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THERAPEUTIC POTENTIAL AND MEDICAL USES OF MARIJUANA

There has been growing interest in the possibility that cannabis and its derivatives will be valuable for the treatment of several medical and psychiatric conditions. The 97th Congress, for example, introduced a bill (H.R. 4498) "to provide for the therapeutic use of marijuana in situations involving life-threatening or tense-threatening illness and to provide adequate supplies of marijuana for such use."

Most of the putative therapeutic effects of cannabis are believed to be mediated by the central nervous system. These include effects on appetite, nausea and vomiting, epilepsy, muscle spasticity, anxiety, depression, pain, and on glaucoma, asthma, and the symptoms of withdrawal from alcohol and narcotics. The literature on these and other therapeutic actions believed mediated by the central nervous system will be reviewed in this chapter.

In general, the committee finds that cannabis shows promise in some of these areas, although the dose necessary to produce the desired therapeutic effect is often close to one that produces an unacceptable frequency of toxic (undesirable) side-effects. What is perhaps more encouraging than the therapeutic effects observed thus far is that cannabis seems to exert its beneficial effects through mechanisms that differ from those of other available drugs. This raises the possibility that some patients who would not be helped by conventional therapies could be treated effectively with cannabis. A second possibility is that cannabis could be combined with other drugs to achieve a therapeutic goal, but with each drug being used at a lower dose than would be required if either were used alone. As a result, fewer side-effects would be expected to occur. It may be possible to reduce side-effects by synthesizing related molecules that could have a more favorable ratio of desired to undesired actions; this line of investigation should have high priority, because such synthetic derivatives may ultimately have widespread therapeutic use.

GLAUCOMA

Glaucoma is the leading cause of blindness in the United States. The term is used to describe a group of ocular diseases characterized by an increase in intraocular pressure, which damages the optic nerve and leads eventually to loss of vision. The disease affects over two million Americans of age 35 or older. Although there is increasing risk of glaucoma with increasing age, there are forms that develop in infancy. The National Society to Prevent Blindness (1980) also estimates that 300,000 new cases are diagnosed each year.

Treatment of glaucoma depends on the type and cause. It may be pharmacological or surgical. Surgery is useful treatment in relatively few cases; there is a high incidence of failure and serious complications may occur. Available antiglaucoma drugs are effective in regulating intraocular pressure in many patients, and are the mainstay of treatment in the most common form of glaucoma, but there are some adverse side-effects. Some patients are refractory to present forms of treatment and become blind as the disease progresses; for them, there is a particularly urgent need to find effective drugs.

Cannabis (the crude drug), Δ-9-THC (the pure compound), and some other cannabinoid derivatives lower intraocular pressure when administered by various routes, such as inhalation, oral, or intravenous. However, adverse side-effects of cannabis and Δ-9-THC also have been reported. Most patients with glaucoma are elderly, and have a reduced tolerance for many of these side-effects. Even without the adverse side effects, smoking, oral, and intravenous routes of administration are not suitable for the long term. For example, to give adequate control for intraocular pressure, four marijuana cigarettes per day of 2 percent Δ-9-THC would be necessary; this amount is considered heavy usage and could pose a serious health problem in long-term use. Therefore, topical application would be the most salutary route of administration for the patient who needs continuous treatment.

Human Studies

Interest in using cannabis for the treatment of glaucoma was first stimulated by the observation of Hepler et al. (1971, 1972) that intraocular pressure decreased when healthy human subjects smoked cannabis (0.9 percent and 1.5 percent Δ-9-THC content) using an ice-cooled water pipe. (See Green, 1979, for an extensive literature review.)

A study of the acute ocular effects of cannabis in 429 subjects showed there was a dose-related and statistically significant reduction of intraocular pressure following the smoking or ingestion of cannabis containing 1, 2, or 4 percent Δ-9-THC (Hepler et al., 1976a). The amount of pressure decrease was in the range of 30 percent for the cannabis that contained 2 percent Δ-9-THC. Nineteen hospitalized subjects who smoked cannabis of 1 or 2 percent

Δ-9-THC content were observed for 35 days and another 29 subjects were observed as in-patients for a total of 94 days. There was a consistent drop in intraocular pressure in those smoking the 2 percent cannabis and the reduction appeared to last 4 to 5 hours (Hepler et al., 1976a). The authors noted that there did not seem to be much of a cumulative effect on size of pupils or upon intraocular pressure response. Studies by other investigators have confirmed this effect of cannabis and Δ-9-THC in causing reduction of intraocular pressure in humans (Shapiro, 1974; Purnell and Gregg, 1975).

Perez-Reyes et al. in 1976 investigated the effect of intravenous infusion of six cannabinoids in healthy volunteers. Delta-8-THC, Δ-9-THC, 11-hydroxy-Δ-9-THC, cannabinol, cannabidiol, and 8-β-hydroxy-Δ-9-THC were tested on healthy subjects with normal intraocular pressure; Δ-8-THC, Δ-9-THC, and 11-hydroxy-THC caused the greatest reduction in pressure. Of these Δ-8-THC caused the largest decrease in intraocular pressure, with the least number of psychological side-effects.

In a preliminary study of 11 human glaucoma patients who smoked marijuana (1, 2, and 4 percent) or ingested Δ-9-THC (15 mg), intraocular pressure was lowered an average of 30 percent in 7 out of 11 patients (Hepler et al., 1976a). Another study showed that most patients had a decrease in intraocular pressure after ingestion of 15, 20, or 30 mg of Δ-9-THC and after smoking cannabis containing 1, 2, and 4 percent Δ-9-THC (Hepler et al., 1976b).

Ideally, the synthesis of a preparation that could be applied topically to the eye would be most desirable for humans, because this would allow for self-administration. However, initial studies in humans with a topical preparation of Δ-9-THC have not shown a consistent effect on intraocular pressure (Merritt et al., 1981). More work needs to be done on this possibility.

Animal Studies

While animal studies have supported the observation that Δ-9-THC lowers intraocular pressure after oral and topical administration in rabbits (Green et al., 1977a,b; 1978), and after intravenous administration in the cat (Innemee et al., 1979), the reduction in intraocular pressure is not completely understood. It may result in part from a central nervous system effect, and in part through action on the adrenergic system in the eye, probably mediated by the neurotransmitter norepinephrine.

Side-Effects

Marijuana and Δ-9-THC given orally, intravenously, or in cigarettes to control glaucoma cause systemic side-effects, such as increase in heart rate, decrease in blood pressure, and psychotropic effects. Some of these side-effects are significant enough to pose problems, particularly in patients with glaucoma, who are usually elderly. But

on the other hand, some of these effects may disappear as tolerance (decreased response with repeated use) develops.

Tolerance to the Intraocular Pressure Reducing Effect

No tolerance was detected to the ocular effects of cannabis in rabbits after 1 year's topical instillation of the synthetic cannabinoids SP-1, SP-106, and SP-204 (Green and Kim, 1977; Green et al., 1977b). Hepler et al. (1976b) noted a ceiling effect in humans, in that the smoking of 22 cannabis cigarettes did not result in a significant decrease in eyeball pressure as compared with a subject who smoked only 2 cigarettes. The area of tolerance will need further study, especially if a cannabinoid preparation with a satisfactorily high ratio of therapeutic to side-effects can be found.

Summary

Cannabis, Δ-9-THC, other cannabinoid derivatives, and their synthetics, reduce intraocular pressure in humans when smoked, or given intravenously or orally. However, there are systemic side-effects as well as psychotropic effects that are of concern. It is not yet clear whether an effective topical preparation can be developed that will not have these side-effects. Future work should determine whether synthetic cannabinoids or cannabinoid analogues can be found that will be effective in treating glaucoma without causing side-effects.

ANTIEMETIC ACTION

Certain cancer chemotherapeutic agents regularly produce nausea and vomiting after oral or intravenous administration. Those that are most severe in that respect are cisplatin, actinomycin D, adriamycin, cyclophosphamide, methotrexate, and the nitrosoureas. Other anticancer compounds may produce nausea less regularly or in less marked fashion.

Because cancer chemotherapy now can produce increased survival in patients with some neoplasms (recurrent or metastatic breast cancer, small cell carcinoma of the lung, ovarian cancer, and others) and substantial cure rates in several (acute lymphoblastic leukemia, Hodgkins disease, germ cell tumors of the testis, etc.) nausea and vomiting that interfere with patients' willingness to continue therapy can be a life-threatening side-effect. Even for those willing to endure the symptoms, they can be extremely unpleasant and debilitating.

Established antiemetics (prochlorperazine and other phenothiazines) are not very effective against drug-induced emesis, and there is a need for new and more reliable antiemetic agents. Metoclopramide, a derivative of procainamide, has recently been shown to be

more effective than prochlorperazine in certain situations and seems promising (Gralla et al., 1981).

The suggestion that cannabis might have some useful antiemetic activity in this setting arose about 1973, when patients receiving intensive chemotherapy for acute leukemia observed that their "social" use of cannabis appeared to reduce their customary nausea and vomiting.

Clinical Investigations

Several controlled studies have been reported. In one of the early ones (Sallan et al., 1975), Δ-9-THC in 15- or 20-mg doses by mouth was compared with a placebo in a randomized double-blind crossover trial in 22 patients whose nausea and vomiting had been shown refractory to other antiemetics. In 14 of 20 courses of treatment, patients obtained "complete or partial relief" with Δ-9-THC; in none of 22 courses did patients report benefit with the placebo. It was observed that the antiemetic effect of Δ-9-THC occurred only in association with the "high," and it was necessary to maintain the "high" in order to maintain the antiemetic effect.

In another controlled trial (Chang et al., 1979), 14 of 15 patients with osteogenic sarcoma treated with high-dose methotrexate had less nausea and vomiting with Δ-9-THC than with the placebo. In that study, patients with other tumors being treated with cytoxan and adriamycin did not respond as well. That report and others like it suggested that the antiemetic effect of Δ-9-THC against those chemotherapeutic agents that are moderate in their emetic potential (e.g., methotrexate) was pronounced, but that Δ-9-THC was less effective against those agents with severe emetic properties. In a similar study (Lucas and Laszlo, 1980), 38 of 53 patients with nausea and vomiting refractory to other antiemetics reported good results with Δ-9-THC. Among the failures were those treated with cisplatin, which has been characterized as one of the most emetic agents used in cancer chemotherapy.

In comparison with prochlorperazine, Δ-9-THC has also been reported to be more effective in preventing nausea and vomiting (Ekert et al., 1979; Sallan et al., 1980).

In a larger study (Frytak et al., 1979), of 116 patients treated with 5-fluouracil and methyl-CCNU, Δ-9-THC was said to be no more effective than prochlorperazine. In that study, in which nearly all patients were older than those in the other reported trials, the majority of patients considered the other side-effects of Δ-9-THC so unpleasant that they preferred either prochlorparazine or the placebo.

Another cannabinoid, a synthetic, nabilone, has been provided to several investigators for evaluation an an antiemetic agent; it has been licensed for use in Canada for treatment of nausea associated with cancer treatment. In the largest clinical study to date (Herman et al., 1979), nabilone was compared with prochlorperazine in a double-blind crossover trial. It was found more effective than

prochlorperazine. The patients in that study preferred nabilone to prochlorperazine; the predominant side-effects were somnolence, dry mouth, and dizziness. Hallucinations occurred in a few patients. Euphoria of the type associated with cannabis was infrequent in that study. However, a study in dogs has revealed previously unrecognized late neurologic effects of nabilone at high doses (Archer et al., 1981). Monkeys and rats did not show similar toxic effects with long-term administration of nabilone (Archer et al., 1981), and further studies will be necessary to clarify the safety of this new agent.

Levonantradol is yet another synthetic cannabinoid, related to Δ-9-THC, which has been shown in preliminary clinical studies to have antiemetic action in patients with refractory chemotherapy-induced emesis (Diasio et al., 1981).

Uncontrolled Use of Δ-9-THC

In response to public and political pressures, the National Cancer Institute, the United States Drug Enforcement Agency, and the Food and Drug Administration have agreed to a program whereby the National Cancer Institute is making Δ-9-THC available through the pharmacies of approximately 500 teaching hospitals and cancer centers to physicians who wish to use Δ-9-THC in treating the nausea and vomiting of patients receiving cancer chemotherapy. This broad, uncontrolled program, in which no data other than the reporting of severe reactions are to be collected, may make it extremely difficult to obtain continuing valid evaluations of the effectiveness of Δ-9-THC in the management of nausea and vomiting due to cancer chemotherapy. Although the extent of use of Δ-9-THC under this program is difficult to evaluate, informal communication with the National Cancer Institute indicates that Δ-9-THC has been supplied in substantial quantities to several hundred hospital pharmacies. The problem is further complicated by the fact that the legislatures of 23 states have authorized the use of cannabis by any physician for the management of nausea and vomiting due to cancer chemotherapy. It is expected that little reliable information will be derived from such use.

Summary

There seems little doubt that Δ-9-THC and other cannabinoids are active against the severe nausea and vomiting produced by cancer chemotherapeutic agents. The extent of this activity, its relation to other antiemetics, and its relation to the other effects of the cannabinoids have not yet been accurately determined.

Cannabis leaf, smoked or eaten, is also antiemetic but its activity has been even less well determined than that of Δ-9-THC. Studies with other synthetic cannabinoids have barely begun and much remains to be learned in this field.

APPETITE STIMULANT

It has been stated by "social" users that the smoking of cannabis increases appetite. On that basis, there have been sporadic attempts to use it in patients with advanced cancer to overcome their customary debilitating weight loss.

In several of the studies in which Δ-9-THC was used as an antiemetic in patients receiving cancer chemotherapy, they were reported to have increased appetite and food intake. At this time, it is not certain whether that increase was due merely to relief of nausea and vomiting or to stimulation of appetite. One comparison of habitual marijuana users and controls matched for age and educational background showed increased caloric intake and weight gain among the users (Greenberg, et al., 1976). Furthermore, a double-blind controlled study (Hollister, 1971) of smokers of cannabis or placebo cigarettes provided with unlimited quantities of a high-caloric beverage indicated an increase in caloric consumption in those using cannabis compared with those using the placebo; however, the variability was very large and there was some question that cannabis could be considered a clinically significant appetite stimulant.

