



# MARIJUANA MYTHS

by Paul Hager

Chair, ICLU Drug Task Force

## 1. Marijuana causes brain damage

The most celebrated study that claims to show brain damage is the rhesus monkey study of Dr. Robert Heath, done in the late 1970s. This study was reviewed by a distinguished panel of scientists sponsored by the Institute of Medicine and the National Academy of Sciences. Their results were published under the title, Marijuana and Health in 1982. Heath's work was sharply criticized for its insufficient sample size (only four monkeys), its failure to control experimental bias, and the misidentification of normal monkey brain structure as "damaged". Actual studies of human populations of marijuana users have shown no evidence of brain damage. For example, two studies from 1977, published in the Journal of the American Medical Association (JAMA) showed no evidence of brain damage in heavy users of marijuana. That same year, the American Medical Association (AMA) officially came out in favor of

decriminalizing marijuana. That's not the sort of thing you'd expect if the AMA thought marijuana damaged the brain.

## **2. Marijuana damages the reproductive system**

This claim is based chiefly on the work of Dr. Gabriel Nahas, who experimented with tissue (cells) isolated in petri dishes, and the work of researchers who dosed animals with near-lethal amounts of cannabinoids (i.e., the intoxicating part of marijuana). Nahas' generalizations from his petri dishes to human beings have been rejected by the scientific community as being invalid. In the case of the animal experiments, the animals that survived their ordeal returned to normal within 30 days of the end of the experiment. Studies of actual human populations have failed to demonstrate that marijuana adversely affects the reproductive system.

## **3. Marijuana is a "gateway" drug-it leads to hard drugs**

This is one of the more persistent myths. A real world example of what happens when marijuana is readily available can be found in Holland. The Dutch partially legalized marijuana in the 1970s. Since then, hard drug use-heroin and cocaine-have DECLINED substantially. If marijuana really were a gateway drug, one would have expected use of hard drugs to have gone up, not down. This apparent "negative gateway" effect has also been observed in the United States. Studies done in the early 1970s showed a negative correlation between use of marijuana and use of alcohol. A 1993 Rand Corporation study that compared drug use in states that had decriminalized marijuana versus those that had not, found that where marijuana was more available-the states that had decriminalized-hard drug abuse as measured by emergency room episodes decreased. In short, what science and actual experience tell us is that marijuana tends to substitute for the much more dangerous hard drugs like alcohol, cocaine, and heroin.

## **4. Marijuana suppresses the immune system**

Like the studies claiming to show damage to the reproductive system, this myth is based on studies where animals were given extremely high-in many cases, near-lethal-doses of cannabinoids. These results have never been duplicated in human beings. Interestingly, two studies done in 1978 and one done in 1988 showed that hashish and marijuana may have actually stimulated the immune system in the people studied.

## **5. Marijuana is much more dangerous than tobacco**

Smoked marijuana contains about the same amount of carcinogens as does an equivalent amount of tobacco. It should be remembered, however, that a heavy tobacco smoker consumes much more tobacco than a heavy marijuana smoker consumes marijuana. This is because smoked tobacco, with a 90% addiction rate, is the most addictive of all drugs while marijuana is less addictive than caffeine. Two other factors are important. The first is that paraphernalia laws directed against marijuana users make it difficult to smoke safely. These laws make water pipes and bongs, which filter some of the carcinogens out of the smoke, illegal and, hence, unavailable. The second is that, if marijuana were legal, it would be more economical to have cannabis drinks like bhang (a traditional drink in the Middle East) or tea which are totally non-carcinogenic. This is in stark contrast with "smokeless" tobacco products like snuff which can cause cancer of the mouth and throat. When all of these facts are taken together, it can be clearly seen that the reverse is true: marijuana is much SAFER than tobacco.

## 6. Legal marijuana would cause carnage on the highways

Although marijuana, when used to intoxication, does impair performance in a manner similar to alcohol, actual studies of the effect of marijuana on the automobile accident rate suggest that it poses LESS of a hazard than alcohol. When a random sample of fatal accident victims was studied, it was initially found that marijuana was associated with RELATIVELY as many accidents as alcohol. In other words, the number of accident victims intoxicated on marijuana relative to the number of marijuana users in society gave a ratio similar to that for accident victims intoxicated on alcohol relative to the total number of alcohol users. However, a closer examination of the victims revealed that around 85% of the people intoxicated on marijuana WERE ALSO INTOXICATED ON ALCOHOL. For people only intoxicated on marijuana, the rate was much lower than for alcohol alone. This finding has been supported by other research using completely different methods. For example, an economic analysis of the effects of decriminalization on marijuana usage found that states that had reduced penalties for marijuana possession experienced a rise in marijuana use and a decline in alcohol use with the result that fatal highway accidents decreased. This would suggest that, far from causing "carnage", legal marijuana might actually save lives.

