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A cannabis reader: global issues and local
experiences

Perspectives on cannabis controversies, treatment and
regulation in Europe

Editors

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VOLUME I

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Chapter 1

Cannabis as medicine in Europe in the 19th century

Keywords: cannabis – history – medicine – medicinal use – pharmaceutical use
– pharmacy

Setting the context

Cannabis has been the subject in recent years of substantial historical study. Overviews include Abel (1980), Grinspoon and Bakalar (1993), Mathre (1997), Sloman (1998), Matthews (1998, revised 2003), Rättsch (2001), Grotenhermen (2002), Wujastyk (2002), Green (2002), Booth (2003), Allegret (2006) and Russo (2007).

This explosion in historical interest is firmly rooted in the present. Reasons for this interest include: a wider vogue in historical publishing towards single product histories (cod, salt, opium, etc.); advocates of medicinal cannabis research and the hemp industry seeking historical legitimacy and lineage; cannabis use among the middle-aged (the core audience for history of any kind); cannabis' emergence as a legislative hot potato; lively debate among botanists on the classification of *Cannabis sativa* ⁽¹⁾; not to mention the explosion of both encyclopaedic texts and drugs-related historical source documents on the Internet. Cannabis has even evolved to have its own portal on *Wikipedia*.

Rather than retread the all-encompassing historical scope of such studies, this chapter provides a focused view of how cannabis aroused interest among pharmacists in Europe. It also provides brief reflections on the contemporary revival in research into medical applications of cannabis over the past two decades. Analogies can be drawn with today's cannabis debate: for example, European experience of far-flung cultures — the past's Napoleonic soldiers in Egypt, today's backpackers in Thailand and

⁽¹⁾ See Watts, G. (2006), 'Science commentary: cannabis confusions', in *British Medical Journal* 332: 175–176 (available at: www.bmj.com/cgi/reprint/332/7534/175.pdf).

Morocco; availability of information — the past's national botanic encyclopaedias and pharmacopoeia, today's cannabis discussion forums and online growguides.

This chapter remains historical in scope. While mentioning recent developments, it does not explore in detail current developments in medicinal cannabis. However, a short chapter has been added by John Witton, providing a summary of recent developments in medicinal cannabis.

Further reading

Histories

- Abel, E. L. (1980), *Marihuana: the first twelve thousand years*, Plenum Press, New York
www.druglibrary.org/Schaffer/hemp/history/first12000/abel.htm
- Allegret, S. (2006), 'Histoire du chanvre', in P. Boulloc (ed.), *Le Chanvre industriel — production et utilisation*, Editions France agricole, Paris.
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- Rätsch, C. (2001), *Marijuana medicine: a world tour of the healing and visionary powers of cannabis*, Healing Arts Press, Rochester.
- Russo, E. (2007), 'History of cannabis and its preparations in saga, science, and sobriquet', *Chemistry and Biodiversity*, 4: 1614–1646.
- Sloman, L. (1998), *Reefer madness: a history of marijuana*, St. Martin's Press, New York.
- Zuardi, A. (2006), 'History of cannabis as a medicine: a review', *Revista Brasileira de Psiquiatria*, 28: 153–157.

For primary historical materials, a bibliography of historical mentions of cannabis was compiled in 1951 in two volumes of the United Nations' *Bulletin on Narcotics* ⁽²⁾.

See also the grey literature list in the Appendix to Volume 1 of this monograph (p.300).

⁽²⁾ United Nations (1951), *Bulletin on narcotic drugs* (available at: www.unodc.org/unodc/en/bulletin/bulletin_1951-01-01_1_page007.html (accessed 11 October 2007)).

Cannabis as medicine in Europe in the 19th century

Manfred Fankhauser

As in the previous centuries, hemp was predominantly used in the 19th century as a fibre material. Herbal cannabis played a marginal role as a medicinal plant, although its seeds were used medicinally, mostly in the form of pressed oils or hemp milk as medicine against gonorrhoea or cystitis. In tandem with prevailing interest in plants, products and culture from the Orient, medicinal use of cannabis arrived in Europe from the East during the 18th century.

