotiana* sp.) pipes in rituals of the Native American Church, is sometimes understood by users to promote feelings of camaraderie and bonding (e.g. see Comitas 1975:129). This may be a disturbing practice for the therapeutic aesthetics of biomedicine. Because biomedicine intends to prescribe medication that is specific and targeted to the needs of the patient, it is not expected that the patient will share the

consumption of the medication with other persons, such as family and friends. Especially, the patient would not share the medication with the physician and other medical staff.

Biomedicine generally isolates the patient's body and body processes from the social context so that it can be treated as an object subordinated to the authority of medical practice (see Lyon & Barbalet 1994:53). However, the eventual sharing of prescription medicinal *Cannabis* would subvert this intention. Firstly, it threatens the attempted isolation of the patient's body processes from those of the patient's immediate social environment, as family and friends also participate in the healing process, jointly consuming the medication. Secondly, it threatens the mythical legitimacy of prescribed medication as being unique for the treatment of the patient's specificity –and possibly dangerous to others. Thirdly, the sharing of the medication is a statement of patient autonomy. And fourthly, if medical staff participates, then the rigid separation of roles that is used to justify objectivity is also jeopardized.

In other medical systems, such as Amazonian mestizo shamanism (e.g. see Dobkin de Rios 1970) the sharing of medication between healer, patients, family and friends is sometimes considered recommendable, as it allows for greater synchronization, communication and 'tuning into' each other's situation. However, such a practice subverts basic tenets of the biomedical model.

Anthropologists have noted that therapeutic practice in many medical systems, in contrast to biomedicine, often constitutes enactment of restitution or strengthening of social ties and bonds (e.g. Whiting 1950; see Turner 1987:57). Healing is a communal (or at least, kin) affair, and therapy often involves making this explicit. Biomedicine, however, creates the passive medical body that the patient has (Lyon & Barbalet

1994:53), and seeks to isolate this body from social ties and commitments. Primarily, biomedicine treats the body and the disease, rather than the patient and the illness. However, the sharing of *Cannabis* would constitute an autonomous patient/family intent to include improved socializing and social integration of the sick person as part of the therapeutic process.

My sole personal acquaintance with a patient who unofficially (that is, without a medical prescription) used *Cannabis* for medical purposes while interned in a hospital does not offer enough data to assess in detail how this practice was viewed by the medical staff, though I know that it was not restricted. This patient did habitually share the cigarette with friends and family members. Perhaps the point is that this practice was condoned by the medical staff, though they did not explicitly endorse it. Sharing *Cannabis* is problematic for biomedicine when it is a prescription drug, but not if it is a relatively private practice incurred into by patient initiative and performed behind closed doors.

In addition, the preference for substituting smoking with, say, pills or injections may also be related to the biomedical focalized interest in the effects of a medication, and less on the process of consumption as a therapeutic cultural event. Taking oral pills or injections are quick modes of drug-administration that can be consummated in single event. Smoking, however, takes longer and usually entails some culturally-stylized behavior. The biomedical concern regards how the chemicals affect the body. There is less therapeutic interest in how the patient stylizes and accommodates behavior. Further, if the patient can manipulate the consumption behavior, this involves a patient autonomy. A passive body that is injected fits more coherently into the biomedical model.

Another possible factor in the aesthetics of therapy concerns the aroma of smoked *Cannabis*. Researchers have noted that the ‘active principles’ in *Cannabis* are odorless, yet users themselves often testify and evaluate the quality of a certain batch or of a subspecies (e.g. *Cannabis indica*) according to the aroma (e.g. see Perrine 1996:349), and this is purported to be related to the potency and effects. It is possible, then, that the smoking of aromatic *Cannabis* may also be important in contributing to patient satisfaction with the medication -at least in terms of patient expectations concerning the efficacy of the medication. The aroma itself may also have soothing effects. It is also a notably different odor to those that prevail in the hospital environment, which, for example, might be intensely uncomfortable for the nauseous chemotherapy patient. However, despite these advantages, it is likely that the hospital context actively seeks to expunge and forbid such odors (as well as those of other smoked plants or other aromatic sources), in the attempt to create an environment that aesthetically impresses staff, patients and the public as being sterile and “technological”.

