

The Truth About Drugs

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Terms: Dope, smoke, weed, draw, puff, blunts, blow, ganja

Marijuana is at the centre of every debate about drugs. Pro-Marijuana reformers argue that the drug is safe compared to tobacco and less unsocial in its effects than alcohol. Legalisation, we are told, will at a stroke deal with a huge problem of criminalisation, save money and make millions of people very happy. But what is the truth about Marijuana? Using the latest technology it is now possible to search through four million recent scientific papers and pull out all those relating to Marijuana, crunching down the results into a digest of the most important facts. Here are the results of that process.

Pattern of use

Marijuana (Marijuana, marijuana or Marijuana sativa) is grown widely world-wide. Marijuana is smoked in a cigarette or a pipe on its own or rolled into tobacco. Marijuana is by far the most popular illegal drug. It varies in potency, according to the content of the active ingredient Tetrahydrocannabinol (THC), from 2-9% in imported material to 8-14% in home-grown flowering heads. 65 - 70% of domestic consumption is resin from North Africa or India, while herbal Marijuana accounts for 25-30% and "Skunk" or other high potency strains 5-10%.

New strains of Marijuana are now available, designed to be grown indoors with short bushy plants and high quality flowering tops. Marijuana is now being grown using the very latest, most modern agricultural techniques. This is a high value crop. Dried marijuana looks similar to tobacco and is compressed into a block the size of a brick, weighing around a kilogram.

Effects of Marijuana

Smoking Marijuana produces almost instant effects, lasting one to four hours. Marijuana makes people relaxed and talkative, but is a depressant, which can make people who are sad feel worse. Sound and colours also become more intense. Users typically report that Marijuana improves self-awareness, relationships with others and makes them more "easy going", tolerant and understanding. Some users say that it helps them to be creative.

140,000 admitted to hospitals every year in US after Marijuana

In the short term Marijuana hinders concentration and slows reaction times, so is a dangerous drug when using machinery or driving. High doses can cause hallucinations and other sensory problems. Nausea and vomiting can occur, especially if inexperienced users take too much. The effects the following day are often less than after heavy drinking - no headaches or nausea, just a "woolly-head".

Death is unknown except from accidents. However, 140,000 people are admitted to US hospitals every year because of Marijuana abuse, mainly with mental health problems. That's one in every 140 users. Physical dependency does not occur, but smoking it in tobacco will of course result in nicotine addiction.

How does it work in the brain?

Some brain cell surfaces have receptors that fit THC, which mimics a naturally occurring brain substance called anandamide. Within minutes of taking Marijuana, these receptors fire up, sending an urgent message to the nucleus of each cell, switching on the genes which tell the cell how to make more receptors. So the first dose may not produce much effect, with few receptors to be activated, but the following ones may be very different.

Now we can see why twins are often similar in their preference for a drug like Marijuana - enjoyment is partly in the genes. Other important factors include the mental state of the person before they take the drug, their expectations and the setting in which the drug is taken.

Big changes in brain function

It is too early to be certain about the long term toxic effects of Marijuana in humans but there are growing grounds for concern. As we have seen with tobacco, opium and other drugs, the history of drug use is that it often takes thirty to fifty years to evaluate impact and risk to health. Even today, almost a century after the first factory-produced cigarettes hit the market some are still arguing that smoking does not cause cancer. Sir Richard Doll's famous studies which first indicated a link are only thirty years old. The question then is what science may conclude about Marijuana by 2050.

We do know already that high dose exposure of rats to THC causes damage and destruction of nerve cells and structural changes to the hippocampus region of the brain. This area is important for memory, learning, and the integration of sensory experiences with emotions and motivation. THC alters the way in which sensory information is interpreted.

Brain activity is reduced in the cerebellum in regular Marijuana users when intoxicated, while the orbitofrontal cortex and basal ganglia are stimulated. These effects do not occur in first time users, and explain the clumsiness together with psychologically addictive effects of regular Marijuana use.