## 7. Marijuana "flattens" human brainwaves

This is an out-and-out lie perpetrated by the Partnership for a Drug-Free America. A few years ago, they ran a TV ad that purported to show, first, a normal human brainwave, and second, a flat brainwave from a 14-year-old "on marijuana". When researchers called up the TV networks to complain about this commercial, the Partnership had to pull it from the air. It seems that the Partnership faked the flat "marijuana brainwave". In reality, marijuana has the effect of slightly INCREASING alpha wave activity. Alpha waves are associated with meditative and relaxed states which are, in turn, often associated with human creativity.

## 8. Marijuana is more potent today than in the past

This myth is the result of bad data. The researchers who made the claim of increased potency used as their baseline the THC content of marijuana seized by police in the early 1970s. Poor storage of this marijuana in un-air conditioned evidence rooms caused it to deteriorate and decline in potency before any chemical assay was performed. Contemporaneous, independent assays of unseized "street" marijuana from the early 1970s showed a potency equivalent to that of modern "street" marijuana. Actually, the most potent form of this drug that was generally available was sold legally in the 1920s and 1930s by the pharmaceutical company Smith-Klein under the name, "American Cannabis".

## 9. Marijuana impairs short-term memory

This is true but misleading. Any impairment of short-term memory disappears when one is no longer under the influence of marijuana. Often, the short-term memory effect is paired with a reference to Dr. Heath's poor rhesus monkeys to imply that the condition is permanent.

## 10. Marijuana lingers in the body like DDT

This is also true but misleading. Cannabinoids are fat soluble as are innumerable nutrients and, yes, some poisons like DDT. For example, the essential nutrient, Vitamin A, is fat soluble but one never hears people who favor marijuana prohibition making this comparison.

## 11. There are over a thousand chemicals in marijuana smoke

Again, true but misleading. The 31 August 1990 issue of the magazine Science notes that of the over 800 volatile chemicals present in roasted COFFEE, only 21 have actually been tested on animals and 16 of these cause cancer in rodents. Yet, coffee remains legal and is generally considered fairly safe.

## 12. No one has ever died of a marijuana overdose

This is true. It was put in to see if you are paying attention. Animal tests have revealed that extremely high doses of cannabinoids are needed to have lethal effect. This has led scientists to conclude that the ratio of the amount of cannabinoids necessary to get a person intoxicated (i.e., stoned) relative to the amount necessary to kill them is 1 to 40,000. In other words, to overdose, you would have to consume 40,000 times as much marijuana as you needed to get stoned. In contrast, the ratio for alcohol varies between 1 to 4 and 1 to 10. It is easy to see how upwards of 5000 people die from alcohol overdoses

every year and no one EVER dies of marijuana overdoses.

## WHAT IS THE ICLU DRUG TASK FORCE?

The Indiana Civil Liberties Union (ICLU) Drug Task Force is involved in education and lobbying efforts directed toward reforming drug policy. Specifically, we support ACLU Policy Statement number 210 which calls for the legalization of marijuana. We also support an end to the drug war. In its place, we favor "harm reduction" strategies which treat drug abuse as what it is- a medical problem-rather than a criminal justice problem.

The Drug Task Force also works to end urine and hair testing of workers by private industry. These kinds of tests violate worker privacy to no good purpose because they detect past use of certain drugs (mostly marijuana) while ignoring others (e.g., LSD) and cannot detect current impairment. In situations where public and worker safety is a legitimate concern, we advocate impairment testing devices which reliably detect degradation of performance without infringing upon worker privacy.

For more information about the activities of the Drug Task Force, call the ICLU at (317) 635-4059 or call Paul Hager at (812) 333-1384 or e-mail to hagerp@cs.indiana.edu on the InterNet.