The threat of benignity

The wide variety of symptoms (especially “side effects” of aggressive therapy) that *Cannabis* can ameliorate, in addition to the psychological comfort that it facilitates in most patients such as anxiety reduction and sedation (Joy *et al.* 1999:4), together with the diverse benefits that stem from the aesthetics of healing that are involved in the eventual sharing of smoked aromatic *Cannabis* cigarettes clearly distinguish the medical use of this plant from the typical therapeutic and intervention models that prevail in technological biomedicine. In addition, the medical use of *Cannabis* may also question

other assumptions or preferences of biomedical pharmaceuticals. One of these is the, by now, well-documented benignity of this medicine.

Since widespread prohibition in the second half of the twentieth century, there have been innumerable studies concerning the health effects of non-medical *Cannabis* use. Abel reports that in 1979 he was able to locate more than 8000 references to this plant, most of which were published after 1965 (Abel 1980:258). Bloomquist (1971:94-95) says that more research has been done on *Cannabis* “than on the majority of drugs currently available on the market”. Seymour & Smith (1987:93) make a similar statement. *Cannabis* is considered by Carlini *et al.* (1972:154) to “be unique among drugs because it seems to be the only one on which more research has been done in man than in laboratory animals”. Much of the recent research involves isolated protocols.

There is also a more than a century old history of government-sponsored multidisciplinary inquiries concerning long-term *Cannabis* use. One of the first was the Indian Hemp Drugs Commission Report in 1894 ordered by the British Government to assess the traditional and widespread use of *Cannabis* in India, with the explicit purpose of defining whether it should be prohibited. The Commission concluded that traditional *Cannabis* use was harmless and in some cases beneficial, and that any abuse was less harmful than that of alcohol (Iversen 2000:242). Mayor La Guardia of New York City also ordered an inquiry in 1940, using a more sophisticated research protocol (e.g. including several types of psychology tests), which also concluded that “[p]rolonged use of the drug does not lead to physical, mental or moral degeneration, nor have we observed any permanent deleterious effects from its continued use” (Iversen 2000:244), and also dispelled that there is a link between non-medical *Cannabis* use and crime,

violence or use of cocaine, heroine or morphine (Iversen 2000:244). In Canada, the La Dain Report in 1970 concluded that prohibition should be repealed and that non-medical use of *Cannabis* was not a cause of concern (Iversen 2000:247).

Historians of the prohibition of *Cannabis* generally agree that it was not the result of a perceived medical harmfulness of use of the plant, but rather due to racist politics in the U.S.A. in the late 1930s (e.g. see Abel 1980). Thus prohibition has been a political issue, and not primarily medical. This situation continues in some places. In 1991, the U.S. Department of Health and Human Services began phasing out an approved program that supplied medical *Cannabis* to some patients, only because it undercut the official administration policy of prohibition (Carroll 1993:346). Several states of the U.S.A. passed laws in the late 1990s that allowed the prescription of medicinal *Cannabis*, but there has been difficulty in applying these laws, because they are at odds with federal laws (Joy *et al.* 1999:17-18).

Since the late 1990s, there has been a trend for medical associations to release reports that highlight the therapeutic potential of *Cannabis*. The current official medical consensus is that *Cannabis* use is quite benign. However, the benignity of *Cannabis* may be a hindrance for its automatic reintegration into the pharmacopeias. For example, Benson & Watson (*in* Joy *et al.* 1999:viii) explicitly declare that *Cannabis* “is not a completely benign substance. It is a powerful drug with a variety of effects”. Instead of trying to evaluate the sources of this statement, for example, it may be more profitable to speculate on the effects. That is, it is useful to consider what the political implications are for some biomedical practitioners to assert that *Cannabis* is a “powerful drug”.

