

Medical Use of Cannabis

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V.1. *Cannabis sativa L.*, or Hemp, is used for medical indications for several centuries in Europe. Hildegard von Bingen (1098-1179) described *Cannabis sativa L.* at length in her book on medicinal plants. Both in the media and in scientific journals, *Cannabis sativa L.* is receiving increasing attention again for its potential medical use. Its use is still more controversial than the use of opium and morphine but because of new scientific data, a renewed interest is emerging among patients and clinicians alike.

Interestingly, the therapeutic effects of Cannabis are well described, or proven, in various illnesses, like HIV/AIDS, Multiple Sclerosis, cancer, asthma, epilepsy, etc. Unfortunately, not enough scientific information seems to be present among patients and health care providers. Therefore, the medical use of cannabis is still underutilized.



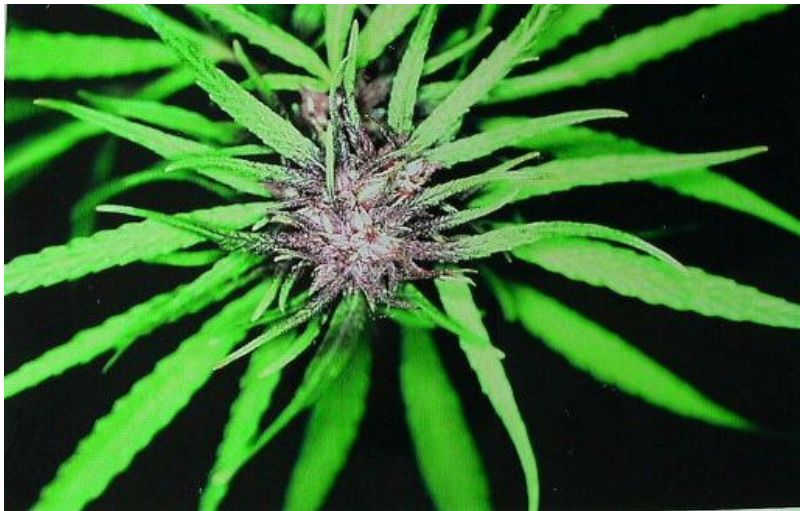
Male cannabis plant

Globally, the awareness of the potential medical use of cannabis and its other components, the cannabinoids, is growing. On November 11th, 1998, the Labourgroup for Science and Technology of the House of Lords of the British Parliament declared that there was enough evidence for efficacy in certain illnesses and thus, that cannabis should be reclassified and made available to patients, so making the use of cannabis for medical purposes no longer an offense. In addition, it was strongly recommended, that clinical trials should be inaugurated to study the efficacy of cannabis in various diseases.

Also, after a thorough research of 18 months of all available data, the US Institute of Medicine, a body of the National Academy of Science, published a report the medical use of cannabis on March 17th, 1999. It concluded that marijuana had potential efficacy in a variety of symptoms and diseases. All possible side effects of the medical use of cannabis were acceptable, except the possible danger of smoking by itself over a significant period of time, which could cause lung cancer.

Interestingly, the German authorities (BfArM) have licensed Dronabinol (THC) for medical purposes in Germany in June 2002. This Dronabinol is made by Delta9Pharma from regular Hemp and thus plant-derived and not made synthetically, like Marinol.

V.2 Cannabis in the oncological practice



Female cannabis plant

Anorexia (loss of appetite) and cachexia (wasting) are diagnosed in more than two-thirds of all cancer patients with advanced disease, and are independent risk factors for morbidity and mortality (1,2). Anorexia, nausea and vomiting are often described as more significant inhibiting factors for quality of life of cancer patients than even intense pain (3).

In 1986, delta-9-tetrahydrocannabinol (**THC**), the main effective constituent of Cannabis, was licensed as an anti-emetic drug in cancer patients receiving chemotherapy (4). In addition, in clinical studies, THC has shown significant stimulation of appetite and increase of body weight in cancer patients and HIV positives and AIDS patients (7,8). The appetite stimulating effects of Cannabis (THC) itself have also been well-documented in many anecdotal cases.

There are strong indications that Cannabis is better tolerated than THC alone, because Cannabis contains several additional Cannabinoids, like Cannabidiol (CBD), which antagonize the psychotropic actions of THC, but do not inhibit the appetite-stimulating effect.

V.3 Cannabis in the neurological practice

Central cannabinoid receptors are densely located in the output nuclei of the basal ganglia (globus pallidus, substantia nigra pars reticulata), suggesting their involvement in the regulation of motor activity. Furthermore, there is evidence that endogenous cannabinoid transmission plays a role in the manipulation of other transmitter systems within the basal ganglia by increasing GABAergic transmission, inhibiting glutamate release and affecting dopaminergic uptake.

Most hyperkinetic and hypokinetic movement disorders are caused by a dysfunction of basal ganglia-thalamo-cortical loops. It has been suggested that an endogenous

cannabinoid tone participates in the control of movements and, therefore, the central cannabinoid system might play a role in the pathophysiology of these diseases.