In another study of the psychological effects of Δ-9-THC in patients with advanced cancer, it was observed that Δ-9-THC appeared to stimulate appetite and retard weight loss (Regelson et al., 1976). In that study many patients refused to complete the 2-week trial because of unacceptable side-effects from Δ-9-THC.

The evidence to date suggests that there may be some influence of cannabis on appetite. However, it is not possible to separate that from the effect on nausea and vomiting. Further studies are in progress in cancer patients whose course is not complicated by nausea and vomiting.

ANTICONVULSANT ACTION

A large number of animal studies have been conducted using cannabis as an anticonvulsant. These can be divided into several categories. The first to be discussed will be maximal electroshock seizures (MES)* both in the rat and mouse (Loewe and Goodman, 1947; Sofia et al., 1971; Fujimoto, 1972; Consroe and Man, 1973; Karler et al., 1973; Chesher and Jackson, 1974; Karler et al., 1974; McCaughran et al., 1974; Karler and Turkanis, 1976; Consroe and Wolkin, 1977; Turkanis et al., 1977). In these studies there is a clear dose-response effect in the protection to MES conferred by cannabinol (CBN) and cannabidiol (CBD). Tolerance to the effect has frequently been reported. However, the tolerance noted with cannabinoids is similar to that seen with phenytoin (DPH). Further, even though tolerance to phenytoin develops with MES, this has not been shown to

*Electrical shock of maximum intensity to cause a major seizure.

be a clinically significant phenomenon. In these studies it is generally found that CBN is less effective against MES and against audiogenic seizures, the latter produced in rodents by loud noise, than CBD. In addition, Turkanis et al. (1977) have emphasized the fact that CBD acts more like DPH than other anticonvulsants and hence would be expected to be effective against major seizures rather than against minor seizures.

There is also extensive animal literature that CBN and CBD will protect against electrically induced, minimal (kindling) seizures (Corcoran et al., 1973; Fried and McIntyre, 1973; Izquierdo et al., 1973; Turkanis et al., 1977, 1979). Reduction of seizures produced by subcortical electrical stimulation in the cat has been reported (Wada et al., 1973). There appears to be much less effect on pentylenetetrazol-induced seizures (Consroe and Man, 1973; Turkanis et al., 1979). Any effect of CBN and CBD on such seizures occurs with maximal toxic doses (Turkanis et al., 1974). Protection against audiogenic seizures (Consroe et al., 1973) and against reflex seizures in the gerbil (Cox et al., 1975) have been reported.

Human studies are largely anecdotal and conflicting. There is one study by Cunha et al. (1980) in which 15 patients suffering from partial complex epilepsy with a temporal focus were randomly divided into two groups. Each patient received, in a double-blind procedure, 200-300 mg of CBD or placebo daily. The drugs were administered for as long as 4 1/2 months. Throughout the study, clinical and laboratory examinations, electroencephalograms, and electrocardiograms were performed at 15- to 30-day intervals. The patients continued their anticonvulsant medications taken before entering the study, on which all them had previously experienced uncontrolled seizures. All patients tolerated CBD well, and there were no signs of toxicity or serious side-effects. Four of the 8 CBD subjects remained nearly free of convulsions during CBD treatment and 3 other patients demonstrated partial improvement in their clinical condition. Cannabidiol was ineffective in 1 patient. The placebo group showed no alteration of seizure frequency. A series of 8 healthy volunteers given CBD showed no effects of the drug.

Summary

There is substantial evidence from animal studies to indicate that cannabinoids are effective in blocking both kindling seizures and MES, and this is particularly true for CBD. MES is a standard testing procedure for evaluation of anticonvulsant drugs. This is strong support for further investigation into the utility of CBD in human epilepsy. The one available carefully controlled human study is in accord with this review.

MUSCLE RELAXANT ACTION

There are widespread, anecdotal reports that cannabis is effective in relieving muscle spasm or spasticity. Petro (1980) has reported such effects in two cases and has carried out a double-blind study of the administration of Δ-9-THC on spasticity (Petro and Ellenberger, 1981). They reported that 10 mg of Δ-9-THC significantly reduced spasticity by clinical measurement and that quadriceps electromyograms demonstrated a decrease in interference pattern in four patients with primarily extensor spasticity. These are preliminary observations, but they suggest that further and more rigorous investigations of the use of cannabinoids in spasticity should be suggested to test their therapeutic effectiveness.

ANTIASTHMATIC EFFECT

Intensive, chronic smoking of concentrated cannabis produces several adverse effects on the airways, including mild bronchoconstriction. But acute smoking of cannabis as well as the ingestion of Δ-9-THC produces bronchodilation in normals and in subjects with chronic, clinically stable bronchial asthma of minimal to moderate severity (Tashkin et al., 1974). These bronchodilator effects were also investigated in individuals in whom an asthmatic attack was induced experimentally by exercise or methalcholine (Tashkin et al., 1975). Immediately after the development of bronchospasm, subjects smoked a cigarette containing 500 mg of cannabis assayed at either 1 or 2 percent Δ-9-THC.

Methalcholine inhalation promptly caused significant bronchoconstriction (an average decrease in airway conductance of 40-55 percent) and significant hyperinflation (mean increases in thoracic gas volume of 35-43 percent). After placebo smoking or saline inhalation, airway conductance increased only modestly, remaining significantly less than initial control values for 30 to 60 minutes, and thoracic gas volume decreased only gradually, remaining significantly increased for 15 minutes. However, after 2 percent cannabis, and after isoproterenol, there was a prompt return of airway conductance and thoracic gas volume to control values.

Exercise in the asthma-prone individual resulted in average decreases in airway conductance of 30-39 percent and average increase in thoracic gas volume of 25-35 percent. After placebo or saline, there was only a gradual return to control values during 30-60 minutes, but after cannabis, airway conductance and thoracic gas volume returned promptly to preexercise values. Four of the subjects who had previously used cannabis could detect pleasurable sensations after smoking cannabis, which distinguished these effects from those of the placebo cigarette. In that sense these experiments were not strictly blind. The four subjects who had no previous experience with cannabis did not experience any central nervous system effects but did note mild somolence or light-headedness after cannabis. The results of this study suggest that any bronchial irritant effects of

placebo cannabis smoke were not sufficient to aggravate or perpetuate existing acute bronchospasm to an extent greater than that which might result from the irritant effect of inhaled saline. The results also demonstrate that inhaled Δ-9-THC causes a prompt and complete sustained reversal of methacholine-induced bronchospasm and correction of the associated hyperinflation. These effects were not significantly different from those observed after isoproterenol, although there was a tendency toward a greater degree of bronchial dilation after isoproterenol. Similarly, after inhalation of Δ-9-THC, there was a prompt return of airway conductance and thoracic gas volume during exercise-induced bronchospasm to the preexercise value. After exercise the effects of 10 mg Δ-9-THC was not as efficacious as 1.25 mg isoproterenol.

The way in which Δ-9-THC induces bronchial dilation has not been determined, but previous studies have shown that this effect is not mediated by beta-adrenergic stimulation or inhibition of muscarine receptors (Shapiro et al., 1973). A vagolytic mechanism is possible, as suggested by other studies carried out on the dog salivary gland (Cavero et al., 1972) and on guinea pig ileum (Gill et al., 1970).

Although ingestion of Δ-9-THC in a sesame oil vehicle has produced bronchodilation in asthmatic patients (Tashkin et al., 1974), less dilation was noted than after smaller doses of Δ-9-THC delivered by smoking. Its significant bronchodilator effect notwithstanding, Δ-9-THC does not appear to be suitable for that therapeutic use, because of its psychotropic effects and possibly other side-effects. However, other cannabinoid compounds such as cannabinol and cannabidiol do not produce the central nervous system effects of tachycardia characteristic of cannabis (Hollister, 1973) and deserve further investigation for possible bronchodilator activity.

ANTIANXIETY EFFECT

Users of cannabis have often reported that the drug produces feelings of relaxation and calmness, and some have reported its use to reduce anxiety. A problem with evaluating cannabis as an antianxiety drug, however, is that some subjects report increased anxiety or panic after using cannabis (see Chapter 6). For example, Regelson et al. (1976) found less tension and apprehension in cancer patients after cannabis use; but 6 of 50 subjects receiving Δ-9-THC reported such side-effects as severe dizziness, confused thinking, dissociation, and concern over loss of sanity. In normals, Pillard et al. (1974) found no effects of cannabis on experimentally induced anxiety. Nabilone, a synthetic cannabinoid, was found to reduce experimentally induced anxiety in normal volunteers but it was less effective than diazepam (Nakano et al., 1978). Nabilone was found to be more effective than placebo in patients with psychoneurotic anxiety (Fabre et al., 1978).

There are very few studies of cannabis effects on anxiety. There is no indication at this time that cannabis or nabilone are

more effective or reliable than currently available antianxiety medication.

ANTIDEPRESSANT EFFECT

Regelson et al. (1976) reported a significant reduction in self-rated depressive symptoms in cancer patients treated with Δ-9-THC. However, in a carefully controlled trial with four bipolar and four unpolar depressed patients, Kotin et al. (1973) found no antidepressant activity.

ANALGESIC ACTION

Several animal models have been used to show analgesic effects of cannabis and its analogues (for example, Grunfeld and Edery, 1969; Sofia et al., 1973). Human studies have been conflicting. Milstein et al. (1975) found increase in tolerance to experimentally induced pain after smoking cannabis, while Hill et al. (1974) were unable to detect effects using a different kind of experimental pain. Noyes et al. (1976) found a reduction in pain reports by cancer patients given oral Δ-9-THC; Regelson et al. (1976) also studied cancer patients and found no significant changes in pain after Δ-9-THC.

Those subjects who show analgesic effects of cannabis also show other pharmacological effects such as mental clouding. The literature does not indicate a specific effect of cannabis on pain pathways nor does it suggest that cannabis is likely to be more effective than currently available analgesics.

ALCOHOLISM

Cannabis has been proposed as a treatment for alcoholism (Scher, 1971) based upon case reports and on the observation that cannabis and alcohol were generally not used together. A systematic evaluation (Rosenberg et al., 1978) failed to find cannabis useful in alcoholism. Moreover, recent surveys (see Chapter 2) indicate that currently the abuse of cannabis and alcohol are frequently combined.

OPIATE WITHDRAWAL

Early clinical reports suggested that cannabis might be useful in suppressing the symptoms of opiate withdrawal (Birch, 1889; Thompson and Proctor, 1953). Recently a series of animal studies (Hine et al., 1975a,b; Bhargava, 1976) have found that Δ-9-THC suppresses many of the behavioral manifestations of withdrawal precipitated by naloxone in morphine dependent rodents. This effect is enhanced by cannabidiol (CBD) (Hine et al., 1975a,b), but CBD is not effective alone.

There are no reports of systematic evaluations of cannabis as a treatment of opiate withdrawal in human beings. The animal studies do not present evidence that cannabis is likely to be more effective than currently available treatments for opiate withdrawal.

ANTITUMOR ACTION

There is very little information about the effects of cannabis on neoplasms. In one study (Harris et al., 1976), minor effects were seen on the Lewis Lung Tumor but not in L1210 leukemia. In another study (White et al., 1976), it was found that Δ-9-THC inhibited tumor DNA replication somewhat. In that same study, cannabidiol appeared to have a growth enhancing effect on the Lewis Lung Tumor. These limited studies do not support a view that Δ-9-THC has a useful effect in inhibiting tumor growth.

SUMMARY

Cannabis and its derivatives have shown promise in the treatment of a variety of disorders. The evidence is most impressive in glaucoma, where their mechanism of action appears to be different from the standard drugs; in asthma, where they approach isoproterenol in effectiveness; and in the nausea and vomiting of cancer chemotherapy, where they compare favorably with phenothiazines. Smaller trials have suggested cannabis might also be useful in seizures, spasticity, and other nervous system disorders. Effective doses usually produce psychotropic and cardiovascular effects and can be troublesome, particularly in older patients.

Although marijuana has not been shown unequivocally superior to any existing therapy for any of these conditions, several important aspects of its therapeutic potential should be appreciated. First, its mechanisms of action and its toxicity in several diseases are different from those of drugs now being used to treat those conditions; thus, combined use with other drugs might allow greater therapeutic efficacy without cumulative toxicity. Second, the differences in action suggest new approaches to understanding both the diseases and the drugs used to treat them. Last, there may be an opportunity to synthesize derivatives of marijuana that offer better therapeutic ratios than marijuana itself.

RECOMMENDATIONS FOR RESEARCH

The committee believes that the therapeutic potential of cannabis and its derivatives and synthetic analogues warrants further research along the lines described in this chapter. There also may be significant heuristic benefits to be derived from the study of the biological mechanisms by which these compounds act.

Some therapeutic promise seems to be offered by synthetic cannabinoid analogues. The committee recommends that particular attention be paid to the treatment of chemotherapy-induced nausea and vomiting in cancer patients because current management of this important and widespread problem is inadequate and preliminary studies suggest that cannabinoids may have some special advantage. Cannabinoids or their analogues also may find a place in the management of resistant glaucoma, of severe intractable asthma, and of certain forms of seizures that are resistant to standard therapy. Continued carefully contracted clinical trials in these areas seem worthwhile at this time, as do studies of the usefulness of cannabinoids in the treatment of muscle spasticity.

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8

FEDERAL SUPPORT OF RESEARCH ON MARIJUANA

PRESENT SOURCES AND AMOUNTS OF SUPPORT

In this chapter the committee has examined sources and amounts of federal support for research on cannabis and the areas of research support. The committee has not analyzed the scientific substance of the work, nor has it examined the strategy of research support or reviewed current unpublished research.

The overall federal support for research on cannabis for the fiscal years 1977, 1978, and 1979 has averaged slightly more than $4 million per year in real dollars (Table 4). During these years, 11 federal agencies allocated funds for this purpose. Of these, the National Institute on Drug Abuse (NIDA) has been the principal agency, accounting for over four-fifths of the total, therefore, our analysis will focus primarily on this agency.

For fiscal years 1975 through 1980, NIDA's support of research on cannabis amounted to $4.5, $2.9, $3.9, $3.6, $3.5, and $3.8 million, respectively, in real dollars, but in constant 1981 dollars, corrected by the GNP deflator, the same figures were $7.0, $4.2, $5.4 $4.6, $4.2, and $4.1 (Table 5). Although the total research budget of this agency for those years increased by approximately $12 million (real dollars), the percent spent on cannabis declined from 14.2 to 8.2 (Table 5). During the same period, the total number of projects on cannabis supported by NIDA was reduced by approximately 50 percent; however, the cost per project increased from $42,700 to $71,400 (real dollars). This increased cost per project is still somewhat lower than the mean cost of all projects funded by the National Institutes of Health in 1980 (Leventhal, 1981).