A comparison can be made with other plant-products that are currently used both medically and non-medically, to suggest an understanding. Opiates, which serve as a clear example, also have a millenary antiquity of medical use. The medical use of opiates (such as morphine and methadone) remains current, and has been fully integrated into biomedical practice and its pharmaceutical system. Opiates can be administered following the accepted biomedical canons. They are solely prescribed by the physician, they are controlled substances that are administered to the patient orally or by injection and often by medical staff or under strict medical supervision. Opiates, like *Cannabis*, are also used non-medically by certain sectors of the population. However, characteristically, non-medical opiate users (especially addicts) tend to perceive their behavior as destructive and eventually detrimental to their health (as I have found from previous research). There is a strong awareness of the potential of abuse of opiates. There isn't a strong social movement or political consensus to legalize or decriminalize the non-medical use of opiates.

The point to be made at this moment, then, is that the non-medical use of *Cannabis* is generally not perceived to be especially dangerous. For as long as it is perceived to be benign, biomedicine is incapable of justifying its typical mechanisms of control over prescription, distribution, administration and sale of *Cannabis* as a medication. An interesting anthropological issue to consider, therefore, is that the conditions of the reinstatement of *Cannabis* as an approved medication are heavily influenced by the currently extant widespread non-medical use, and not solely by conditions intrinsic to the pharmacology of the plant.

A curious situation can be observed that also distinguishes *Cannabis* from discussions concerning other substances, such as opiates. During the brief decades after prohibition, that coincided with the increasing spread of social non-medical use of *Cannabis*, and the sudden surge of multitudinous studies that intended to define once and for all whether the growing practice was harmful to health or not (or to what degrees), the knowledge, concern and actual use of *Cannabis* as a medical agent was virtually abandoned. Preoccupation and concern over *Cannabis* focalized during those decades almost exclusively on trying to assess and evaluate the expanding non-medical use.

A similar situation did not occur with other substances. The medical use of opiates, for example, was never discontinued or disputed, regardless of the non-medical uses that have existed simultaneously (for centuries). This paper suggests that this difference is due to the benignity of *Cannabis*, which has so often been the issue at stake. Benignity poses a political problem regarding the legitimacy of restriction and control. The dangers of opiate abuse, in contrast, have been well-known for centuries.

Within the typical biomedical paradigm that views therapy as a potentially dangerous intervention that requires submitting the passive body (or body parts) to the expertise of skilled professionals who allopathically counter the effects of discrete pathogens using “powerful drugs”, for several reasons reviewed in this paper, *Cannabis* does not seem to have an automatically assigned position. The recognition of the therapeutic potential for *Cannabis* appears to require either altering the biomedical model, or reconstructing *Cannabis* as a medication that conforms to the model.

One way of doing the latter, is by attempting to re-frame it as a “powerful drug” (as do Benson & Watson (*in Joy et al.* 1999:viii)). Other strategies that have been

considered in this paper include dismissing the use of chemically composite plant parts (that non-medical users prefer), with the argument that they contain unknown chemicals (that are therefore potentially harmful, researchers imply - see Schlaadt & Shannon 1990:266); and the replacement of smoking (the most widespread mode of non-medical consumption) with other forms of drug-delivery, such as pills. In short, biomedical researchers advocate a modification in the behavior pattern of the consumption of *Cannabis*, so that it simulates the standard drug-delivery mechanisms of other medications and ceases to bear resemblance to the non-medical use. The standard drug-delivery mechanisms of biomedicine reassert the power imbalances, especially the patient's dependence.

Another interesting anthropological issue to consider is the legal environment in which a medical use of *Cannabis* has been authorized as a legitimate medication, in nations where the State's health policies adhere to and support the biomedical paradigm. In the example considered below, there is an official rhetoric that frames *Cannabis* as a dangerous drug that requires special authorization to be prescribed, and can only be used for treating a limited type of patient with very severe conditions.