Marijuana causes an acute and with regular heavy use, a subacute encephalopathy (damage to brain cells - some viruses do the same). There is no evidence (yet) of irreversible cerebral damage resulting from its use, although impairment of information processing might be a long-term consequence of prolonged use.

Long term effect on brain

There have been a number of studies on the longer term effects of Marijuana, some find significant differences, others do not. The trouble is it all depends on what you are looking for. The truth is that long term Marijuana effects are subtle and easily missed - but they are there all the same. In view of the very large numbers of regular Marijuana users, even subtle effects need to be taken seriously. After all, what is the effect of a single cigarette or of smoking for a year? It is the possible cumulative effect in a population of hundreds of thousands of young and older users over a decade or more that requires the closest scrutiny.

Scientists have studied electrical activity in the frontal lobes of the brain in Marijuana users

using event-related potential measurements (ERP). You can measure not only patterns of electrical activity in the brain using electrodes placed over the head, but also the speed of brain reactions to - say - a picture or a sound.

Research shows that with increased length of use, Marijuana users are less able to focus attention and filter out irrelevant stimuli, (frontal lobe activity). However with increasing frequency of use there was a growing problem in the parietal area of the brain with slower speed of information processing.

For example, a 35 year old man who had been taking Marijuana every day for eighteen years was monitored during six weeks of withdrawal. Brain event-related potential (ERP) measures of selective attention showed that he had problems filtering out complex irrelevant information. THC is fat soluble and stored widely in the body, taking several weeks to disappear completely, however the changes persisted even when Marijuana levels in the body were undetectable after six weeks of abstinence.

The man was allowed to take some more Marijuana, and his ERP almost returned to normal. In other words, there is some evidence that people who are regularly stoned, require some THC levels in the brain for "normal" function in some mental tasks. Some problems in thinking may actually improve when a chronic user is slightly under the influence. But effects of Marijuana can last a very long time.

This "recovery" effect when intoxicated is not uncommon. Some musicians report that work they create when drunk or stoned can only be recovered fully when they perform in the same mental state that they were in originally.

Selective attention deficits

With so many school pupils using Marijuana we need to look very closely at any possible effect on learning. The results are worrying. A study of college students found significant effects on a wide range of mental tasks more than 18 hours after using Marijuana. Heavy users made more errors and had greater difficulty concentrating, in registering, processing and using information. These are subtle effects that might not be noticed by the person or those around but are identified on formal psychometric assessment. Another study also found long term difficulties in focussing attention and filtering out irrelevant information, which got worse in those with longest exposure to Marijuana.

In summary then, Marijuana is not physically addictive and there is no withdrawal. However it produces profound changes in brain activity, activating genes and altering the way the brain functions - effects which can last months after a chronic user has given up. Marijuana is undoubtedly addictive psychologically, as seen in some who do not find it easy or pleasant to live without it.

Motivation

The so-called a motivational syndrome has been well described in chronic users, who seem to have lost drive. Marijuana users can sometimes be convinced that this is a positive thing: an end to undisguised aggressive ambition, replaced by a gentler, more relaxed attitude to the whole of life.

But drive, the desire to succeed, to triumph over difficulties, to excel through a major challenge, these things are vital to the future of young people, who as we have seen are often the heaviest Marijuana users. Stamina, staying power, determination, these are the substance of remarkable achievement, of developing one's true potential, of character development.

Indeed one could go further and say that the future of a community or a nation depends on motivating each generation to go out and make a difference, instead of sitting on their back-sides dreaming all day.

However we need to return to the pressures created by the six faces of the future: fast, urban, tribal, universal, radical and ethical. Teenagers and young adults leaning towards a radical, ethical and tribal society, and against one that is "power-hungry" fast, urban and universal, can easily embrace a Marijuana culture as part of a protest. For them, the answer to life may not be more, but mildness, not massive but micro, not mighty but meek.