During the last years, in humans, a limited number of clinical trials demonstrated that cannabinoids might be useful in the treatment of certain movement disorders. Despite a lack of controlled studies, there is evidence that cannabinoids are of therapeutic value in the treatment of tics in Tourettes syndrome (3,4), the reduction of levodopa-induced dyskinesia in Parkinsons disease (1,2), and some forms of tremor and dystonia, like in Huntingtons disease (5).

Robert Gorter et al. studied the medical use of Cannabis in the Netherlands. He found that licensed medical doctors (family practitioners, internists, oncologists and surgeons alike, both in private practice as well in General Hospitals and University Medical Centers) would prescribe Cannabis both for inhalation (smoking) and as oral application. A large majority (64%) of all patients reported a good or excellent effect on their symptoms. Of these patients, approximately 44% used Cannabis for 5 months and longer. Indications were neurologic disorders, like MS and spinal cord injuries, pains, musculoskeletal disorders, and cancer-related anorexia & cachexia. Inhalation Cannabis was perceived as more effective than oral administration. Reported side effects were generally very mild (6).

(1) Snider SR, Consroe P: Beneficial and adverse effects of cannabidiol in a Parkinson patient with sinemet-induced dystonic dyskinesia. *Neurology* (1985) 35(suppl): 201. (2) Frankel JP, Hughes A, Lees AJ, Stern GM: Marijuana for Parkinsonian tremor. *J Neurol Neurosurg Psychiatry* (1990) 53: 436. (3) Hemming M, Yellowlees PM: Effective treatment of Tourettes syndrome with marijuana. *J Psychopharmacol* (1993) 7: 389-391. (4) Sandyk R, Awerbuch G: Marijuana and Tourettes syndrome. *J Clin Psychopharmacol* (1988) 8: 444-445. (5) Sandyk R, Consroe P, Snider SR, Bliklen D: Preliminary trial of cannabidiol in Huntingtons disease; in Chester G, Consroe P, Musty R (eds): *Marijuana: An International Research Report*. National Campaign against Drug Abuse Monograph Series, No. 7 Canberra, Australian Government Publishing Service (1998) pp157-162.

(6) Gorter, R., Butorac, M., Cobian, E., Van der Sluis, W.: Medical Use of Cannabis in the Netherlands. *Neurology* (2005) 64 (5): 917-919.

V.4 Cannabis in the treatment of (chronic) pain

Cannabis has sedative and analgesic activities. The analgesic effects of cannabis are less than those of opiates. Like opiates, cannabis has both central and peripheral activities. THC augments the analgesic effects of opiates, both in the animal model and in humans (1).

In a survey of 112 patients with multiple Sclerosis, who self-medicated with Cannabis sativa, the following findings were pertinent: 96.5% had a decrease of muscle spasticity at bedtime; 93.2% had a decrease of muscle spasticity when waking up; 92.3% had less pain at bedtime; 90.7% had fewer tremors of head and/or hands; 90.6% has fewer depressions (2).

In the Netherlands, a similar survey was conducted among 2000 members of the National Society of Multiple Sclerosis Patients. Here, very similar results could be documented.

In a survey among 170 Patients in German-speaking Europe, using cannabis, it was confirmed, that most patients use long-term cannabis for relieve of pain and spasticity in Multiple Sclerosis (10.8%); depressions (12.0%); HIV/AIDS related symptoms (9.0%); migraine (6.6%); asthma (6.0%) (3).

(1) Holdcroft A, Smith M, Jacklin A, Hodgson H, Smith B, Newton M, Evans F: Pain relief with oral cannabinoids in familial Mediterranean fever. *Anaesthesia* (1997) 52: 483-486.

(2) Consroe P, Musty R, Rein J, Tillery W, Pertwee R: The perceived effects of smoked cannabis on patients with multiple sclerosis. *Eur Neurol* (1997) 38: 44-48.

(3) Schnelle M, Grotenhermen F, Reif M, Gorter RW: Ergebnisse einer standardisierten Umfrage zur medizinischen Verwendung von Cannabisprodukten im deutschen Sprachraum. *Forsch Komplementärmed* (1999) 6(suppl3): 28-36.

V.5 Cannabis and the Cologne Model

In the Cologne Model, there is a 30-year long experience with the medical use of Cannabis sativa L., and its derivatives. Here, if appropriate, cannabis (Dronabinol or THC) is used for the following symptoms and diseases:

- anorexia / cachexia in cancer and HIV/AIDS patients, and in all other cases where loss of appetite and wasting are a problem;
- nausea and vomiting, caused by chemotherapy and other forms of medications, like Highly Active Anti-Retroviral Therapy (HAART) in HIV infection;
- management of (chronic) pain where traditional pain medications (opiates) do not deliver full or sufficient pain relief;
- phantom pains;

- muscle spasms, including those caused by spinal cord injuries, Multiple Sclerosis, Parkinsons Disease, etc.;
- asthma;
- ectopic dermatitis (neurodermitis);
- chronic inflammatory illness, like colitis ulcerosa.