The medicinal use of *Cannabis* is currently legally approved in Canada at the time of writing this paper. However there are important restrictions concerning access, which limit the kind of patient that is eligible to receive a *Cannabis* prescription, as well as the physician that is authorized to prescribe it. Generally speaking, *Cannabis* is not offered as a first-choice medication. Already this implies a legal discrimination concerning the therapeutic viability of *Cannabis*, and a notorious legal restriction on both patient and physician autonomy. There are three categories of patients who are authorized to receive

medicinal *Cannabis* prescriptions in Canada. Briefly, they either: have a terminal illness and are expected to die within twelve months, or they have symptoms of serious medical conditions and do not respond to other treatments (e.g. severe pain and/or persistent muscle spasms from neurological diseases; or pains, anorexia, weight loss, severe nausea from cancer or HIV/AIDS infection), or they have symptoms of some other serious medical condition not listed in the second category and do not respond to other treatments (Office of Cannabis Medical Access 2004a). Clearly the legal restrictions explicitly make the use of *Cannabis* a last option medication. This political position appears to make the authorization of medicinal *Cannabis* more of a reluctant compassionate allowance, than a full-hearted recognition of the scientifically proven therapeutic benefits and limited known risks.

Official publications of the government of Canada often explain that *Cannabis* is not an officially approved medical drug in any country in the world (e.g. see Health Canada 2000). The publications also explain the measures that the government office, Health Canada, is taking to assess the benefits and risks of a medical use of *Cannabis*, such as sponsoring research. Health Canada is also concerned about the source of *Cannabis* that would be used in research or medical prescriptions (see Health Canada 2000). For example, *Cannabis* that has been seized by law enforcement cannot be used because “[a]s the source and quality of the drug is seldom known, the risks to humans cannot be easily evaluated. There is uncertainty about contaminants such as herbicides and pesticides which could be detrimental to health” (Health Canada 2000).

Despite this rhetoric, independent civil associations that support the medical use of *Cannabis* have found governmentally-provided *Cannabis* to be of poor and dangerous

quality. For example, samples of government-provided medicinal *Cannabis* have been found to contain dangerously high levels of arsenic (medicalmarihuana.ca 2004a). Apparently this is because it is grown in fields in Manitoba that were former copper and zinc mines. Tests have found the soil in this area to be heavily contaminated with poisonous metals, such as arsenic and lead (medicalmarihuana.ca 2004b). A researcher of Environment Canada's National Water Resource Institute declared that the local water sources are also heavily contaminated with poisonous metals (medicalmarihuana.ca 2004b). Concerns have also been raised about the use of chemical fertilizers in the cultivation process and the sterilization by gamma irradiation of the government-provided *Cannabis* (medicalmarihuana.ca 2004).

In addition, tests supported by civil associations have found that samples of government-provided medicinal *Cannabis* contain approximately four times less cannabinoids than those obtained from a civil provider of medicinal *Cannabis* (medicalmarihuana.ca 2004a). Patients have complained about government-provided *Cannabis*, which is claimed to produce headache and other discomforts as well as requiring consuming four to six times as much to achieve the medicinal effect. Many patients have demanded a refund on the government's *Cannabis* (medicalmarihuana.ca 2004a).

This situation shows that there is an official rhetoric that stresses the danger of medicinal *Cannabis*, whereby the public is reassured that the government is concerned with authorizing a medical use of *Cannabis* only when other treatments have proved insufficiently efficacious and the patients are in severe or terminal conditions. The rhetoric also expresses that the government will seek to provide safe and high-quality

Cannabis samples for patients, to avoid the dangers of *Cannabis* obtained from private sources. Generally speaking, the legal restrictions and the official rhetoric portray *Cannabis* as a dangerous substance. In practice though, the actual *Cannabis* provided by the government has been found to be medically less efficacious, and even poisonous due to contaminants. The point I wish to stress is the autonomy of the official rhetoric in its portrayal of *Cannabis* as inherently dangerous and requiring justified restrictions, independently from what appears to be the actual empirical situation.