Table 6 shows the NIDA extramural research programs for fiscal years 1975 through 1981, allocated according to the type of drug being studied. In FY 1975 research on cannabis was allocated only 13 percent of the total extramural budget, whereas narcotics and narcotic antagonists received more than 40 percent. Thereafter, the percentage devoted to cannabis declined, to a low of 8 percent in FY 1979, but started to rise again slightly in FY 1980 and FY 1981. In the last year, an estimated 11 percent of the budget was spent on cannabis research. The percent of the budget allocated to narcotics and narcotic antagonists has declined steadily, while the percentages

TABLE 4 Cannabis Research by Federal Agency: FY 1977-1979 (real dollars in thousands)

	Total (77) No. of grants	Funds	Percent	Total (78) No. of grants	Funds	Percent	Total (79) No. of grants	Funds	Percent
ADAMHA[b]									
NIDA	75	3,940	90	64	3,596	88	65	3,536	84
NIMH	8	167	4	8	214	5	7	207	5
NIAAA	2	8	[a]	5	85	2	6	122	3
NIH									
NCI	4	91	2	2	80	2	2	85	2
NEI	--	--	0	3	68	2	1	36	1
NICHD	--	--	0	1	13	[a]	1	15	[a]
NIRR	--	--	0	2	26	0	--	--	0
NIGMS	--	--	0	--	--	0	1	9	[a]
OTHER AGENCIES									
VA	7	52	1	6	26	1	8	25	1
DOT	5	55	1	1	--	[a]	2	104	2
USDA	1	41	1	-	--	0	1	85	2
TOTAL	102	4,354		92	4,106		94	4,202	

[a] less than 1 percent.

[b]

ADAMHA Alcohol, Drug Abuse and Mental Health Administration
DHHS Department of Health and Human Services
DOT Department of Transportation
NCI National Cancer Institute
NEI National Eye Institute
NIAAA National Institute on Alcohol Abuse and Alcoholism
NICHD National Institute of Child Health and Human Development
NIDA National Institute on Drug Abuse
NIGMS National Institute of General Medical Sciences
NIH National Institutes of Health
NIMH National Institute of Mental Health
NIRR National Institute of Research Resources
VA Veterans Administration
USDA Department of Agriculture

Source: Adapted from information provided by NIDA.

TABLE 5 Total Research and Research on Cannabis in NIDA Budget

	FY '73	FY '74	FY '75	FY '76	FY '77	FY '78	FY '79	FY '80	FY '81
Total NIDA research budget (real dollars, thousands)	31,600	34,000	34,046	33,760	33,994	33,986	42,930	45,972	40,400
Total NIDA research budget (constant 1981 dollars, thousands)	58,500	58,700	53,500	49,600	46,800	43,800	51,000	50,300	40,400
Cannabis research budget (real dollars, thousands)	[a]	[a]	4,483	2,853	3,940	3,596	3,536	3,788	[a]
Cannabis research budget (constant 1981 dollars, thousands)	[a]	[a]	7,043	4,191	5,421	4,636	4,201	4,144	[a]
Percent cannabis research	[a]	[a]	14.2	9.1	11.6	10.6	8.2	8.2	[a]
Total cannabis projects (real dollars, thousands)	[a]	[a]	105	82	75	64	65	53	[a]
Mean cannabis project cost (real dollars, thousands)	[a]	[a]	42.70	34.8	52.5	56.2	54.4	71.5[b]	[a]
Mean cannabis project cost (constant 1981 dollars, thousands)	[a]	[a]	67.1	51.1	72.3	72.5	64.6	78.2	[a]

[a]Data unavailable at present time.
[b]Mean NIH Project Cost (1980) was 105.

Source: Adapted from information provided by NIDA.

TABLE 6 NIDA Extramural Research Program, Distribution by Drug (real dollars in thousands)

Drug Class	FY 1975 Amount	%	FY 1976 Amount	%	FY 1977 Amount	%	FY 1978 Amount	%	FY 1979 Amount	%	FY 1980 Amount	%	FY 1981E Amount	%
Cannabis	4,104	13	3,694	12	3,532	11	3,114	10	3,263	8	3,683	9	4,500	11
Depressants	1,642	5	1,527	5	1,976	6	1,557	5	1,123	3	1,695	4	1,000	3
Hallucinogens	316	1	729	2	1,572	5	1,515	5	2,358	6	2,065	7	3,000	7
Narcotics	9,787	31	11,298	36	11,766	37	9,341	30	8,947	23	10,667	25	10,000	25
Narcotic antagonists	3,473	11	3,061	10	3,017	10	3,526	11	3,879	10	2,304	5	2,800	7
Stimulants	1,926	6	2,360	8	2,291	7	2,535	8	2,770	7	3,277	8	4,000	10
Volatiles/solvents	158	1	363	1	496	2	556	2	294	1	270	1	500	1
Tobacco	--	--	--	--	110	0	934	3	1,130	3	2,973	7	3,200	8
Endogenous substances	--	--	--	--	--	--	1,337	4	2,717	7	2,607	6	3,400	8
Polydrug, unspecified, other	10,169	32	8,166	26	6,731	22	6,721	22	12,206	32	11,875	28	8,008	20
TOTAL	31,575	100	31,198	100	31,491	100	31,138	100	38,775	100	42,024	100	40,408	100

Estimate.

Source: Adapted from information provided by NIDA.

devoted to hallucinogens, stimulants, and "endogenous substances" have increased.

In FY '80, only $3,683,000 (9 percent) of the extramural budget was devoted to cannabis research. Almost as much was spent that year by NIDA on stimulants and on tobacco. For comparison, the National Cancer Institute's budget for its program "Smoking and Health" was $13.2 million in FY '80, of which $3.9 million was allocated for tobacco research (Little, 1981). The National Heart, Lung, and Blood Institute allocated $8.2 million to study the effects of cigarette smoking on the cardiovascular repiratory system (Hurd, 1981).

AREAS OF RESEARCH SUPPORT

Cannabis research essentially began in the late 1960s with a National Institute of Mental Health program to produce "pedigreed" cannabis for research investigators. NIDA, which was created in 1972, started with an extramural budget of $29.6 million and an intramural budget of $4.0 million for fiscal year 1973 (Ludford, 1981). In the early 1970s, NIDA's major thrusts were (a) supplying (to researchers) standardized marijuana of a known concentration of Δ-9-THC and of known genetic stock, (b) facilitating administrative mechanisms, and (c) attempting to understand the problem of drug abuse, e.g., how many people use the drug, what are the acute effects, and what are its implications (Petersen, 1981).

Recently, NIDA's emphasis has shifted to studying certain groups, e.g., children, adolescents, and pregnant women, especially with respect to the long-term effects of cannabis on these groups (Petersen, 1981). The NIDA program plan for fiscal year 1982 stresses that chronic and acute studies need to be conducted on the effects of cannabis and other drugs of abuse on women and adolescents, with a special emphasis on: (a) in-depth behavioral and biological studies of the amotivational syndrome ("burn-out"), and (b) the development of approaches to treatment. Also specifically targeted are studies of the effects on brain function and structure.

Table 7 presents the NIDA projects on cannabis for fiscal years 1978, 1979, and 1980 stratified by research goal. These research goals are defined in the footnote to the table. For fiscal years 1978, 1979, and 1980, most of the money devoted to research on cannabis (approximately $3 million annually) was spent in three areas: (1) hazards of cannabis use, (2) basic research, and (3) research support. This last goal includes the growth, processing, packaging, and distribution of cannabis, as well as the development of the Δ-9-THC capsule. It is instructive to compare this distribution of cannabis funds with the distribution of the total research funds of NIDA. In FY '80, research on hazards took only 12 percent of the total NIDA research budget, basic research 42 percent, and research support 19 percent (Pollin, 1981).

The allocation of funds, by research topic, for fiscal years 1978, 1979, and 1980 is presented in Table 8. The largest proportion of the funds has been allocated to two research topics: (1) drug

TABLE 7 NIDA Cannabis Projects by Research Goal: FY 1978-1980
(real dollars in thousands)

Goals	FY 1978	FY 1979	FY 1980
1. Epidemiology	238	54	61
2. Etiology	145	133	136
3. Prevention	77		48
4. Hazards	916	990	1,236
5. Therapeutic uses of cannabis	43	49	50
6. Treatment of cannabis abuse	11	2	82
7. Basic research	972	1,295	1,036
8. General research support	1,194	1,013	1,139
TOTAL	3,596	3,536	3,788

1. Epidemiology--to determine the incidence, prevalence, trends, and distribution of drug abuse by sex, race, geographic origin, and other special characteristics.

2. Etiology--to determine the etiologic factors associated with drug abuse, including those combinations of biological, psychological, and societal factors most associated with increased risk for misuse and/or abuse of drugs.

3. Prevention--to develop and test new strategies and methods which might decrease, postpone, or modify drug-abusing behavior

4. Hazards--to determine the hazards of drug abuse to the physical and mental health of the individual and its adverse effects on society.

5. Therapeutic uses--to study the effectiveness and safety of cannabis in the treatment of various medical conditions.

6. Treatment--to determine the most effective therapeutic procedures for reducing drug abuse including new and innovative treatment methods and development of more effective drugs to be used in treatment.

7. Basic research--to advance basic knowledge of the pharmacology, biochemistry, and neurophysiology of drugs, the basic mechanisms involved in drug tolerance, and dependence and the underlying processes involved in addictive and/or habitual behaviors.

8. Research support--to develop the methodological and support resources required to further drug abuse research; to provide for the publication and evaluation of research results, the analysis and supply of controlled substances, and the development of chemical methods to detect and assay drugs.

Source: Adapted from information provided by NIDA.

TABLE 8 NIDA Cannabinoid Projects by Research Topic: FY 1978-1980 (real dollars in thousands)

	FY 1978	FY 1979	FY 1980
Assay and models	482	302	268
Drug development, synthesis, and distribution	706	756	950
Psychophysiology	54	76	16
Performance (esp. driving)	193	111	76
Reproduction and development	491	864	849
Behavioral studies	124	62	15
Other drug effects/toxicity	397	347	440
Metabolism and pharmacokinetics	261	446	259
Immunology	69	85	--
Drug interactions	--	64	97
Chemistry	67	58	103
Mechanism of tolerance and dependence	285	174	134
Cultural/ethnic	195	45	69
Patterns and lifestyle	57	80	127
Crime/law	137	66	337
Abuse liability	76	--	48
TOTAL	3,594[a]	3,536	3,788

[a]Due to rounding of numbers, the total value is not exactly the same as in Table 7.

Source: Adapted from information provided by NIDA.

development, synthesis, and distribution; and (2) drug effects on reproduction and development.

Grants, Contracts, and Intramural Projects

Tables 9 through 11 compare the number of grants, contracts, and intramural projects on cannabis, as well as the funds expended by each agency for fiscal years 1977, 1978, and 1979. In each of these years, most of the extramural awards and most of the money involved investigator-initiated research grants. The ratio of grant to contract funds rose during this period from approximately 1.5 in FY '77 to almost 3.0 in FY '79. For NIDA as a whole, that ratio has consistently been much higher; in FY '79, for example, the funding of grants was more than five times that of contracts.

Support of investigator-initiated research grants requires that grant applications be approved by a peer review committee. In the peer review process, each approved grant is given a priority score based on scientific merit of the proposal (scaled from 100 to 500, with 100 the highest). This priority score determines the order in which available funds are dispersed. The award rate for all drug research supported by NIDA is shown in Table 12. The percentage of grants recommended for approval has increased slightly over recent years, as has the total number of grant applications. However, the percent of approved grants that has been funded has gone down sharply, as shown in the table. For FY '81 it is estimated that only 25 percent of all applicants were ultimately funded. The priority score at the 90th percentile of funded applications has also been declining, and in 1981 was estimated at 190. These data suggest that there has been no decline in the quality of funded grants--if anything, the quality has risen during the past few years.

The number of investigator-initiated projects has decreased slightly but still exceeds the number of contracts and intramural projects. Grants generally are for a period of 3 years (renewable on a year-to-year basis), with a maximum period of 5 years (Petersen, 1981). Contract projects are funded on a year-to-year basis and are mainly concerned with the growth, processing, packaging, and distribution of cannabis, as well as with the development of the Δ-9-THC capsule.* A few studies are conducted on toxicology and pharmacokinetics (Petersen, 1981). For fiscal years 1977, 1978, and 1979, the number of contracts has declined: 16, 14, and 10, respectively. However, the requests for proposals for fiscal years 1980 and 1981 have increased to 12 and 14, respectively (Ludford, 1981).

Intramural projects account for a small portion of the budget; for fiscal years 1977, 1978, and 1979, they have been declining.

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*NIDA has requested that the NIH take over the cost and distribution of the drugs for clinical studies (Snyder, 1981).

TABLE 9 Cannabinoid Research by Agency: FY 1977
(real dollars in thousands)

	Grants		Contracts		Intramural		Total	
	No.	Funds	No.	Funds	No.	Funds	No.	Funds
ADAMHA								
NIDA	55	2,267	16	1,629	4	44	75	3,940
NIMH	8	167	--	--	--	--	8	167
NIAAA	2	8	--	--	--	--	2	8
NIH								
NCI	4	91	--	--	--	--	4	91
NEI	--	--	--	--	--	--	--	--
NCHD	--	--	--	--	--	--	--	--
NIRR	--	--	--	--	--	--	--	--
NIGMS	--	--	--	--	--	--	--	--
OTHER AGENCIES								
VA	--	--	--	--	7	52	7	52
DOT	--	--	2	55	--	--	2	55
USDA	--	--	--	--	1	41	1	41
TOTAL	69	2,533	18	1,684	12	137	99	4,354

Source: Adapted from information provided by NIDA.