Schizophrenia

There have been many suggestions that schizophrenia could be triggered by use of Marijuana. There is no evidence for this but good reason for the link in people's minds. Schizophrenia is a condition affecting around 1% of the population in the course of a lifetime, and is usually chronic, treatable but relapsing. However schizophrenia is often confused with drug-induced psychosis. By the law of probabilities the two events sometimes occur more or less at the same time - psychosis and onset of schizophrenia - as one would expect when both drug-taking and schizophrenia are relatively common.

Acute mental illness caused by Marijuana is a common cause of hospital admission. In many cases it is hard to separate the effects of different drugs that the user has been taking. The combined effect is often an acute psychotic state indistinguishable from many other mental disorders. The diagnosis may only become clear when the person who is unwell reveals the full history of what they have tried and when. The difference from other diagnoses is that drug-induced hallucinations, delusions and distortions disappear with abstinence from drugs.

Other health issues

Marijuana use in pregnancy carries similar risks to smoking tobacco - from the tobacco used. It can also affect male sexual development in some cases (unusual). Marijuana has a depressant effect on the immune system through direct effects on white cells. It can also slow healing. Regular Marijuana smoking is linked to bronchitis and other chest problems, and possibly lung cancer. One to three marijuana joints a day can cause as much lung damage as smoking five times as many cigarettes. The way smokers inhale increases the effects on the lung.

Marijuana in combination with cocaine causes a particularly high rise in blood pressure and heart rate - typically a rise of 49 beats per minute combined compared to around 30 with either alone. Users taking both before exercising are placing an additional strain on their hearts.

Special issues

The ladder or gateway - the facts

As we have seen, both tobacco and alcohol use in teenagers make use of other drugs more likely, and the same is true for Marijuana. Most people who use other illegal drugs started off using Marijuana. A study by Columbia University's Centre on Addiction and Substance Abuse found children who smoke marijuana are 85 times more likely to use cocaine than peers who have never tried it. People who use Marijuana do not necessarily go on to use other illegal drugs. However they may be open to other health risks such as unwanted pregnancy or sexually transmitted diseases.

The fact that there is a link does not prove cause. Studies show that people using crack or heroin have almost without exception used Marijuana first. Chance association or real culprit? Some say that there is no real link. Whilst it is true that people who use heroin usually started

with Marijuana, they say there could be other reasons:

- Perhaps some common factor in background or personality.
- Perhaps the studies on possible links were done when Marijuana was more freely available than heroin - so people may simply have come across it first.
- It may be the illegality of Marijuana that creates the link - exposing users to an underground network. Of dealers offering other drugs.

The same kind of arguments exist over violent videos and violent crime. We know from research that those with certain types of personality are more likely to feel aggressive and commit violent acts if they have recently been watching violent films. So surely violent films are to blame? No, say the film-makers. "It may just be that people who are violent like watching violent films and anyway the link is not strong. Violent crimes are committed by people who have not watched videos or films beforehand, and many watch them with no effects."

Common sense tells us there is a link

However, common sense tells us that there is almost certainly a link. We know that media exposure influences behaviour. Indeed the advertising industry sells billions of pounds of TV time on that basis. A campaign starts in a town or city and sales soar. People can be influenced to part with money, change the way they use their spare time or which brand of alcohol they consume - so why not accept the likelihood that people can also be influenced in the way they treat other people?

The same arguments apply to Marijuana. Here is a drug which is relatively harmless in itself but which is almost always a front-runner in those who later become addicted to drugs such as heroin. We know that once teenagers smoke tobacco it is easier for them to cross the next step and smoke Marijuana.

Lowering the threshold

We also know that once someone starts using Marijuana it is easier for them to try something else - for the following reasons:

- Desensitisation: "It was a big step at first, but Marijuana didn't kill me - actually I can't see what all the fuss is about so why not try some other things?"
- Targeting by dealer: "My mate offered me some free dope and also had some other stuff he was giving away so I tried both"
- Knowledge of supply: "I was thinking about trying something else and I already knew exactly who to ask"
- Drug-taking part of social life: "My friends do things together. We all smoke dope. Someone had something else so for a bit of a laugh we all tried it"

It is dangerous nonsense therefore to suggest that Marijuana use does not significantly increase the risk of a serious drug addiction later on.