## SOURCES

- 1) Marijuana and Health, Institute of Medicine, National Academy of Sciences, 1982. Note: the Committee on Substance Abuse and Habitual Behavior of the "Marijuana and Health" study had its part of the final report suppressed when it reviewed the evidence and recommended that possession of small amounts of marijuana should no longer be a crime (TIME magazine, July 19, 1982). The two JAMA studies are: Co, B.T., Goodwin, D.W., Gado, M., Mikhael, M., and Hill, S. Y.: "Absence of cerebral atrophy in chronic cannabis users", JAMA, 237:1229-1230, 1977; and, Kuehnle, J., Mendelson, J.H., Davis, K.R., and New, P.F.J.: "Computed tomographic examination of heavy marijuana smokers", JAMA, 237:1231-1232, 1977.
- 2) See Marijuana and Health, *ibid.*, for information on this research. See also, Marijuana Reconsidered (1978) by Dr. Lester Grinspoon.
- 3) The Dutch experience is written up in "The Economics of Legalizing Drugs", by Richard J. Dennis, The Atlantic Monthly, Vol 266, No. 5, Nov 1990, p. 130. See "A Comparison of Marijuana Users and Non-users" by Norman Zinberg and Andrew Weil (1971) for the negative correlation between use of marijuana and use of alcohol. The 1993 Rand Corporation study is "The Effect of Marijuana Decriminalization on Hospital Emergency Room Episodes: 1975 - 1978" by Karyn E. Model.
- 4) See a review of studies and their methodology in "Marijuana and Immunity", Journal of Psychoactive Drugs, Vol 20(1), Jan-Mar 1988. Studies showing stimulation of the immune system: Kaklamani, et al., "Hashish smoking and T-lymphocytes", 1978; Kalofoutis et al., "The significance of lymphocyte lipid changes after smoking hashish", 1978. The 1988 study: Wallace, J.M., Tashkin, D.P., Oishi, J.S., Barbers, R.G., "Peripheral Blood Lymphocyte Subpopulations

and Mitogen Responsiveness in Tobacco and Marijuana Smokers", 1988, Journal of Psychoactive Drugs, *ibid.*

- 5) The 90% figure comes from Health Consequences of Smoking:
- Nicotine Addiction, Surgeon General's Report, 1988. In Health magazine in an article entitled, "Hooked, Not Hooked" by Deborah Franklin (pp. 39-52), compares the addictives of various drugs and ranks marijuana below coffee. For current information on cannabis drinks see Working Men and Ganja:
- Marijuana Use in Rural Jamaica by M. C. Dreher, Institute for the Study of Human Issues, 1982, ISBN 0-89727-025-8. For information on cannabis and actual cancer risk, see Marijuana and Health, *ibid.*
- 6) For a survey of studies relating to cannabis and highway accidents see "Marijuana, Driving and Accident Safety", by Dale Gieringer, Journal of Psychoactive Drugs, *ibid.* The effect of decriminalization on highway accidents is analyzed in "Do Youths Substitute Alcohol and Marijuana? Some Econometric Evidence" by Frank J. Chaloupka and Adit Laixuthai, Nov. 1992, University of Illinois at Chicago.
- 7) For information about the Partnership ad, see Jack Herer's book, The Emperor Wears No Clothes, 1990, p. 74. See also "Hard Sell in the Drug War", The Nation, March 9, 1992, by Cynthia Cotts, which reveals that the Partnership receives a large percentage of its advertising budget from alcohol, tobacco, and pharmaceutical companies and is thus disposed toward exaggerating the risks of marijuana while downplaying the risks of legal drugs. For information on memory and the alpha brainwave enhancement effect, see "Marijuana, Memory, and Perception", by R. L. Dornbush, M.D., M. Fink, M.D., and A. M. Freedman, M.D., presented at the 124th annual meeting of the American Psychiatric Association, May 3-7, 1971.
- 8) See "Cannabis 1988, Old Drug New Dangers, The Potency Question" by Tod H Mikuriya, M. D. and Michael Aldrich, Ph.D., Journal of Psychoactive Drugs, *ibid.*
- 9) See Marijuana and Health, *ibid.* Also see "Marijuana, Memory, and Perception", *ibid.*
- 10) The fat solubility of cannabinoids and certain vitamins is well known. See Marijuana and Health, *ibid.* For some information on vitamin A, see "The A Team" in Scientific American, Vol 264, No. 2, February 1991, p. 16.
- 11) See "Too Many Rodent Carcinogens: Mitogenesis Increases Mutagenesis", Bruce N. Ames and Lois Swirsky Gold, Science, Vol 249, 31 August 1990, p. 971.
- 12) Cannabis and alcohol toxicity is compared in Marijuana Reconsidered, *ibid.*, p. 227. Yearly alcohol overdoses was taken from "Drug Prohibition in the United States: Costs, Consequences, and Alternatives" by Ethan A. Nadelmann, Science, Vol 245, 1 September 1989, p. 943.