SUMMARY OF FINDINGS

Total federal support for research on cannabis has been declining in real dollars over the past 3 years. Most of that support comes from the NIDA research budget, which allocates approximately 10 percent of its resources to this purpose. The current level of funding, under 4 million dollars, supports only about 50 extramural projects and represents only one-tenth of the total research program of NIDA. This decline in support has inexplicably occurred during a period when the concern of the public and of all levels of government seems to be rising. It cannot be explained by lack of interest in the field, for research grant applications have risen; neither can it be

TABLE 10 Cannabinoid Research By Agency: FY 1978
(real dollars in thousands)

	Grants		Contracts		Intramural		Total	
	No.	Funds	No.	Funds	No.	Funds	No.	Funds
ADAMHA								
NIDA	47	2,104	14	1,460	3	30	64	3,594
NIMH	5	158	--	--	3	56	8	214
NIAAA	5	85	--	--	--	--	5	85
NIH								
NCI	2	80	--	--	--	--	2	80
NEI	3	68	--	--	--	--	3	68
NCHD	1	13	--	--	--	--	1	13
NIRR	2	26	--	--	--	--	2	26
NIGMS	--	--	--	--	--	--	--	--
OTHER AGENCIES								
VA	--	--	--	--	6	26	6	26
DOT	--	--	1	[a]	--	--	1	[a]
USDA	--	--	--	--	--	--	--	--
TOTAL	65	2,534	15	1,460	12	112	92	4,106

[a]Indicates a funding level of less than $1000.

Source: Adapted from information provided by NIDA.

attributed to lack of scientific opportunity; for every area we have studied, the committee has identified important questions that seem amenable to new research efforts. (Many of these have been enumerated in the preceding chapters.)

In FY '80, NIDA spent a nearly equal amount on stimulant drugs and more than four times as much on narcotics and narcotic antagonists. Most of the cannabis research is devoted to three areas in approximately equal amounts: (1) growth, processing and distribution; (2) hazards of cannabis use; and (3) basic research. Three quarters of all the federal research money devoted to cannabis goes to

TABLE 11 Cannabinoid Research by Agency: FY 1979
(real dollars in thousands)

	Grants		Contracts[a]		Intramural		Total	
	No.	Funds	No.	Funds	No.	Funds	No.	Funds
ADAMHA								
NIDA	54	2,608	10	925	1	3	65	3,536
NIMH	4	145	--	--	3	62	7	207
NIAAA	6	122	--	--	--	--	6	122
NIH								
NCI	2	85	--	--	--	--	2	85
NEI	1	36	--	--	--	--	1	36
NICHD	1	15	--	--	--	--	1	15
NIRR	--	--	--	--	--	--	--	--
NIGMS	1	9	--	--	--	--	1	9
OTHER AGENCIES								
VA	--	--	--	--	8	25	8	25
DOT	--	--	2	104	--	--	2	104
USDA	--	--	1	85	--	--	1	85
TOTAL	69	3,020	13	1,114	12	90	94	4,224

[a]FY '80: RFP 12
FY '81: RFP 14

Source: Adapted from information provided by NIDA.

investigator-initiated extramural research grants, and most of the rest to extramural contracts. There is relatively little intramural research. The fraction of NIDA grants approved is about 60 percent, but the fraction funded is slightly more than half of that. The total number of cannabis research grants is declining steadily as support (in constant dollars) continues to fall and the average cost of a project (in constant dollars) goes up.

The committee believes that the magnitude of the problem, and the extent and depth of public concern about the consequences of marijuana use warrant more support of research in this field.

TABLE 12 Drug Abuse Research Grant Award Rates and Priority Scores

	1979 Actual	1980 Actual	1981 Estimate	1982 Estimate
Applicants received (number)	359	369	382	360
Percent recommended for approval	59	62	63	62
Percent funded of those approved during year	63	57	40	27
Percent funded of all applicants	37	35	25	20
90 percent priority score	244	230	190	170

Source: Adapted from information provided by NIDA.

Emphasis should be on studies of human beings and other primates, and investigator-initiated research grants should continue to be the primary vehicle of support.

RECOMMENDATIONS

In view of the demonstrated high potential of risk to human health that has been associated with the use of cannabis, the existing funds allocated to such research are not appropriate. The committee's recommendations to federal agencies regarding support of cannabis-related research are:

- More support of cannabis research is needed. Properly allocated, it could pay large dividends in new knowledge and could help to dispel present ignorance in many areas. Without this new information, the present level of anxiety and controversy over the use of marijuana is not likely to be resolved in the forseeable future. Furthermore, we are not likely to improve our present slow progress in developing information about possible therapeutic uses of cannabis and its analogues without the stimulus of increased research grant support. At the end of each of the chapters, we have pointed out opportunities or problems that are ripe at this time.
- A larger proportion of NIDA resources could justifiably be allocated to cannabis research. Without wishing to minimize the value of any of the other drug research programs now supported by NIDA, we believe that the magnitude and social urgency of the marijuana problem warrant a higher priority for cannabis research

than it has apparently received to date. A drug that is currently used by about a third of all American high school seniors, and daily by about one in eleven, deserves more study than we currently are giving it. No other illicit drug is used as widely by our youth, and yet NIDA spent only 9 percent of its research budget on it in FY '80.

- NIDA would be advised to continue its recent policy of reducing the relative proportion of contracts and emphasizing grants. Although we believe that there is need for federal initiatives in stimulating work in neglected areas of current concern, the bulk of research suport should continue to go to investigator-initiated projects.
- The duration for investigator-initiated research should be lengthened beyond the average 3-year period in order to attract and hold good researchers.
- Other agencies should contribute funds for the production, processing, and distribution of cannabis.
- A scientific advisory group should be formed to assist in providing scientific evidence and guidance to the director of NIDA.
- An increased interagency effort targeted toward specific problems not readily addressed by other approaches is required. These would include, for example, human long-term studies, as well as studies in epidemiology, prevention, and treatment. Funds should be contributed by all agencies.
- Research on human beings and other primates should be encouraged, particularly studies in the young. There is a special need at this time for good epidemiological studies that follow identifiable cohorts of marijuana users over a period of time.

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Appendix

A

WORK OF THE COMMITTEE

To conduct this study, the Institute of Medicine established a committee of experts drawn from relevant disciplines, including clinical medicine, epidemiology, pharmacology, psychiatry, and toxicology. This steering committee's expertise was augmented by consultants, as well as by many other persons serving as panel members. Six panels, each chaired by a committee member, were formed to carry out a detailed analysis of such special issues as the effects of cannabis use on behavioral and psychosocial development, on reproductive and fetal biology, on cardiovascular and respiratory systems, and to consider neurobiologic, genetic, oncogenic, and cytogenetic issues, and cell biology, including pharmacologic and immunologic aspects. During the early months of the study, the panels met to apportion writing responsibilities, and established the scope and focus of each panel's undertaking. The chronology of the panel meetings follows.

February 3, 1981: Panel on Behavioral and Psychosocial Issues met in Washington
February 18, 1981: Panel on Neurobiological Issues met in Washington
February 26, 1981: Panel on Cardiovascular and Respiratory Issues met in New York City
February 27, 1981: Panel on Genetic/Oncogenic/Cytogenetic Issues met in Washington
March 11, 1981: Panel on Reproductive and Fetal Issues met in Boston
March 16, 1981: Subpanel on Intrapersonal Variables and Social Behavior of the Panel on Behavioral and Psychosocial Issues met in Los Angeles
March 23, 1981: Panel on Cell Biology/Pharmacological and Immunological Issues met in Boston
April 14, 1981: Panel on Behavioral and Psychosocial Issues met in Washington

The steering committee, in the meantime, nominated additional candidates for membership on the panels and committee at its first meeting on December 1, 1980. Subsequently, four more meetings were

held, on April 15, 1981, June 2-3, 1981, August 31-September 1, 1981, and October 26, 1981. The first two were held in Washington, the third meeting was held in Woods Hole, Massachusetts, and the final meeting was held in Washington.

The committee made full use of research in other countries as well as the United States. A special effort was made to coordinate activities with the staff of the Addiction Research Foundation/World Health Organization Conference on Adverse Health and Behavioral Consequences of Cannabis Use. The group's draft report and working papers were made available to the IOM committee. The mandate of this group was to consider the scientific, clinical, and epidemiological information about potential and actual hazards to health.

Because of widespread public interest in the IOM study, a notice was placed in the February 24, 1981, Federal Register to solicit information from the public and from professional groups on the health-related effects of cannabis use. Approximately 90 responses were received from professional organizations, lawyers, medical doctors, scientists, other professionals, and parents. The responses can be divided into three categories:

1. The dangers of marijuana. The majority of responses came from people and groups opposed to cannabis use. Many parents of cannabis smokers (and ex-cannabis smokers) submitted statements about their personal experiences and observations. Included among the groups that responded are the National Federation of Parents for Drug Free Youth, Georgia Congress of Parents and Teachers, the American Lung Association, Drug Information Program of the Crusade Against Crime, the Committees of Correspondence, Phoenix House Foundation, and Pride.

2. The therapeutic potential of marijuana. Responses were received from medical doctors, as well as individuals or their parents, reporting that cannabis had alleviated pain from various medical problems—rheumatoid arthritis, migraine headaches, multiple sclerosis—and had in some cases lessened the side-effects of drugs used in chemotherapy. In most cases the marijuana had to be obtained by unauthorized means, making many of the victims and their families uncomfortable. Several respondents were from the State of Michigan, where a cannabis therapeutic research program has recently been authorized by the state legislature. Responses were also received from the Alliance for Cannabis Therapeutics and the American Medical Association.

3. Support of general use and legalization of marijuana. Responses in this regard were received from lawyers and other individuals, as well as the following organizations: the Ethiopian Zion Coptic Church, the Cannabis Institute of America, the National Organization for the Reform of Marijuana Laws, and the publication High Times. One writer contended that perhaps more people would submit statements if their anonymity were assured.

Appendix

B

ACCESS TO Δ-9-THC AND MARIJUANA FOR RESEARCH AND TREATMENT

The investigational use in human subjects of Δ-9-THC and marijuana are controlled by the Federal Food, Drug, and Cosmetic Act and the Investigational New Drug Regulations issued under that Act. In addition, Δ-9-THC and marijuana are controlled under the provisions of the Controlled Substances Act and currently are controlled in Schedule I of the Controlled Substances Act. Schedule I drugs are those that have: (1) high potential for abuse, (2) no currently accepted medical use in treatment in the United States, and (3) lack of accepted safety for use under medical supervision.

Basically two agencies work together for enforcing the controls of the Act: the Food and Drug Administration (FDA) in the Department of Health and Human Services and the Drug Enforcement Administration (DEA) in the Department of Justice. The Department of Justice was petitioned to reconsider the rescheduling of Δ-9-THC and marijuana in 1972, but to date there has been no change. However, DEA and FDA are now under court order to reconsider this situation. An FDA advisory meeting, held in June 1981, considered the scheduling status of the Δ-9-THC capsule only (Federal Register, 1981). The committee recommended that the Δ-9-THC capsule be changed from Schedule I to Schedule II status when a new drug application for Δ-9-THC is approved by FDA. Schedule II drugs are those that have: (1) a high potential for abuse, (2) a currently accepted medical use in treatment in the United States or a currently accepted medical use with severe restrictions, and (3) abuse that may lead to severe psychological or physical dependence.

Complaints and concerns were expressed to the study committee about the supply and distribution of marijuana and Δ-9-THC for treating chemotherapy side-effects in cancer patients. On the one hand, physicians said that there was poor cooperation from federal agencies engaged in controlling and supplying the drug (Koller, 1981; Monsma, 1981), particularly with respect to (1) potency of Δ-9-THC received (concentrations were too low to be effective), and (2) uncertainty and irregularity of the shipments of the drug. On the other hand, some clinicians felt that it was premature to release Δ-9-THC for use in cancer patients (Moertel, 1981; Cook, 1981) because:

- specific indications have not been established, in that the way in which chemotherapeutic agents cause nausea and vomiting is not known;
- specific populations of patients have not been established;
- effective dose schedules have not been established;
- safety of treatment at doses effective for antiemetic purposes remains in question;
- reported peer-reviewed experience is contradictory and still fragmentary; and
- controlled, randomized, prospective studies have not been conducted.

Depending upon the use of the drug, two different agencies are in charge of supplying marijuana cigarettes and Δ-9-THC capsules; the National Institute on Drug Abuse (NIDA) controls the supply of marijuana cigarettes and/or Δ-9-THC capsules for basic research, and the National Cancer Institute (NCI) controls the supply of Δ-9-THC capsules for cancer treatment. The processes of obtaining supplies from each agency (or for each purpose) differ.

OBTAINING THE MARIJUANA CIGARETTES*

To obtain marijuana cigarettes for basic research,† an investigator must register with DEA (apply for a license), file a Notice of Claimed Investigation Exemption for a New Drug (IND)†† with FDA, and submit an order for drug substance to NIDA. The agencies suggest that all the paperwork be filed concurrently in order not to unnecessarily delay the process. FDA analyzes the scientific protocol and determines if the project has scientific merit, if the researcher is qualified, and if IND requirements are satisfied. DEA sends an agent to supply the order forms, to determine from local police records whether the investigator has a drug trafficking record, and to see if the investigator has provisions for keeping the drug secure from theft. On notification of approval by FDA and DEA, NIDA will supply the drug. The entire process is supposed to take from 30 days to 6 months, including the visit from the DEA (Tocus, 1981). However, some investigators have contended it can take longer.

To obtain marijuana cigarettes (or Δ-9-THC capsules) for investigational treatment of glaucoma, multiple sclerosis, or

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*Concentrations of Δ-9-THC range between 0.5 and 2.8 percent; the marijuana cigarettes contain other cannabinoids, as well as other chemicals.

†DEA and FDA do not fund research. Federal agencies that have supported cannabis research in FY 1979 (in order of percent cannabinoid research) are: NIDA (84), NIMH (5), NIAA (3), NCI (2), DOT (2), USDA (2), NEI (1), NICHG and NIGMS (less than 1).

††Twelve states hold their own IND as of September 1981.

anorexia, the physician must go through the basic research route. In view of the possible contaminant problems with aspergillus and salmonella, it may be necessary to provide sterilized marijuana cigarettes to patients.

OBTAINING THE Δ-9-THC CAPSULES*

As a Schedule I drug, Δ-9-THC can only be used for investigational purposes. However, some cancer patients undergoing chemotherapy treatment and resistant to standard antiemetic drugs benefit from the antiemetic properties of Δ-9-THC. Therefore, a system has been established for the distribution of Δ-9-THC capsules to chemotherapy patients within the guidelines of the Schedule I restrictions.