Some say that the risk would be reduced if legalised because the person would buy Marijuana from a licensed and regulated source (a shop) rather than from an illicit dealer supplying a wide range of other drugs. That might be the case but there is no doubt in my mind that it would also lower the threshold for other experimentation, and increase the numbers of young people for whom Marijuana becomes a completely accepted part of normal everyday life. This is unlike the situation at present in most countries including the US and UK where the majority of teenagers and adults have never used Marijuana, and where a very small minority of any age use it regularly.

Does Marijuana have a medical value?

For years there have been suggestions that Marijuana can help the sick - especially those with multiple sclerosis or advanced cancer. Indeed as we have seen the drug has been used by doctors for centuries in many countries, and in Britain up to 1928. The big question is whether doctors should be given the same freedom that they enjoy with morphine and other opiates.

California recently passed a law allowing doctor to prescribe Marijuana as a treatment,

although the law is being contested. The British Medical Association has also recommended legalisation for medical purposes and more research into pain-relieving effects.

As a doctor I find it strange that very addictive drugs such as heroin and cocaine have been used in medicine for decades, yet the use of Marijuana in medicine is still illegal in many countries and frowned upon in others. We will discuss later on the beneficial effects of heroin, morphine and other opiate-derived drugs in the relief of pain and other symptoms such as severe diarrhoea and terminal breathlessness, but what about Marijuana?

Let doctors decide how to treat illness

My own view is that doctors should be free to prescribe whatever drugs the medical profession as a whole considers to be helpful in treatment, unhindered by law. Great fuss is made that doctors might be persuaded to prescribe Marijuana simply because it makes seriously sick people happy and their suffering easier to bear. But even if that were the case, would that be so wrong?

Doctors in general practice spend their lives prescribing psychoactive drugs such as tranquillisers and antidepressants to help people feel happier about life. If a particular individual reports that he or she finds a reefer of Marijuana as effective or more effective than conventional medication, why not let it be used for that purpose? It might be more acceptable to prescribe THC in cake form or as tablets.

A precedent has been set for decades by doctors who prescribe a glass of sherry before an evening meal or whisky last thing at night for patients on the ward. "Her usual tipple and it will do her good". The main reason is for a sense of well-being, rather than to produce a very slight reduction in the risk of heart disease.

Of course, every Marijuana user in the country might go banging on the door of their doctor's surgeries saying he's depressed and wants cut-price dope from the chemist, but prescribing could be reserved for those with a limited range of chronic conditions or for those who are dying. Those that might benefit include those with advanced cancer, motor neurone disease, multiple sclerosis or AIDS.

The refusal to allow doctors to prescribe THC as a drug is a political one and needs to change. It is no more likely to undermine anti-drugs campaigns than the use of morphine for

pain or steroids to increase a sense of well being in the dying.

In summary then, Marijuana is a powerful drug with long term effects on the activity of the human brain, plus a host of separate actions on other organs and tissues. Expect more reports of subtle learning difficulties, especially in teenage users who so far have been very difficult to include in clinical studies for obvious reasons.

Marijuana is not a drug that should be available to anyone in society except on a prescription basis for a limited number of serious medical conditions. Given what we now know, it is clear that Marijuana is a particularly unsuitable drug for large numbers of teenagers and young adults to be taking at a critical time in their lives. That's clear from research on the brain alone, without even considering other health issues and the ladder effect. People who promote Marijuana as "safe" or "harmless" are dangerously ignorant, dishonest or deluded. One suspects the majority are users or past users themselves - hardly likely to be impartial.

In view of how hard it would be to re-legalise Marijuana were it to be legalised today, legalisation would be particularly fool-hardy and irresponsible. We don't yet know what future research will show and the data we have is disturbing enough. It would be very premature to say the least. I have no doubt that future generations would judge such a decision very severely.

The Truth About Drugs - free book by Patrick Dixon, published by Hodder in 1998

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