In contrast with government practice and rhetoric, civil associations that support the medical use of *Cannabis* have provided detailed recommendations of ideal growing conditions (for example, organic) –as well as applying them-, the effects of the interaction of *Cannabis* with other medications (such as morphine, aspirin and tylenol), recommendations for patients with special conditions (e.g. AIDS, muscle spasms, etc.), and have compiled very relevant lists that specify which biological subspecies (strains) of *Cannabis* are ideal for each medical condition. For example, patients undergoing radiation therapies or chemotherapy are recommended by one source to use “El Peru” strain, which is a hybrid that is 40% *Cannabis indica* and 60% *Cannabis sativa*. The patient should harvest the relevant parts seven weeks after flowering. Counter-indications are also given (see Recommended Strains 2004). Patients with arthritis, lower back pain or pain in the joints are recommended to use “Blue Kiev” strain, which is a hybrid that is 70% *Cannabis indica* and 30% *Cannabis sativa*. It should be harvested 60-65 days after flowering. Counter-indications are also given (see Recommended Strains 2004).

The purpose of providing these examples is to suggest that the chemical variability of the several botanical strains of *Cannabis* should serve as a fertile ground for

future research, rather than a cause for rapid dismissal of the medicinal potential of the use of plant products. Medical users of *Cannabis* are independently developing a sophisticated taxonomy and understanding of how the medication is best used. The knowledge being developed by these medical users also shows that the combined effect of the different chemical substances that are present in the different varieties of plants can indeed be eventually determined, to the point of specifying ideal moments for harvesting the plant. Although this knowledge requires being assessed by scientific research, nonetheless, it addresses -and counters- the common argument that is given by biomedical researchers that synthetic or purified cannabinoids should be preferred to plant products because the latter “are of variable and uncertain composition” (Joy *et al.* 1999:4). It also addresses the biomedical concern that isolated cannabinoids have more reliable effects than plant products (Joy *et al.* 1999:11).

Early research already showed that Turkish *Cannabis* was high in CBD and low in THC, whereas Mexican varieties were high in THC and low in CBD (Braude 1972:99). It is already common to consider that the medical potential of each of these chemical compounds is different. Strict adherence to the “magic bullet” model would require a complex production of pills or prescriptions that contain adequate percentages of each compound. In the end, this would only be a technical replication of the botanical knowledge that medical users of *Cannabis* are already attempting to systematize. However, as has been mentioned earlier, it would also remove the production of medicinal *Cannabis* from the small-business sphere into the already well-established economics of industrial pharmaceuticals.

Conclusion

In order to finalize this paper, it is useful to recapitulate some of the major points expressed above. Biomedical researchers who confirm the therapeutic potential of *Cannabis* recognize the ancient use of this herbal remedy. However it is common for them to state that the standards of modern medicine are different than those of the past, and therefore that the question is not whether *Cannabis* “can be used as a herbal remedy but rather how well this remedy meets today’s standards of efficacy and safety” (Joy *et al.* 1999:19). Current Western societies expect licensed medications to be safe, reliable and of proven efficacy. In addition, contaminants and inconsistent ingredients are not tolerated (Joy *et al.* 1999:19).

This paper has shown that scientific research supports both the safety and efficacy of *Cannabis* for treatment of several symptoms and illnesses. *Cannabis* is now recommended to treat glaucoma, chemotherapy side effects, anorexia, epilepsy, asthma, muscle spasms, nausea, multiple sclerosis, seizures, spasticity and several other disorders and symptoms (Carroll 1993:346-347; Institute of Medicine 1982:139-150; Perrine 1996:359-367; Schlaadt & Shannon 1990:264-266; Stimmel 1993:122).