A physician who wants to dispense Δ-9-THC capsules to his cancer patients does so under NCI Group C distribution system (Group C Guidelines, 1980). The physician sends an FDA registration form to a DEA-approved hospital pharmacy. The pharmacy forwards the application to NCI, which holds its own IND. NCI evaluates the credentials of the physician, and, if approving, informs the pharmacy to supply the physician. This process, under emergency situations, can take as little as 24 hours (Abraham, 1981). A physician may also obtain marijuana cigarettes for cancer patients in an NCI-approved treatment program. More than 500 hospitals have been invited to participate (Abraham, 1981), and about 300 have clearance from DEA (Gunby, 1981). Shipments began late last fall (Gunby, 1981). More than 1,500 physicians have applied, and 1,000 have been approved by DEA (Gunby, 1981). The doses available in capsule form are 2.5 and 5 mg.

At least one company has submitted a New Drug Application (NDA) to the FDA for manufacture of a synthetic Δ-9-THC capsule to treat cancer patients (Federal Register, 1981; Tocus, 1981). If an NDA for Δ-9-THC is approved, a Schedule I status will no longer be appropriate. In fact, the Drug Abuse Advisory Committee† recommended that the Δ-9-THC capsule be changed from Schedule I to a Schedule II status when an NDA is approved by FDA.

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*Purity of Δ-9-THC capsules is better than 96 percent (97-98 percent, C. Turner, 1981, and 100 percent, D. Abraham, 1981).

†The committee advises the Commissioner of Food and Drugs regarding the scientific and medical evaluation of all information gathered by the Department of Health and Human Services and the Department of Justice with regard to safety, efficacy, and abuse potential of drugs and other substances and recommends action to be taken by the Department of Health and Human Services with regard to the marketing, investigation, and control of such drugs or other substances.

SUPPLIERS OF MARIJUANA CIGARETTES AND Δ-9-THC CAPSULES

Marijuana cigarettes are supplied to NIDA by Research Triangle Institute, which stores and distributes them (Davignon, 1981).

Many contractors are engaged in the synthesis, storage, and distribution of Δ-9-THC capsules to NCI. Manufacture is done by Aerojet Propulsion Labs (large scale) and Arthur D. Little (small scale). Stanford Research Institute assays Δ-9-THC. Banner Gelatin encapsulates it. Flow Laboratories stores and ships Δ-9-THC to DEA-approved hospital pharmacies.

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Appendix

C

LONGITUDINAL STUDIES

Appendix C is a review of prospective longitudinal studies of drug use in normal populations listed by completion status, type of sample (school sample, community sample), age of respondents, and year of first contact. Some of the studies are ongoing.

Characteristics of Longitudinal Studies of Drug Use in Normal Populations Listed by Completion Status, Type of Sample, Age of Respondents, and Year of First Contact.

Part 1. Completed Studies: School Samples

Principal Investigators	Population Characteristics	Grade/Age at T1 of Sample Eligible for Panel	Year of First Contact	Year of Last Contact	Total Number of Contacts	Interval Between Contacts	Size of Sample T1 Eligible for Panel	Size of Matched Panel	Methods of Data Collection[a]	Drugs Inquired About
Kellam	All entering public and parochial school first-grade children in a black community in Chicago with low income and high unemployment	Grade 1	1966	1975-1976	5	3 times during first grade 2 years 7 years	1,241	705	Home interviews; school tests (IQ, achievement) and grades; ratings by teacher, clinician, mother (T1-T5); police records, questionnaires (T5)	Cigarettes, beer or wine, hard liquor, marijuana, LSD, other psychedelics, uppers, downers, tranquilizers, cocaine, heroin and other opiates, glue, cough syrup
Smith	Students from grades 4-12 in 6 school systems in greater Boston area, predominantly white and middle-class	Grades 4-11	1969	1973	2-5	1 year	12,000 (approx.)	Variable	Self-administered questionnaires in classrooms; school records; peers' ratings of students' personalities	Cigarettes, liquor, marijuana, ups, downs, psychedelics opiates, inhalants, nonprescription drug store products
Kaplan	Seventh grade students from 18 of 36 junior high schools of the Houston Independent School District	Grade 7	1971	1973	3	1 year	7,620	3,148	Self-administered questionnaires in classrooms	Beer or wine, liquor, marijuana, narcotics
Jessor and Jessor	High school study: random sample of students from grades 7-12 of 3 junior and 3 senior high schools in a small city in the Rocky Mountains, almost all of Anglo-American, middle-class background	Grades 7-9 Grades 10-11	1969 1969	1972 1972	4 2-3	1 year 1 year	589 262	483 Variable	Self-administered questionnaires outside of class, school records	Beer or wine, hard liquor, marijuana, amphetamines, LSD, other psychedelics, cocaine, and heroin
Elinson and Josepheon	Students from 5 junior and 18 senior high schools purposefully selected to represent varied regions, community sizes, socioeconomic levels, and racial compositions but not to represent the United States	Grades 7-10	1971	1973	2	2 years	18,363	8,136	Self-administered questionnaires in classrooms	Cigarettes, beer or wine, hard liquor, marijuana or hashish, amphetamines, methedrine, barbiturates, LSD, other psychedelics, cocaine, heroin, inhalants

CORRECTION

THIS DOCUMENT
HAS BEEN REPHOTOGRAPHED
TO ASSURE LEGIBILITY

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Part 1. Completed Studies: School Samples

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Jessor and Jessor	High school study: random sample of students from grades 7-12 of 3 junior and 3 senior high schools in a small city in the Rocky Mountains, almost all of Anglo-American, middle-class background	Grades 7-9	1969	1972	4	1 year	589	483	Self-administered questionnaires outside of class, school records	Beer or wine, hard liquor, marijuana, amphetamines, LSD, other psychedelics, cocaine, and heroin
		Grades 10-11	1969	1972	2-3	1 year	262	Variable		
Blinson and Josephson	Students from 5 junior and 18 senior high schools purposefully selected to represent varied regions, community sizes, socioeconomic levels, and racial compositions but not to represent the United States	Grades 7-10	1971	1973	2	2 years	18,363	8,136	Self-administered questionnaires in classrooms	Cigarettes, beer or wine, hard liquor, marijuana or hashish, amphetamines, methedrine, barbiturates, LSD, other psychedelics, cocaine, heroin, inhalants

Annis and Watson	Students of 3 public high schools in a northern Ontario city and dropouts from same classes	Grade 9	(Not Given)	(Not Given)	2	13 months	915	886	Self-administered questionnaires in class; interviews with dropouts at T2	Alcohol, marijuana, tobacco, solvents, hallucinogens, barbiturates, opiates
Kandel	(1) Multistage random sample of New York State public secondary school students from 18 schools and data from mothers or fathers; best school friend in subsample of 5 schools	Grades 9-12	1971	1972	2	6 months	8,206	5,623	Self-administered questionnaires in classrooms (adolescents). Mailed questionnaires (parents)	Cigarettes, beer or wine, hard liquor, marijauna, hashish, amphetamines, methedrine, barbiturates, tranquilizers, LSD, other psychedelics, cocaine, heroin, other narcotics, inhalants, cough syrup
	(2) 1972 Senior class (Third wave)	Grade 12	1971	1973	3	7-12 months	2,386	1,635	Self-administered questionnaires (T1, T2); mailed questionnaires (T3)	Same
Johnston	Youth in Transition cohort--A national random sample of boys in 87 public high schools in continental United States in 1966; drug components added in 1970 and 1974	Grade 10	1966	1974	5	2 years 1 year 1 year 4 years	2,213	1,608	Interviews (T1, T2,T4); self-administered questionnaires (T1-T4); mailed questionnaires (T5); ability tests (T1)	Cigarettes, beer, wine, hard liquor marijuana, amphetamines, barbiturates, hallucinogens, methaqualone, cocaine, heroin
Britt and Campbell	North Carolina high school seniors who expressed an intention to attend college in fall	Grade 12	1961	1962	2	1 year	2,300	1,420	Self-administered questionnaires, (unclear whether in or out of class)	Alcohol
Gulas and King	Seniors at Dartmouth College matched retrospectively to their freshman-year records	College freshmen	Not Given (prior to 1976)	Not Given	2	4 years	90	90	Mailed questionnaires	Marijuana, amphetamines, barbiturates, hallucinogens
Haagen	College juniors at Wesleyan University matched retrospectively to their freshman-and-sophomore-year records	College freshmen	1965	1968	2	3 years	70	70	Self-administered questionnaires; test data on file at Office of Psychological Service	Tobacco, alcohol, marijuana, hallucinogens
Garfield and Garfield	Random sample at large private suburban residential western university	College students	1966-1967	1970-1971	4	1 year	300	T2-100 T3-201 T4-100	Personally administered questionnaires	Alcohol, marijuana, hashish, LSD, mescaline

[a]The same methods were used in all waves of data collection of a study, unless specific times are indicated.

Characteristics of Longitudinal Studies of Drug Use in Normal Populations Listed by Completion Status, Type of Sample, Age of Respondents, and Year of First Contact.

Part 1. Completed Studies: School Samples

Principal Investigators	Population Characteristics	Grade/Age at T1 of Sample Eligible for Panel	Year of First Contact	Year of Last Contact	Total Number of Contacts	Interval Between Contacts	Size of Sample T1 Eligible for Panel	Size of Matched Panel	Methods of Data Collection	Drugs Inquired About
Grupp	Random sample of 1% of students at Illinois State University not reporting marijuana use	College undergraduates and graduate students	1969	1973	3	2 years	127	T2-120 T3-103	Personal interviews at T1, T2; mailed questionnaires for those out of area at T2, and for everyone at T3	Marijuana
Goldstein	Students enrolled at Carnegie-Mellon University (class of 1972)	College freshmen	1968	1972	4	Approx: 9 months 16 months 20 months	770	417	Self-administered questionnaires, outside of class (mail technique preserving anonymity)	Beer, hard liquor, marijuana (incl. hashish), tranquilizers and barbiturates, amphetamines, hallucinogens, narcotics, tobacco
Groves	Full-time students at predominantly white nonspecialized colleges with projected enrollment of over 1,000 (1970)	College freshmen and juniors	1970	1971	2	1 year	7,948	3,961	Mailed questionnaires	Caffeine, alcohol, marijuana, hashish methedrine, other amphetamines, barbiturates, sedatives, tranquilizers, LSD, other psychedelics, cocaine, opium, heroin, other narcotics, cough syrups
Mellinger	(1) Probability sample of male freshmen of University of California at Berkeley in Fall 1970	College freshmen	1970	1973	2	2 1/2 years	960	834	Personal interviews and self-administered forms; school records; mailed questionnaires	Tobacco, alcohol, marijuana or hashish, amphetamines, barbiturates, sedatives, psychedelics, cocaine, heroin, opium, other opiates, inhalants
	(2) Probability sample of senior men in class of 1971	College seniors	1971	1973	2	2 1/2 years	986	821	Same	Same
Jessor and Jessor	College study--random sample of arts and science university students in a small Rocky Mountain city	College freshmen	1970	1973	4	1 year	276	226	Self-administered questionnaires; school records	Beer or wine, hard liquor, marijuana, amphetamines, LSD, other psychedelics, cocaine, heroin

Schuckit	Random samples of incoming freshmen at:									
	(1) Washington University in St. Louis	College freshmen	1970	1974	4	1 year	158	Not Given	Semistructured interviews: mailed questionnaires to nonresidents	Tobacco, alcohol, marijuana, hashish, amphetamines, speed, LSD, mescaline, psilocybin, STP, MDA, opiates, medicinal drugs
	(2) University of California at San Diego	College freshmen	1971	1975	4	1 year	222	188		
Ginsberg and Greenley	Students enrolled at University of Wisconsin-Madison 1971-1974	College freshmen and sophomores	1971	1974	2	2 years	319	274	Mailed questionnaires	Marijuana
Sadava	(1) College freshmen in an English-language Roman Catholic college in province of Quebec	College freshmen	Not Given (prior to 1973)	Not Given	2	6 months	358	319	Self-administered questionnaires in classrooms	Cannabis, psychedelics, amphetamines, alcohol
	(2) Undergraduates at a small Ontario university in introductory psychology courses	College freshmen and sophomores	1972	1973	2	6 months	467	374	Self-administered questionnaires	Alcohol, tobacco, marijuana and other illicit drugs
Kay	Random sample of male students entering Lehigh University	College freshman	1971 1972 1973	1974 1974 1974	4 3 2	6 months: 1-T2; 1 year; T2-T1, T1-T4	130 124 112	68 85 98	Self-administered questionnaires, adjective check list, California Psychological Inventory	Marijuana
Moos	Entering classes of two universities	College freshmen	Not Given	Not Given	3	9 months 3 years	1,296	T2-886 T3-567	Self-administered questionnaires, outside class	Alcohol

Characteristics of Longitudinal Studies of Drug Use in Normal Populations Listed by Completion Status, Type of Sample, Age of Respondents, and Year of First Contact.

Part 2. Completed Studies: Community Samples

Principal Investigators	Population Characteristics	Grade/Age at T1 of Sample Eligible for Panel	Year of First Contact	Year of Last Contact	Total Number of Contacts	Interval Between Contacts	Size of Sample T1 Eligible for Panel	Size of Matched Panel	Methods of Data Collection	Drugs Inquired About
Lukoff and Brook	Samples of ghetto community stratified for ethnicity, social class, and contiguity with deviance:									
	(1) Children	13-17 yrs	1973	1975-1976	2	3 years	403	181	Household interviews	Marijuana, dope, downs, psychedelics, heroin
	(2) Mothers	30-65 yrs					284	183		
Brunswick	Representative community sample of Harlem youth	16-17 years old	1969-1970	1975-1976	2	6 years	664	516	Household interviews	Alcohol, marijuana, amphetamines, barbiturates, acid, cocaine, heroin, glue
Bieber	19 year old conscripts born in canton of Zurich who report some alcohol/drug use at initial contact	19 years	1971	1974	2	3 years	1,413	841	Self-administered questionnaires T1; mailed questionnaires T2	Alcohol, tobacco, marijuana
Robins	(1) Vietnam veterans random sample of army enlisted males who returned from Vietnam to the United States in September 1971, and a supplementary random sample from all men returning that month whose urine had been detected as positive for morphine prior to leaving Vietnam. T2 sampled from reduced T1 target population restricted to men inducted since 1969 and from the 25 more populous states	20 years (mean)	1972	1974 1975	2	2 years	605	571	Interviews; urine samples; military and Veterans' Administration records	Cigarettes, alcohol, marijuana, amphetamines, barbiturates, tranquilizers, hallucinogens, cocaine, narcotics

	(2) Control group at T2--sample of non-veterans matched on Selective Service Board, draft eligibility, age, and education	Matched to veterans	1974-1975	--	1	--	302	284	Interviews; urine samples; Selective Service Records	Same
Cahalan et al.	(1) National probability sample of United States adult population; (T2) sampled from reduced T1 target population N=1,610, with abstainers and very infrequent drinkers subsampled at a lesser rate	21 and over	1964-1965	1967	2	2 years	1,810	1,359	Household interviews (T1); mail questionnaires	Drinking patterns, practices, and problems
	(2) National probability sample of white males aged 21-59, with oversampling of urban areas	21-59 years old	1969	1973	2	4 years	978	725	Same	Same
	(3) Probability sample of white males, aged 21-59, in San Francisco	21-59 years old	1967-1968	1972	2	4 years	796	615	Same	Same

Characteristics of Longitudinal Studies of Drug Use in Normal Populations Listed by Completion Status, Type of Sample, Age of Respondents, and Year of First Contact.