Much has been written on the historical knowledge in Europe of the psychoactive properties of hemp prior to the 18th century: among readers of Herodotus' description of Scythian cannabis-incensed burial rites; by alchemists, in particular the herb *Pantagrueion* lauded by author François Rabelais; via knowledge of Islamic medicine via al-Andalus, and elsewhere (Bennett et al., 1995; Booth, 2003; Mercuri et al., 2002). However, widespread scientific writings on its psychoactive properties came later. For example, Gmelin wrote in 1777 of the Eastern use of *bhang* for stupefying ('etwas Betauebendes'), mind-clouding ('Benebelung des Verstandes') and intoxicating effects (Fankhauser, 2002); and in 1786 the Comte d'Angiviller thanked a certain Boulogne for his sending of Indian hemp plants with the prophetic words '*Cette plante sera peut-être un présent intéressant pour l'Europe*'. At the end of the 18th century, the French naturalist Sonnerat informed Lamarck's 1873 *Encyclopédique de botanique* of *Cannabis indica* (Emboden, 1974) and brought Indian hemp home to France after a journey to the Orient. Napoleonic campaigns in Egypt and the Near East introduced colonial troops — notably the scientists Silvestre de Sacy, Rouyer and Desgenettes — to hashish (Abel, 1980; Booth, 2003).

European interest in this 'new', or rather rediscovered, plant grew only hesitantly. The first comprehensive description of the medical usefulness of Indian hemp in Europe was written in 1830 by the German pharmacist and botanist Friedrich Ludwig Nees von Esenbeck. Until that point in time, use of hemp for medical purposes had remained at a low level. This situation changed significantly prior to the middle of the 19th century. William B. O'Shaughnessy (1809–1889/90), an Irish medical doctor stationed in Calcutta, India, published in 1839 a comprehensive study on Indian hemp. Thanks mainly to his *On the Preparations of the Indian Hemp or Gunjah, Cannabis indica* now also became recognised within European-school medicine. O'Shaughnessy used various hemp compounds in his investigations, partly with great success, against the following indications: rheumatism, rabies, cholera, tetanus, convulsions and delirium tremens. With hashish he had found a well-suited medicine to give his patients relief, and in the

case of cramps, even total disappearance of symptoms. For concluding remarks, he wrote: 'The presented cases are a summary of my experience with cannabis indica, and I believe that this medicine is an anticonvulsivum of great value' (O'Shaughnessy, 1839).

Europe reacted promptly to this new knowledge from India. This is not surprising as until then no adequate treatment existed against recognised diseases such as rabies, cholera or tetanus. Great hopes were based on O'Shaughnessy's results. The French were the first to engage themselves intensively with the plant. As early as 1840, the French medical doctor Louis Aubert-Roche (1809–1874), who resided in Egypt, used hashish seemingly successfully against pestilence (Hirsch, 1884–1886). Nearly simultaneously, his compatriot and friend, the psychiatrist Jaques Joseph Moreau de Tours (1804–1884), began to experiment with hashish. He started out with experimenting upon doves and hares, giving them large doses of hashish extracts with their fodder. Then he tested hashish on friends, colleagues, patients and himself. He was convinced that hashish was the supreme medicament for use in psychiatry. His book, *Du Hachich et de l'aliénation mentale* (1845), caused a great sensation at the time, and is still understood as the origin of experimental psychiatry and psychopharmacology (Weber, 1971).