Avoidance of contaminants and inconsistent ingredients has been taken up as an argument to promote the development of medications containing synthetic or isolated ‘active principles’, and also to substitute smoking as a drug-delivery mechanism with other more common methods used in contemporary technological biomedicine (such as pills and injections). However, the paper has shown that there may be other issues at stake in these intentions. Plant-products can be made to conform to these requirements with careful and scientifically-guided gardening and cultivation techniques. There is also

reason to believe that plant-products may be more beneficial in certain cases, as the relative percentages of medicinal chemical compounds can be regulated through careful genetic manipulation. Empirical evidence also indicates that both patients and physicians actually find the use of plant-products to be more satisfying and effective than isolated ‘active principles’. Therefore, the rejection of the use of plant-products may be an attempt to conform the production, distribution and administration of the medicinal components to the established pharmaceutical organization and economy.

In addition, it might be reasonable to consider that, perhaps, smoking plant-products is challenging to the aesthetics of biomedical therapy. For example, the dismissal of smoking plant-products may be related to an attempt to replace patterns of behavior associated to the non-medical use of *Cannabis* with other consumption patterns of behavior that are more common to the biomedical context (such as taking pills dispensed by a pharmacy or being given an injection by a nurse –and that also reinforce patient dependency and passivity).

The possible sharing of the medicinal *Cannabis* cigarette -which it is assumed many patients would be inclined to do with close friends or family- is also challenging to the biomedical understanding that only the patient should consume the medication, that therapy is not a shared experience, and that medication is an act performed upon the passive patient. It challenges the biomedical isolation of the patient.

Further, the increasing agreement among researchers that *Cannabis* is benign, also threatens biomedical structures of control over production, distribution and prescription of medicines. It is possibly for this reason that researchers, and also government authorities, share a rhetoric that intends to portray *Cannabis* as dangerous, in order to

continue to make its access restrictive. Only the authorized physician should decide whether *Cannabis* use is beneficial for a person.

It is useful to contrast how the plant has been used in other long-standing medical traditions, in which inherent properties of the plant (such as the combined chemical composition) are put to therapeutic use and recognized as beneficial, rather than a hindrance, to medical application –such is the case of Traditional Chinese Medicine, that further prescribes the use of the plant in conjunction with at least three other herbs. It is also notable that Traditional Chinese Medicine considers the use of *Cannabis* recommendable for elderly or debilitated persons and for women who have just given birth (Huang 1999:236; Chinese Academy of Medical Sciences 1970). Clearly, *Cannabis* is not perceived as a dangerous drug in this medical tradition, but obviously quite benign.

Further, research has shown that *Cannabis* is particularly beneficial for the treatment of symptoms, the alleviation of “side effects” of aggressive treatments, and for remission of the symptoms of some chronic conditions. Such a therapeutic use is not only unproblematic for some medical traditions, such as Traditional Chinese Medicine, but is often the actual generalized practice. It is no surprise that the medical use of *Cannabis* is unquestioned in such traditions. However, such a use is more out of place in a pathogen-combative medical system, such as biomedicine. *Cannabis* does not really ‘cure’ disease.

In conclusion, the biomedical approach and positioning regards the medicinal use of *Cannabis* perhaps reflects more about biomedical expectations and conditions for approval and use of medications, than inherent pharmacological properties of the plant or derived substances.

NOTES

ⁱ In this paper the term *Cannabis* refers to the unpurified plant extracts, including leaves and flowering tops, regardless of how they are consumed by or administered to the patient. The botanical term has been preferred here in order to avoid the evaluative connotations often implicit in common culturally-relevant names.