Part 3. Ongoing Studies: A--Within Adolescence, Adulthood

Principal Investigators	Population Characteristics	Grade/Age at T1 of Sample Eligible for Panel	Year of First Contact	Year of Last Contact	Total Number of Contacts	Interval Between Contacts	Size of Sample T1 Eligible for Panel	Size of Matched Panel	Methods of Data Collection	Drugs Inquired About
Huba and Bentler	Students in the greater Los Angeles area with oversampling of lower socioeconomic schools	Grades 7-9	1976	1980[1]	4	1 year 2 years 1 year	1,634	768	Self-administered questionnaires from the students, parents (T1,T4) and peers (T1,T2)	Cigarettes, beer, wine, liquor, marijuana, hashish, coffee, minor and major tranquilizers, barbiturates, sedatives, antidepressants, amphetamines, non-amphetamines, uppers, LSD, other psychedelics, sniffing stuff, amyl nitrate, nonprescription: sleeping pills, stimulants, cough medicine, cold medicine, cocaine, heroin, other narcotics, PCP, coca paste
Lukoff and Brook	Quota sample from 6 states (Connecticut, Kansas, New Jersey, New York, Ohio, and South Carolina). Approximately equal numbers of males and females, blacks and whites of middle socioeconomic status	Grades 9-10	1979	1981	2	2 years	932	Not yet completed	Self administered questionnaires	Alcohol, cigarettes, marijuana, amphetamines, barbiturates, LSD, other psychedelics, heroin, other narcotics, tranquilizers, quaaludes, cocaine, inhalants
Clayton and Voss	Nationally representative sample of men born between 1944 and 1954 inclusive, who registered with Selective Service upon age 18	20-30 years old	1974-1975	1982	2	6-7 years	450	Not yet completed	Personal interviews	Cigarettes, alcohol, marijuana, psychedelics, stimulants, sedatives, heroin, other opiates, cocaine, tranquilizers, inhalants

Carpenter, Lester, Pandina, and Labouvie	Cohort-sequential design--Random samples of New Jersey adolescents-- a) 9 cohorts born 1967-75 b) 3 cohorts born 1966-66 c) 3 cohorts born 1961-63 d) 5 control groups at T4	a) 12 years b) 15 years c) 18 years	1979	ongoing	14 telephone 8 onsite	1 year 3 years until age 24; 6 years after age 24	a) 1,350 b) 450 c) 450 d) 150	Not yet completed	On-site: -personal interview -self-administered questionnaires -behavioral tests -blood sample -psychological test -medical exams Telephone contact: -major life events -alcohol and drug taking outcomes	Alcohol, cigarettes, marijuana, amphetamines, barbiturates, LSD, other psychedelics, heroin, other narcotics, tranquilizers, quaaludes, cocaine, inhalants, PCP, amyl and butyl nitrates, over-the-counter psychotherapeutics, caffeine
Elliott	National Youth Survey-National probability multistage cluster sample of dwellings	11-17 years	1976	1980	5	1 year	1,725	T2-1655 T3-1626 T4-1543 T5-1494	Personal structured interviews	Tobacco, beer, wine, liquor, marijuana, hallucinogens, cocaine, heroin, medical and nonmedical use of amphetamines, barbiturates
Jessor, Jessor, and Donovan	Young adult follow-up. High school sample--random sample of students from grades 7-9 of 3 junior high schools in a small city in the Rocky Mountains, almost all of Anglo-American, middle class background	Grades 7-9	1969	1981[a]	6	1 year 1 year 1 year 7 years 2 years	432	Not yet completed	T1-T4--Self-administered questionnaires in school (high school sample) in small groups (college sample)	Beer, wine, hard liquor, marijuana, LSD, amphetamines, cocaine, heroin, tranquilizers, barbiturates, morphine
	College sample--random sample of freshman class arts and science university students in a small Rocky Mountain city	College freshman	1970	1981[a]	6	1 year 1 year 1 year 6 years 2 years	205	not yet completed	T5,T6--Adult follow-ups: mailed self-administered questionnaires	

[a]Future contacts planned, if funds available.

Characteristics of Longitudinal Studies of Drug Use in Normal Populations Listed by Completion Status, Type of Sample, Age of Respondents, and Year of First Contact.

Part 3. Ongoing Studies: B--From Adolescence to Young Adulthood

Principal Investigators	Population Characteristics	Grade/Age at T1 of Sample Eligible for Panel	Year of First Contact	Year of Last Contact	Total Number of Contacts	Interval Between Contacts	Size of Sample T1 Eligible for Panel	Size of Matched Panel	Methods of Data Collection	Drugs Inquired About
Johnston and Bachman	Monitoring the Future--cohort sequential design. Successive nationally representative cohorts of high school seniors from 115 public and 15 private high schools; repeated annually; entire senior classes in schools with 300 seniors, and subsamples (n=300) in larger schools	Grade 12	1975-ongoing	ongoing	11 for each cohort	1 year for each cohort (2 yrs for each cohort 1/2 sample)	2,400 (target for each cohort; 1,200 for each cohort 1/2 sample)	Not yet completed	T1--Self-administered questionnaires in classrooms T2, adult follow-ups -- Mailed questionnaires	Alcohol, cigarettes, marijuana, amphetamines, barbiturates, LSD, other psychedelics, heroin, other narcotics, tranquilizers, quaaludes, cocaine, inhalants, PCP, amyl and butyl nitrates, over-the-counter psychotherapeutics, caffeine
Kandel	Multistage random sample of adolescents enrolled in New York public secondary school selected from 18 schools a) regular students b) absentees	Grades 10-11	1971	1980[a]	3	6 months 9 years	a) 1,321 b) 330	1,081 244	T1,T2--Self-administered questionnaires in classrooms T3--Adult follow-up--Household interviews	Cigarettes, beer or wine, hard liquor, marijuana, hashish, methedrine, LSD, other psychedelics, cocaine, heroin, other narcotics, inhalants, cough syrup, stimulants, sedatives and tranquilizers (medical and non-medical use)

Kaplan	Seventh grade students enrolled in 18 of 36 junior high schools of the Houston Independent School District	Grade 7	1971	1981-1982	4	1 year ½ year 9-11 years	9,300	Not yet completed	T1-T3--Self-administered questionnaires T4--Adult follow-up--Household interviews	Marijuana/hashish, barbiturates, inhalents, hallucinogens, amphetamines, tranquilizers, heroin, other narcotics, quaaludes, cocaine
Lewer and Akers	All students in 2 junior high schools, 1 senior high school in small Iowa city	7-12	1980	1984	5	1 year	2,194	Not yet completed	Self-administered questionnaires in classroom Saliva test	Cigarettes, chewing tobacco, snuff, cigars/pipe
Schlegel	Random sample of students in 2 school boards (urban, rural) in southern Ontario	9-12	1974	1980[a]	7	4 months 4 months 4 months 1 year 2 years 2 years	1,781	918	(T1-T4) Self-administered questionnaires in classroom. (T5-T7) Mailed self-administered questionnaires	Beer, wine, liquor, cigarettes, amphetamines, barbiturates, marijuana, hallucinogens, tranquilizers, heroin, glue
Smith	Students and former students in middle-class predominantly white school district in the greater Boston area	Grades 8-10	1969	1981	4-6	1 year 1 year 1 year 1 year 8 years	1,935	Not yet completed	T1-T5--Self-administered questionnaires, peer ratings of personality, school records T6--Adult follow-up - Mailed questionnaires	Cigarettes, beer, wine, liquor, marijuana, hashish, ups, downs, tripping stuff, cocaine, heroin and other opiates, drug store medicine, sniffing stuff, combination drugs

[a]Future contacts planned, if funds available.

Appendix

D

PARAQUAT ISSUE

Paraquat is a herbicide that is used throughout the world. It is available in an aerosol form, granules, and a water-soluble concentrate. As a result of accidental or suicidal swallowing of the water-soluble concentrate, more than 500 human fatalities have occurred (Harley et al., 1977). In contrast, neither inhalation of the spray nor ingestion of paraquat granules has been shown to be of clinical importance (Fairshter and Wilson, 1975).

About 60 percent of the marijuana consumed in the United States is grown in Mexico. Since 1975, in the attempt to reduce the illegal production of marijuana, the Mexican government has been spraying marijuana fields from airplanes. The herbicide kills the treated plants within 1 or 2 days. Marijuana producers have resorted to harvesting the plants soon after spraying, minimizing exposure to sunshine, so that they are not destroyed. The paraquat persists on the dried leaves. Samples of marijuana confiscated at the U.S.-Mexico border have disclosed that about 21 percent of the confiscated marijuana was contaminated with paraquat in varying concentrations.

Paraquat damages the lungs, heart, kidneys, adrenal glands, central nervous system, liver, skeletal muscle, and spleen. In general, all effects but those on the lungs are transitory. The changes in the lungs of humans after ingestion appear to be dose-related: small amounts of the swallowed chemical may cause modest and reversible lung damage; in contrast, larger quantities cause lethal pulmonary fibrosis. An important element in paraquat toxicity is the fact that it is concentrated in the lungs where it does particular damage to the alveolar lining. In many respects, probably including the mechanism by which it damages the lungs, its effects resemble those of oxygen toxicity but seem to be less reversible (Smith and Heath, 1976).

With respect to marijuana, the use of paraquat as a herbicide entails the possibility of risk to two populations: (1) those who spray the paraquat and the workers in the fields who are exposed to an environment containing the paraquat spray, and (2) the marijuana smoker. To date, no toxic effects attributable to paraquat, per se, have been proved in either population. However, the observations thus far relate to the acute hazards of paraquat inhalation and do

not provide any assurance about the long-term effects. Indeed, observations on other inhaled toxins suggest that exposure for many years may be prerequisite for the development of clinical disability.

An important question with respect to the toxic effects of paraquat on the lungs is how much of the paraquat survives combustion and is transferred in the smoke to the gas-exchanging surfaces of the lungs. Studies conducted by NIDA indicate that as much as 0.2 percent of the paraquat in a marijuana cigarette appeared in a condensate of smoke prepared under laboratory conditions. The results suggested that a typical marijuana cigarette contaminated at approximately 500 ppm--a reasonable degree of contamination--would produce smoke containing up to 1 mg of paraquat. This experimental evidence has led to the prediction that a human smoker of five marijuana cigarettes per day would expose the lungs to approximately 5 mg of paraquat. Laboratory evidence derived from hamsters suggests the possibility of damaging the distal part of the airways (the bronchioles and the proximal alveolar ducts) by this exposure. These experiments and predictions suggest that an individual who continued to smoke paraquat-contaminated cigarettes would be a candidate for serious lung injury. The prospect probably would be greatly heightened by the toxic effects of the combusted marijuana.

There are only a few observations of experimental animals that bear directly on the effects of inhaled paraquat (Kimbrough and Gaines, 1970; Zavala and Rhodes, 1978). These suggest that similar lesions are produced by ingested paraquat and by paraquat introduced into the airways. For example, the introduction of minute quantities of paraquat dichloride intrabronchially, in concentrations ranging from 10 mg to 100 mg, elicited focal pulmonary edema, hemorrhage, and fibrosis (Zavala and Rhodes, 1978). The smaller doses are within the range to which a smoker of marijuana contaminated by paraquat might be exposed. However, the experimental evidence is not entirely relevant on several accounts: (1) paraquat arriving at the lung surfaces by inhalation from contaminated air or after smoking must be carried in the form of smoke, gas, or small droplets, because larger droplets, such as the aerosols used in agriculture, are apt to precipitate out in proximal airways, which are protected by cilia and mucus; (2) the intrabronchial installation of paraquat in a solution provides a different pattern of access to the gas-exchanging surfaces of the lungs than does inhalation of smoke, gas, or droplets; (3) because of its water solubility, paraquat that escapes pyrolyzation during smoking would be expected to be taken up by the tracheal bronchial tree and its branches before reaching the alveoli unless carried in the form of smoke, gas, or small droplets.

In essence, the evidence concerning the injurious effects of paraquat inhaled after either spraying or smoking is too meager for conclusions. The observations available since 1975 have not proved that paraquat, per se, is harmful to the lungs. On the other hand, the clinical experience to date, coupled with the increasing understanding of the biochemical basis for paraquat toxicity, raises the serious possibility that continued exposure to inhaled paraquat is likely to be harmful to the lungs, that the predominant effect

will be diffuse interstitial fibrosis, and that if exposure is sufficiently intense over years, respiratory insufficiency, disability, and death may reasonably be expected to ensue.

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Position Statements

ALASKA PEACE OFFICERS ASSOCIATION

Concerning Legislative Proposals

before the

Fifteenth Alaska Legislature

March 1987

ALASKA PEACE OFFICERS ASSOCIATION

DDC Coordinator
P.O. Box 240106
Anchorage, AK
99524-0106
(907) 376-9177

State APOA Office
P.O. Box 240106
Anchorage, AK
99524-0106
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March 12, 1987

The Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Members of the Alaska State Legislature:

The Alaska Peace Officers Association, comprised of over 1000 members within the criminal justice system in Alaska, is pleased to forward our position with respect to several legislative proposals. Each has been discussed in detail by the Board of Directors at our meeting last month in Juneau.

