nature

5 April 2001 Volume 410 Issue no 6829

Gathering the evidence on medical marijuana

The US Supreme Court has been hearing arguments about whether states that have legalized the medical use of marijuana are in breach of federal law. But medical agencies engaged in its clinical testing should not be deterred from their work.

It has been a long war of attrition, but patient groups, who sometimes know a thing or two about treatment efficacy, have started to persuade governments and medical research agencies to confront the issue of whether marijuana has medical value.

Thousands of years of marijuana use suggest that it may have. But since the 1960s, marijuana has been classified by international agencies as a 'schedule 1' drug; that is, an addictive substance with no recognized medical value. This illegal status has, perversely, hindered scientists from conducting the research that might determine whether either of these attributes is true.

Many patients say that smoking the weed makes them feel better. Among them are cancer and AIDS sufferers, who claim that it helps them control the nausea and vomiting that accompany chemotherapy, relieves pain resistant even to morphine and, as an important bonus, restores appetite. Multiple sclerosis sufferers claim relief from muscle spasm. A little accompanying mood elevation is not necessarily an evil, in the circumstances, they say — and some of their physicians agree with them.

There is also a biological basis for these therapeutic claims. Research has shown that the active constituents of marijuana — the cannabinoids — operate through cannabinoid receptors present throughout the nervous system. These are normally activated by endogenous cannabinoids, much as endorphins operate through opiate receptors, through which morphine and heroin exert their effects.

Nonetheless, governments, including the US federal government, have until recently refused to sanction the medical use of marijuana, and have also done what they can to prevent its clinical testing. They have defended their inaction by claiming that either step would signal to the public a softening of the so-called 'war on drugs'.

But the debate is slowly edging forward. In a recent referendum, Californians voted to legalize the medical use of marijuana, and several other states have followed suit. Medical research agencies in the United Kingdom and Canada are sponsoring clinical trials (see *Nature* **410,** 505; 2001). Such trials will help to define the medical disorders that marijuana might usefully treat, and to determine the therapeutic value of its most potent ingredient, delta-9 tetrahydrocannabinol (THC).

The illegal status of marijuana has endowed it with mystical properties. Many regard marijuana as a sort of panacea, withheld from the public by politics and by an indifferent pharmaceutical industry which sees no profit in developing an unpatentable weed into medicine. Some view synthetic THC with suspicion, believing that the natural mixture of cannabinoids in the marijuana leaf appropriately balances therapeutic effects and side effects.

This approach is unhelpful. The drug may have a wide range of therapeutic uses, but for some of these, including nausea and vomiting and glaucoma, better alternatives are already available. For others, such as spastic cramps and the control of neurogenic pain, marijuana-based drugs might prove to be genuinely unique and important.

These uses should be investigated by classical pharmacological methods, so that efficacy can be established — and optimized — unequivocally. That means working with pure compounds. After all, new drugs derived from morphine are clearly better for treating severe pain than are extracts of opium poppies. If the ingredients of marijuana prove to be effective, smoking of the natural substance will be replaced by a more refined product.

The pharmacology of cannabinoids is a valid field of scientific investigation. Pharmacologists have the tools and the methodologies to realize its considerable potential, provided the political climate permits them to do so. ■

E-access to science

Introducing a forum on the future of primary scientific publishing.

This week, *Nature* launches an online forum on a topic that has filled volumes of conference proceedings and reams of individual articles since the emergence of the Internet — namely, the web's impact on the publishing of the results of original research.

The most recent and prominent manifestation of the debates surrounding this topic is an initiative by researchers to force publishers, by a threatened boycott, to release archived reports of original research into centralized, freely available and unrestricted databases, known as 'The Public Library of Science' (PLS). *Nature*'s forum does not represent the response of our publishers, the Nature Publishing Group, to the PLS initiative. *Nature*'s publishers are currently soliciting feedback from researchers, librarians and other interested parties in weighing up the issues. But, in principle, everyone in research has an interest in understanding the many aspects of those issues. So the focus of the forum is only partly on the debate between, for example, advocates of free access and those who worry about the loss of publishers' livelihood and ownership rights.

Accordingly, we have commissioned not only researchers and publishers but also experts in scientific information management and commerce to contribute. This week you can find the first contributions, including two views from the European Molecular Biology Organization, which is proposing its own model, to be funded by the European Union (see http://www.nature.com/nature/debates/e-access). We welcome original responses to the forum, bearing in mind our interest in exploring in more depth the many aspects of the online-access debate, rather than reiterating opinions on how that access should be shaped. ■