REFERENCES CITED

- Abel, Ernest L.
1980 *Marihuana: The First Twelve Thousand Years*. New York and London: Plenum Press.
- Aldrich, Michael R.
1972 A Brief Legal History of Marihuana. *In* *Marihuana: Debate and Data*. Western Institute of Drug Problems. Pp. 15-33. Corvallis: Continuing Education Publications.
- Bloomquist, Edward R.
1971 *Marijuana: The Second Trip*. Rev. edition. Beverly Hills: Glencoe Press.
- Braude, Monique C.
1972 Toxicology of Cannabinoids. *In* *Cannabis and its Derivatives: Pharmacology and Experimental Psychology*. W. Paton and J. Crown, eds. Pp. 88-100. London: Oxford University Press.
- Brounstein, Howie
1995 *Herbal Smoking Mixtures*.
<http://home.teleport.com/~howieb/smoking/smoke5.html>, accessed 31 March 2004.
- Carlini, E.A., *et al.*
1972 *Cannabis Sativa: Is it possible to Consider Behavioural Animal Data as Experimental Models for Some Effects on Humans?* *In* *Cannabis and its Derivatives: Pharmacology and Experimental Psychology*. W. Paton and J. Crown, eds. Pp. 154-175. London: Oxford University Press.
- Carroll, Charles R.
1993 *Drugs in Modern Society*. 3rd edition. Dubuque: Brown & Benchmark Publishers.
- Chinese Academy of Medical Sciences
1970 *In* *Herbal Pharmacology in the People's Republic of China: A Trip Report of the American Herbal Pharmacological Delegation*. National Academy of Sciences. 1975. Washington, D.C.: National Academy of Sciences.
- Comitas, Lambros
1975 The Social Nexus of *Ganja* in Jamaica. *In* *Cannabis and Culture*. Vera Rubin, ed. Pp. 119-132. The Hague: Mouton Publishers.
- Dobkin de Rios, Marlene
1970 A Note on the Use of Ayahuasca among Urban Mestizo Populations in the Peruvian Amazon. *American Anthropologist*. New Series. 72 (6):1419-1422.
- Etkin, Nina
1992 "Side Effects": Cultural Constructions and Reinterpretations of Western Pharmaceuticals. *Medical Anthropological Quarterly*. New Series. 6 (2):99-113.
- Felter, Harvey Wickes, and Lloyd, John Uri
1898 *Stramonium – Stramonium*. *In* *King's American Dispensatory*
<http://www.ibiblio.org/herbmed/eclectic/kings/datura.html>, accessed 31 March 2004.
- Furst, Peter T.
1976 *Hallucinogens and Culture*. San Francisco: Chandler & Sharp Publishers, Inc.
- Green, Melvyn and Miller, Ralph
1975 *Cannabis Use in Canada*. *In* *Cannabis and Culture*. Vera Rubin, ed. Pp. 497-520. The Hague: Mouton Publishers.
- Giannini, James, and Slaby, Andrew, eds.
1989 *Drugs of Abuse*. Oradell: Medical Economic Books.