We consider these proposals as priority measures for the improvement of the justice system. Several have cost savings potential. We would be pleased to provide additional information needed and to arrange for personal testimony as these measures proceed through the legislative process.

Please don't hesitate to contact me at 694-6712 or our legislative liaison, Steve Kalwara of the Juneau Police Department.

Thank you for your consideration of our view on the following bills.

Sincerely yours,

Rollie Port

Rollie Port
President

TABLE OF CONTENTS

SB 32 (Fischer and Faiks) and
HB 55 (Martin) Identical measures, relating to the recriminalization of marijuana.

APOA strongly supports recriminalizing marijuana.

Alaska is the only state to have, in effect, legalized small amounts of marijuana - up to four ounces - for personal use. No other state has adopted a similar law. Using small amounts of marijuana legally stimulates trafficking of the drug which is illegal. The existing statute, in effect, promotes illegal activity.

Possession of any quantity of marijuana is against federal law while state law permits possession of small amounts. This creates confusion in the minds of the public. This dichotomy of federal law vs. state law tends to breed disrespect for the law. As the Baltimore Sun editorialized in early 1984, "Only in Alaska can you sit at home and smoke marijuana, secure in the knowledge that you are breaking federal law with the blessing of the State Supreme Court."

Alaska's tolerance of marijuana has also inhibited the efforts of the U.S. to obtain agreements by foreign countries to crack down upon illicit drugs in their country. According to the Undersecretary for International Narcotics Affairs, Department of State, in a recent address in Anchorage, several foreign countries have questioned the sincerity of the U.S. regarding suppression of illicit drugs by calling attention to Alaska's legalization of small amounts of marijuana. This is significant

since the U.S. is a signatory nation to two international conventions concerning control of narcotics - the Single Convention on Narcotic Drugs of 1961 and the Psychotropic Substances Act of 1971, which include outlawing marijuana.

APOA considers the contradiction of federal and state law regarding marijuana, the increasingly effective health campaigns against smoking, and the public's proclaimed respect for the law, with state law permitting marijuana use, to be sending mixed signals to our youth. Either society condones drug use and smoking or it does not. Our collective position should be clear to our young people.

The Ravin decision leading to legalizing marijuana was based in part upon the finding that the state could show no clear and convincing public need to ban marijuana. Since then, more and more information from around the country shows increasing concern about the health aspects of smoking in general and marijuana in particular. The APOA believes that a clear and convincing health issue can now be made to support a ban upon marijuana use.

The APOA knows of no police department that would undertake an intensive enforcement effort against persons possessing small amounts of marijuana, if possession would be recriminalized. Frankly, there are more urgent needs to be addressed. Therefore, we would support a citation, mail-in bail approach, as is now used for most traffic infractions.

The APOA is more interested in consistency of our laws, clear and concise positions about marijuana for our youth, and other

advantages of recriminalization than in a tough, unyielding enforcement program.

Anchorage Chamber of Commerce

Crime Commission

February 25, 1987

Representative Terry Martin
Alaska House of Representatives
Pouch V
Juneau, Alaska 99811

Dear Terry:

The Anchorage Crime Commission has endorsed the recriminalization of marijuana as one of its 1987 goals. The Commission enthusiastically supports your previously stated position on this issue.

The Commission's Public Opinion survey, conducted in the Anchorage area, indicated that there was a strong desire by the general public to change the present law.

This correspondence is to reiterate our strong support of this issue and request your continued support and endorsement of HB 55. We believe the passage of this legislation will be beneficial to Alaska and its citizenry.

We further request your support in enlisting other members of the State Legislature to help assure passage of this bill into law.

If the Anchorage Crime Commission can be of further assistance in this matter please contact me.

Thank you for your support.

Sincerely,

Harold C. Heinze

Harold C. Heinze
Chairman

A Committee of the
Anchorage Chamber
of Commerce

415 F Street
Anchorage AK 99501
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City of Galena
Antoski Hall • P.O. Box 149 • Galena, Alaska 99741 • Telephone (907) 656-1301

February 25, 1987

Representative Alyce Hanley
PO Box V, MS 3100
Juneau, AK 99811

Dear Representative Hanley:

On behalf of the Galena Drug Task Force, a group of people representing law enforcement agencies, education, the community, city and religious group initially appointed by the Galena City Council, would like to make you aware that there is a real drug problem on the Yukon River and especially here in Galena.

Further, we would like to encourage you to support legislation that would criminalize the possession of any amount of marijuana and legislation which will help make it possible to prosecute and convict dealers not only of marijuana but all controlled substance.

Your help and support will be most appreciated.

Sincerely,

Harry E. Purdy
Chairperson
Galena Drug Task Force

cc: Pat Myers, City Manager

HP/tw

BILL NO: HB 55
TITLE: "An Act relating to marijuana; and providing for an effective date"
DATE: 3/4/87

The Juneau Police Department is supportive of this legislation.

The purpose of HB 55 is to recriminalize the possession of any amount of marijuana. By achieving this end a number of purposes will be served.

Increasingly it has been shown that the long term consumption of marijuana poses a health hazard of serious consequence. A number of medical studies substantiate this fact. It is necessary to reflect that the possession of any amount of marijuana will not be tolerated so as to reinforce the concept that health hazards do exist when marijuana is used. Marijuana has been targeted as the single best predicator of other future illegal drug use.

The present conflict that exists between current state and federal law tends to create confusion in the mind of the public. This conflict creates apathy on the part of the public and flies in the face of the need for consistency in the law. Disregard and apathy are most readily apparent in the minds of the young people of the community. This conflict also creates impediments in the discharge of local police responsibilities in addressing the problem of drug traffickers.

The relaxed attitude toward marijuana in Alaska creates in the minds of people that this is a state that condones this and other types of drug usage. It creates a marked place for a substance that is legal here but illegal in all other states.

The recriminalization of marijuana would not, as some sources are concerned, create a large scale impact on the criminal justice system. The primary focus is and will continue to be on interception, interdiction and prosecution of drug sources. This is a demonstrated philosophy that provides cost effective results for resources expended.

Michael S. Gelston
Chief of Police
Juneau Police Department

MSG/ps6

BILL NO: HB 55 DATE: 1/21/87

TITLE: "An Act relating to marijuana; and providing for an effective date.

CONTACT: Maj. Walter J. Gilmour
Acting Director

The Division of Alaska State Troopers is neutral on this legislation.

Many individuals and groups in Alaska feel that the use of marijuana is harmful to public health and welfare. The purpose of this legislation is to recriminalize the possession of any amount of marijuana.

Presently the state law allows up to four ounces of marijuana for personal use. This is in direct conflict with the existing Federal law. This in effect encourages the violation of Federal law.

The existing conflict of Federal and State law is confusing in the mind of the public. The public expects consistency rather than diversity in the law. Such diversity tends to breed disrespect for the law in general, especially upon the impressionable minds of our youth.

Alaska's lenient attitude toward marijuana in effect creates a legal market for a substance that is illegally grown in other states.

Alaska's legalization of small amounts of marijuana directly contravenes the terms of the Single Narcotics Convention, the international treaty which outlaws marijuana and other controlled substances. The United States is one of numerous countries which are signators to the convention.

Recriminalizing marijuana would not, as some fear, result in wholesale arrest of individuals possessing small amounts of marijuana. The present drug enforcement philosophy of source interdiction recognizes the far greater cost-effectiveness of striking against high-level distributors, and sadly, there is no lack of high-level drug dealers in Alaska to occupy the enforcement efforts of narcotics officers.

William R. Nix
Acting Commissioner

DEPARTMENT OF PUBLIC SAFETY

STATE OF ALASKA 1987 LEGISLATIVE SESSION
FISCAL NOTE

Bill Version: HB 55
Publish Date:

REQUEST
Revision Date:
Title: "An Act relating to marijuana; and providing for an effective date."
Sponsor: Rep. Martin
Requestor: H HESS/FN

Agency Affected: Public Safety
BRU: Alaska State Troopers
Components: Detachments & C.I.B. Narcotics

EXPENDITURES/REVENUES: (Thousands of Dollars)

	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92
OPERATING						
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	0	0	0	0	0	0
CAPITAL						
REVENUE						

FUNDING: (Thousands of Dollars)

GENERAL FUNDS						
FEDERAL FUNDS						
OTHER						
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME						
TEMPORARY						

ANALYSIS: (Attach a separate page if necessary)

No additional enforcement activities are anticipated and thus no fiscal impact is anticipated.

G.C.A.

JNR 1/23/87

Prepared by: Francis C. Allan
Division: Alaska State Troopers
Phone: 269-5691
Date: 1/21/87

Approved by Commissioner:
Date: 1/23/87
Agency: Public Safety

Distribution (by preparer):
Legislative Finance
Legislative Sponsor
Requestor
Office of Management and Budget
Impacted Agency(ies)
Senate Secretary

ANCHORAGE POLICE DEPARTMENT

4501 SOUTH BRAGAW STREET • ANCHORAGE, ALASKA 99507-1599
TELEPHONE (907) 786-8500

TONY KNOWLES
MAYOR

RONALD L. OTTE
CHIEF

March 13, 1987

MAR 18 1987

Senator Paul Fischer
Chairman, H.E.S.S. Committee
Alaska State Legislature
Pouch V (MS 3100)
Juneau, Alaska 99811

Dear Senator Fischer,

The purpose of this letter is to inform you of our support for Senate Bill 32 addressing the recriminalization of marijuana.

We believe that recent research may indicate that marijuana is more of a health hazard than originally thought. We believe that the legislature of the State of Alaska should take a serious look at recriminalization and hold hearings regarding its potential medical effects upon the populace. In addition, we believe that the youth of Alaska receive a mixed signal regarding the appropriateness of drug usage when marijuana is essentially legal in this state. In addition to that, we feel that the populace develops a scoff law attitude when the possession of marijuana is legal, but the purchase of and transportation of is illegal.

We urge that the recriminalization of marijuana be brought from the committee and addressed on the floor of the State Legislature.

If we can be of any further assistance regarding this issue or any other law enforcement related issue that you wish to call upon us for, feel free to do so.

Sincerely,

Del Smith

Del Smith
Deputy Chief of Operations

DS:dl

Galena Police Department
P.O. Box 208 • Galena, Alaska 99741 • Telephone (907) 656-1303

February 24, 1987

The Honorable Terry Martin
Hess Committee
Pouch V
Juneau, Alaska 99811

Re: Recriminalization of Marijuana, Senate Bill 32

Dear Mr. Martin:

I am writing this letter to formally advise you that this Department thoroughly supports the above-captioned Senate bill pertaining to the recriminalization of marijuana; and to also solicit your support of the same, for the following reasons:

First, let me begin by stating that proper drug abuse education is probably one of our most effective overall means of combating the abuse of controlled substances. Our Youth and others are being taught that marijuana is a controlled substance which can produce harmful effects. To confuse this issue, the State of Alaska, first defines marijuana as a controlled substance, pursuant to Title 11 of the Alaska Statutes (Criminal Code); and then, within the same breath of the law, condones the possession of up to four (4) ounces of marijuana by a person within their own residence for their own consumption. How are our youth and others suppose to respond to what they are being taught, when they see others using marijuana in what is supposedly a lawful manner. This is not only contradictive, but also counterproductive.

Secondly, Law Enforcement has a difficult enough job attempting to deal with controlled substance abuse which involves those drugs that are strictly illicit. To interject a decriminalization law into the Controlled Substance Act, only serves to make their work that much more difficult and confusing. After attempting to deal with the same, certain Law Enforcement factions may begin to develop a disinterested attitude toward the enforcement of marijuana abuse, thinking if the State of Alaska doesn't care, why should we. Additionally, State Prosecutors are justifiably less than enthusiastic about prosecuting cases involving marijuana.

Finally, the State of Alaska has been receiving nationwide recognition through television talk shows where marijuana is the topic of discussion. On one such show, a guest emphasized several times that marijuana has been "LEGALIZED" in Alaska. The word: DECRIMINALIZATION" was never mentioned. That little advertisement should give our tourist industry quite a boost.

In closing, this Department will appreciate any effort you may put forth in guiding Senate Bill 32 out of committee and to the floor of both the Senate and House for a vote.

Respectfully Submitted,

Robert A. Harrington
Chief of Police

san/RAH

FBI National Academy Associates
Alaska Chapter

February 9, 1987

Representative Terry Martin
Alaska State Legislature
P.O. Box V, State Capitol
Juneau, AK 99811

Dear Terry:

I received your letter of February 5, 1987, concerning the teleconference hearing on Senator Paul Fischer's bill to recriminalize marijuana and to be held on February 18, 1987.

Unfortunately, I will be out of the state, attending an Energy Security Conference and will be unable to personally testify. I have been very interested in this particular subject for a number of years and, as you are aware, I served as Vice Chairman of the Anchorage Crime Commission in 1984-85. This subject was one of our priorities then and it is still a current priority of the present Crime Commission members.

In 1985, we prepared an extensive review of information developed since 1976, when the existing law was passed. I was rather taken back that the Director of the State Office of Drug and Alcohol Abuse stated that there had been no new scientific information gathered since 1976 which would support the changing of the law. Obviously, this particular individual has not done the research that I have and I'm confident that there is substantial scientific evidence to support the health problem created by the use of marijuana.

One of the major arguments used to state that the law should remain the same is the amount of manpower and commitment that would be necessary in order to enforce any changes in the law. In my opinion, this is not an issue--the issue is the health problem created by the continuous use of marijuana and, equally important if not more so, the illusion it gives to our young people that marijuana in Alaska is legal and, therefore, its usage must <u>not be harmful</u>.

If we do nothing other than stomp out this false illusion by recriminalizing marijuana, then, in my personal and professional opinion, we have done a great service to the young people of our state and those that are coming along.

I realize that you and the other members of the legislature who support the recriminalization of marijuana have an uphill battle, but I know that you are dedicated to this particular legislation. I commend you and the other members who, throughout the years, have diligently pursued the effort to recriminalize marijuana. I believe you will be successful someday; however, tremendous effort from involved citizens and members of the legislature will be required.

I shall contact various individuals whom I feel should take advantage of the teleconference testimony and, hopefully, we'll be able to present a professional, rational discussion on why the law should be changed.

Again, I emphasize that my personal and professional opinion is that our current statute is creating a wrong impression for our young people and, if for no other reason than to correct this misunderstanding and misconception, the law should be changed.

Incidentally, Terry, the FBI National Academy Associates, which is made up of local, state, and federal officers who have attended the FBI National Academy since its inception in 1935, unanimously support the recriminalization of marijuana in Alaska. Please feel free to use this information as you see fit.

If I can be of further assistance to you or other members of the legislature on this or other matters of mutual concern and interest, please contact me.

Sincerely yours,

Pat Wellington
President, Alaska Chapter

nm

cc: Senator Paul Fischer
Mr. Harold Heinze, Chairman, Anchorage Chamber of Commerce Crime Commission
Chief Pat Shely, Valdez Police Department, President, Alaska Chiefs of Police
Deputy Chief Del Smith, Anchorage Police Department, Vice President, Alaska Chiefs of Police
Sgt. Rollie Port, State President, Alaska Peace Officers Association

Alaska Association Chiefs of Police

625 C Street • Anchorage, Alaska 99501

March 26, 1985

Mr. George N. Nelson
Anchorage Crime Commission
415 F Street
Anchorage, Alaska 99501

Dear Mr. Nelson,

Our Association conducted its annual meeting on March 22, 1985 in Anchorage.

Legislation pending before the Alaska State Legislature was extensively discussed. The Association has identified several pieces of legislation that it feels merit support. Among those bills we will be commenting on to the Governor and individual legislators are four that we understand have been identified as priority legislation by your Commission.

These bills are as follows:

HB 178	Conspiracy
HB 179	Hearsay
HB 205	Juvenile Waiver
SB ~~163~~ 32	Recriminalization of Marijuana

As stated previously, these bills were thoroughly discussed by the Association membership. The consensus was a directive to relay our strong support for passage of the legislation.

I understand that members of your Commission will be going to Juneau shortly to meet with legislators. Please feel free to make those legislators aware of our support for your legislative priorities.

If we can be of any additional assistance please do not hesitate to contact us.

Sincerely,

Del Smith

Del Smith
Secretary-Treasurer, ACOP

WILLIAM G KLEIN
CHIEF OF POLICE
106TH SESSION

WRANGELL POLICE DEPARTMENT

CITY OF WRANGELL, ALASKA
POST OFFICE BOX 531 • WRANGELL, ALASKA 99929
(907) 874-3304

March 4, 1987

MAR 5 1987

Senator Paul Fisher
Hess Committee Chairman
P.O. Box V
Juneau, Alaska 99811 (Mail Stop 3100)

Dear Senator Fisher:

On behalf of this department and the concerned members of this community, I sincerely urge that all possible efforts and support be afforded to Senate Bill 32, Recriminalization of Marijuana, in order that said bill be brought to the floor of the Senate and House for a vote.

As an Alaska law enforcement officer for the past 21 years I can state without reservation that one of the greatest errors consumated by a legislative body was the decriminalization of marijuana. Not only is it in violation of Federal Law, its usage among the youth of this state has escalated like a malignant growth.

In all frankness, I must state that the time is long overdue for positive action on behalf of our elected officials to combat and control this statewide problem. Give law enforcement in the State of Alaska the weapons, in the form of realistic and effective laws, and we will do our part.

Respectfully submitted,

William G. Klein
Chief of Police

WGK:rrk

cc: Representative Terry Martin
Senator Lloyd Jones
Representative Robin Taylor
Representative John Sund

ALASKANS FOR
DRUG-FREE YOUTH
P.O. BOX 8515
KETCHIKAN, ALASKA 99901
PHONE 247-CARE
In Alaska, Call Toll Free:
(800) 478-CARE

January 19, 1988

Marijuana Resolution

Whereas- We, the citizens of the state of Alaska are concerned about the prevalent use and abuse of the drug Marijuana.

Whereas- Adults may now possess 4 oz. of Marijuana for their own personal use in their home, even though in these homes may reside children.

Whereas-Research has demonstrated that Marijuana usage is occuring more frequently in earlier age groups.

Whereas- Marijuana has been found to be harmful both mentally and physically, to be addictive, to build tolerance and may be 10 times more potent than 10 years ago, significantly increasing health risks.

Whereas-Marijuana has been found to impair motor skills, making it dangerous to operate any mechanical equipment.

Whereas- Marijuana remains in the body up to 30 days, being stored in the body's fat cells.

Whereas- Marijuana is a "gateway" drug". The use of it introduces the "high" experience and may lead to users seeking stronger drugs.

Whereas- The state of Alaska statutes pertaining to Marijuana are not in conformity with National and International laws.

Whereas- The Supreme Court of Alaska has stated that "no one has the right to do things in their own home which will affect others adversely." *

Whereas- The Supreme Court of Alaska further stated "when there is a substantial doubt as to the safety of a substance or situation of Public Health, controls to obviate the danger will usually be upheld." *

Therefore be it resolved that ALASKANS FOR DRUG-FREE YOUTH respectfully urge our public officials in the State Government including the legislature to make the possession of any amount of Marijuana illegal- by all appropriate and lawful means.

Support the modernization of Alaska's Marijuana laws by recriminalization of Marijuana in Alaska and urge the Alaska legislature to pass SB 32 and HB 55 followed by support of the Governor.

* Reference- Raven Case 1975

ALASKANS FOR DRUG-FREE YOUTH

P.O. Box 8515 Ketchikan, Alaska 99901

APR 30 1987

Box 8515
Ketchikan,Alaska 99901
April 24, 1987

Senator Paul Fischer
Alaska State Legislature
P.O. Box V [MS 3100]
Juneau, Alaska 99811

Dear Senator Fischer:

Enclosed you will find about 1650 signatures in support of S.B.32. Since we are active in S.E. Alaska, most of the signatures are from Ketchikan, Wrangell and Petersburg.

Please see that the Senate Judiciary committee sees these when they consider S.B. 32. I understand that will be on Tuesday, April 28.

I hope tha you will keep these in your file and pass them on wherever they are needed as long as the bill is alive. I do have copies in my files.

Sincerely,

Betty J. Wilson
Alaskans for Drug Free Youth

cc/Senate Judiciary Committee
Jones, Taylor,Sund

Marijuana Resolution

Whereas- We, the citizens of the state of Alaska are concerned about the prevalent use and abuse of the drug Marijuana.

Whereas- Adults may now possess 4 oz. of Marijuana for their own personal use in their home, even though in these homes may reside children.

Whereas- Research has demonstrated that Marijuana usage is occuring more frequently in earlier age groups.

Whereas- Marijuana has been found to be harmful both mentally and physically, to be addictive, to build tolerance and may be 10 times more potent than 10 years ago, significantly increasing health risks.

Whereas- Marijuana has been found to impair motor skills, making it dangerous to operate any mechanical equipment.

Whereas Marijuana remains in the body up to 30 days, being stored in the body's fat cells.

Whereas- Marijuana is considered a "gateway drug" the use of it introduces the "high" experience and may lead to users seeking stronger drugs.

Whereas- The state of Alaska statutes pertaining to Marijuana are not in conformity with National and International laws.

Whereas- The Supreme Court of Alaska has stated that "no one has the right to do things in their own home which will affect others adversely." *

Whereas- The Supreme Court of Alaska further stated "when there is a substantial doubt as to the safety of a substance or situation of Public Health, controls to obviate the danger will usually be upheld." *

Therefore be it resolved that- We the citizens of Alaska respectfully urge our public offical's in the State Goverment including the legislature to make the possession of any amount of Marijuana illegal- by all appropriate and lawful means.

* Reference- Raven Case 1975

Alaskans for Drug Free Youth

Box 8515, Ketchikan, Alaska, 99901

Prepared by Betty Wilson

Signatures for Marijuana Decriminalization

Anchorage - 91
Bethel 47
Kenai 15
Ketchikan 985
Mekoryuk 33
Nelliabetia 34
Petersburg 175
Seward - 65
Sitka - 8
Wrangell - 201

Total = 1657

DRUG-FREE YOUTH

WILL MAKE
A STRONG AMERICA

Member of
National Federation of Parents for
Drug-Free Youth, Washington, D.C.

Alaskans For Drug-Free Youth

PREVENTION THROUGH EDUCATION AND COMMUNITY ACTION

"A child is a person who is going to carry on what you have started. He is going to sit where you are sitting, and when you are gone, attend to those things you think are important. You may adopt all of the policies you please, but how they are carried out depends on him. He will assume control of your cities, states, and nations. He is going to move in and take over your churches, schools, universities, and corporations. . . the fate of humanity is in his hands.". .

—Abraham Lincoln

P.O. Box 8515
Ketchikan, Alaska 99901

7760 Glacier Hwy.
Juneau, Alaska 99801

We Believe . . .

that strong, knowledgeable, caring families working in concert with schools, service and civic groups, religious groups, media, la enforcement, medical and drug-related agencies, is the best way to help our youth choose drug-free alternatives in their lives.

We Are . . .

volunteers representing the State of Alaska, who are educating, training, and networking communities, to create a drug free enviroment, strengthening youth and family potential.

We Can Help You . . .

- Form community awareness/prevention groups.
- Expand and supplement your school drug education programs.
- Cooperate with community groups to provide and distribute drug educational materials.
- Call on your law enforcement, juvenile justice agencies, and local government to establish plans of action regarding sales of drug paraphernalia, liquor sales to minors, teenage drinking, and other drug related issues.
- Assist with implementation of Just Say No Clubs, SAFE HOMES PROGRAMS, Operation Prom/Graduation, Red Ribbon Campaign and other national prevention programs.

Our Goals For The Future Are . . .

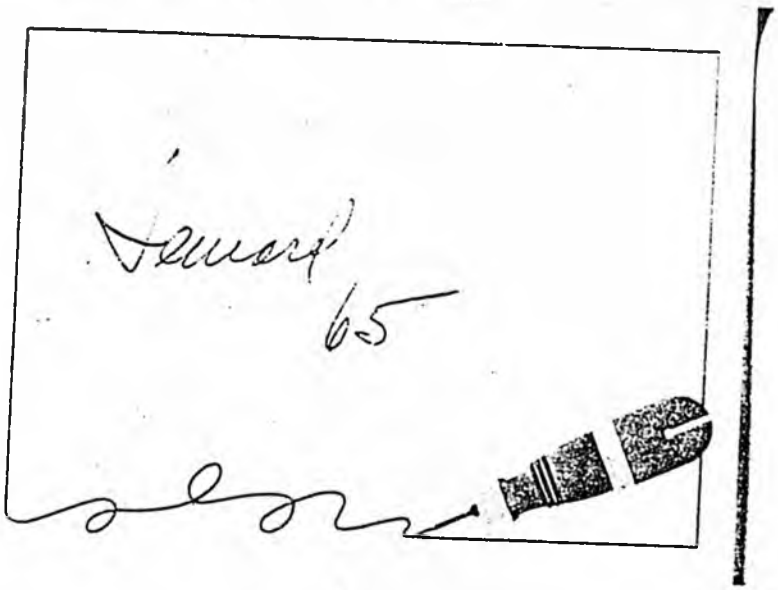
- Continue the expansion of our network and resources.
- Expand our Speakers Bureau.
- Continue preparing and implementing new community awareness programs.
- Influence pertinent legislation.

BUT. . . IN ORDER TO CONTINUE THESE EFFORTS, WE NEED YOUR FINANCIAL SUPPORT AND WILLING HANDS.

KETCHIKAN ELKS
DRUG AWARENESS EDUCATION
PROGRAM

The Elks are proud to be associated with and contribute to the efforts of parents to produce drug free youth.

Lind Printing, Inc.


Edward
65

Box 8515	Ketchikan, AK 99901
NAME	Address
Norman Peterson	Box 690 Seward 99664
Cheryl Verschueren	Box 1192 - Seward 99661
Myrna S. Casselman	Box 1582 Seward 99664
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[illegible]	POB 311 Seward 99664
James a White	Po Box 1955 Seward 99664
Gertrude E. White	P.O. Box 1955 Seward 99664
Steve [illegible]	P O Box 1735 Seward
Mike Sola	P.O. Box 912, Seward
[illegible]	P.O. Box [illegible] Seward
Carolyn M Clark	Box 2[illegible] - Seward
[illegible] Simmons	Box 3[illegible] Seward
Dennis Lodge	Box 1975 Seward 99664
Bernadette Packa	Box 263 Seward 99664
[illegible] Bouden	Box 718 Seward AK 99664
[illegible] Sanders	Box 1582 SEWARD AK. 99664
[illegible]	Box 2012 SEWARD AK 99664
[illegible]	Box 1625 Seward AK

15

Box 8515 | Ketchikan, AK 99901

NAME	Address
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Paulene L. Baldwin	P.O. Box 556 Seward, AK 99664
Lillian H [illegible]	P.O. Box 543 Seward AK 9966-
B Davis	P.O. Box 1364 Seward AK 99664
Pat Hamill	P.O. Box 321 Seward, ak 99664
Tammy Jo Duncan	P.O. Box 654 Seward, AK
M[illegible] E.H. [illegible]	P.O. Box 614 Seward Alaska
Bonnie Warren	P.O. Box 28 Seward Alaska 99664
Novell Warren	P.O. Box 604 Seward, AK 99664
Ruth Helgenstell	Box 614 Seward AK 99664
Linda D. Young	Box 1612 Seward, AK 99664
Patricia E Forrest	Box 435 Seward AK 99664
Russell Smith	3605 ARCTIC #237 ANCH, AK 99503
Violet J. Larson	P.O. Box 1552 Seward, AK 99664
Lila E. Hill	Box 475 Seward AK 99664
Charles Larson	Box 1552 Seward AK 99664
Walter March Jr.	P.O. Box 1292, SEWARD, AK
[illegible] Hunter (Hunter)	Seward Alaska 99585
Rev. Charles F. Baldwin	P.O. Box 556 Seward AK 99664
[illegible]	[illegible] 1364 Seward AK 99664
John D Hill	P.O. Box 475 SEWARD ALASKA 99664

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Box 8515 | Ketchikan, AK 99901

NAME	Address
Rev David L Walker	P.O. Box 616, Seward, Alaska 99664
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[illegible] Bryan	Box 1316 – Seward, Alaska
Howard [illegible]	Box 1728 Seward, Alaska
Edith Hough	Box 1394 – Seward, Ak.
[illegible] Mullen	Box 1397 Seward, Ak. 99664
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Wm [illegible] Elge	PO Box 1296 Seward Ak 99664
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[illegible]	[illegible] Seward AK 99664

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