-
- Goldstein, Avram
2001 *Addiction: From Biology to Drug Policy*. 2nd edition. Oxford: Oxford University Press.
- Gunther, Robert, ed.
1968 *The Greek Herbal of Dioscorides*. 2nd printing. London and New York: Hafner Publishing Company.
- Health Canada (Santé Canada, Government of Canada – Gouvernement du Canada)
2000 (September) *Information: Marijuana for medical purposes: Update – frequently asked questions*
http://www.hc-sc.gc.ca/english/media/releases/2000/2000_89ebk.htm, accessed 1st April 2004.
- Huang, Kee Chang
1999 *The Pharmacology of Chinese Herbs*. 2nd edition. Boca Raton, FL: CRC Press.
- Institute of Medicine
1982 *Marijuana and Health: Report of a Study by a Committee of the Institute of Medicine Division of Health Sciences Policy*. Washington, D.C.: National Academy Press.
- Iversen, Leslie L.
2000 *The Science of Marijuana*. New York: Oxford University Press.
- Joy, Janet E., *et al.*, eds.
1999 *Marijuana and Medicine: Assessing the Science Base*. Washington, D.C.: National Academy Press. [Also authored by: Institute of Medicine]
- Kleinman, Arthur
1980 *Patients and Healers in the Context of Culture*. Berkeley and Los Angeles: University of California Press.
- Krochmal Arnold and Krochmal Connie
1973 *A Guide to the Medicinal Plants of the United States*. New York: Quadrangle/New York Times Book Co.
- Lewis, Walter, and Elvin-Lewis, Memory
1977 *Medical Botany: Plants Affecting Man's Health*. New York: John Wiley & Sons, Inc.
- Luna, Luis Eduardo, and Amaringo, Pablo
1999 [1991] *Ayahuasca Visions: The Religious Iconography of a Peruvian Shaman*. Berkeley: North Atlantic Books.
- Lyon, M.L., and Barbalet, J.M.
1994 *Society's body: emotion and the 'somatization' of social theory*. *In Embodiment and experience: The existential ground of culture and self*. Thomas Csordas, ed. Cambridge: Cambridge University Press.
- medicalmarihuana.ca
2004a *Government Medical Pot Grown in One of Canada's Most Toxic Areas*
<http://www.medicalmarihuana.ca/toxic.html>, accessed 1st April 2004.
2004b *Health Canada Government Marijuana Supply is Low Quality Weed*
<http://www.medicalmarihuana.ca/govtpot.html>, accessed 1st April 2004.
- Nahas, Gabriel
1973 *Marihuana – Deceptive Weed*. New York: Raven Press.
- Office of Cannabis Medical Access (Health Canada – Santé Canada, Government of Canada – Gouvernement du Canada)
2004a *Information*
<http://www.hc-sc.gc.ca/hecs-sesc/ocma/information1.htm>, accessed 1st April 2004
2004b *Marihuana for Medical Purposes – Statistics (February 6, 2004)*
http://www.hc-sc.gc.ca/hecs-sesc/ocma/stats/2004/feb/stats_feb-04.htm, accessed 1st April 2004.
- Ohnuki-Tierney, Emiko
1986 *Illness and Culture in Contemporary Japan*. New York: Cambridge University Press.

-
- Perrine, Daniel M.
1996 *The Chemistry of Mind-Altering Drugs: History, Pharmacology, and Cultural Context*. Washington D.C.: American Chemical Society.
- Recommended Strains
2004 Recommended Strains for Certain Conditions
<http://free.freespeech.org/ekomstop/subjects/cannabis/medical/strains.htm>, accessed 1st April 2004.
- Relkin, Richard
1972 Death Following Withdrawal of Diazepam. *In Drug Abuse: Medical and Criminal Aspects*. Francis Braceland *et al.* Pp. 101-103. New York: MSS Information Corporation.
- Schlaadt, Richard G., and Shannon, Peter T.
1990 *Drugs*. 3rd edition. Englewood Cliffs, NJ: Prentice Hall.
- Sharma, Ursula
1990 Using Alternative Therapies: Marginal Medicine and Central Concerns. *In New Directions in the Sociology of Health*. Pamela Abbot and Geoff Payne, eds. Pp. 127-139. London: The Falmer Press.
- Seymour, Richard and Smith, David E.
1987 *The Physician's Guide to Psychoactive Drugs*. New York and London: The Haworth Press, Inc.
- Stimmel, Barry
1993 *The Facts about Drug Use: Coping with drugs and alcohol in your family, at work, in your community*. New York: The Haworth Medical Press, Inc.
- Turner, Bryan S.
1987 *Medical Power and Social Knowledge*. London: Sage Publications Ltd.
- Whiting, Beatrice Blyth
1950 Paiute Sorcery: Sickness and Social Control. *In Culture, Disease, and Healing: Studies in Medical Anthropology*. 1977. David Landy, ed. Pp. 210-218. New York: Macmillan Publishing Co., Inc.
- www.heroin.org
2004 The Plant of Joy. <http://www.heroin.org/red.html>, accessed 31 March 2004.

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