The works of Moreau de Tours had an impact not only in medical circles, but also among writers and artists. The poet Théophile Gauthier (1811–1872), for instance, received hashish samples from Moreau de Tours. In 1843 he described extensively a self-experienced hashish intoxication in the Paris newspaper *La Presse* under the title 'Le Club des Hachichins'. The club of hashish eaters, of which Gauthier was one of the founders, had regular meetings in Hôtel Pimodan on the Seine island of St Louis. He and Charles Baudelaire (1821–1867) shared a penthouse in the hotel for several years. Other prominent club members were Alexandre Dumas (1802–1870) and Honoré Daumier (1808–1879) (Moreau, 1904). Further well-known contemporaries such as Honoré de Balzac (1799–1850), Gustave Flaubert (1821–1880) and Victor Hugo (1802–1885) participated occasionally (Behr, 1982).

Inspired by Moreau de Tours and later by pharmacy professor Eugène Soubeiran (1797–1859), the pharmacist Edmond de Courtive published in 1848 his widely noted dissertation, *Haschisch*. In addition to chemical analysis, he carried out self-experiments with miscellaneous hashish compounds and gave exact descriptions of their physical and psychic effects (De Courtive, 1848).

Many medical doctors took advantage of the promising results of the pioneers O'Shaughnessy, Aubert-Roche and Moreau de Tours and used these new drugs for therapeutic purposes. Initially, primarily doctors from the colonial powers of England and France showed interest in the use of compounds made of Indian hemp. The necessary commodities or compounds were imported in great quantities to Europe from the colonies, especially from India (Smith and Smith, 1847). Hemp was in this period sold to Europe primarily in three commercial variations:

- *Ganjah*: consists solely of the blooming tips of the female, carefully cultivated plant. Mostly 24 blooming tips are bundled in a length of approximately 1 m, and 11 cm thickness.
- *Charras*: consists of the resin, which is extracted foremost from the blossom, but also from leaves and stalks of the female plant. Today, the extracted resin is called hashish.
- *Bhang*: extracted from the leafless stalks of the female hemp plant. Bhang was predominantly exported to Europe in powder form.

In Europe *ganjah* was the first to be pharmaceutically exploited. Initially, the fields of application known to O'Shaughnessy were adopted. Later on, the therapeutic application of hashish was considerably extended. In particular, the English and French medics applied this new wonder drug against tetanus (Martius, 1844). Encouraged by many positive reports, especially from England, the Bulgarian medic Basilus Beron intensively engaged in this problem in a dissertation. His work concludes:

I was so contented that, after having used almost all known antitetanic drugs without result, the sick person that had been assigned to me was totally cured after use of the Indian hemp (...) wherefore the Indian hemp is strongly recommended against tetanus.

(Beron, 1852)

Homeopathy, founded by Samuel Hahnemann (1755–1843) and rapidly advancing in this period, was also quick to include Indian hemp in its medical catalogue. Towards the middle of the 19th century, in addition to the illnesses already mentioned, Indian hemp was mainly used against neuralgia and other pains, chorea, hysteria, insanity, haemorrhage and insomnia. Since prepared products did not yet exist, cannabis extracts and tinctures were mostly used.

The real success story of cannabis as a medicine began in the second half of the 19th century after the publication of Beron's dissertation in 1852. In the same year, Franz von Kobylanski published a dissertation on the effect of cannabis as an oxytotic (1852). Four years later, the German Georg Martius wrote his comprehensive work *Pharmakognostisch-chemische Studien über den Hanf*, which attracted much attention. Interest was also aroused by the experiments of the Viennese Carl Damian Ritter von Schroff (1802–1887). Martius was among the few who did not deem cannabis compounds as harmless. He wrote that:

the Indian hemp and all its compounds show great diversity concerning the degree and type of effect according to individual differences in healthy as well as in pathological conditions. It therefore belongs to the unsafe agents, and the medic should under all circumstances use it with great care.

(Von Schorff, 1858)

At the same time, Ernst Freiherr von Bibra (1806–1878) published his standard work, *Die narkotischen Genussmittel und der Mensch*. Here, he discussed hashish for over 30 pages. In addition to experiences of others, he describes a self-experiment with hashish. His concluding judgement was as follows: ‘Recent experiments and experiences made on the medical effect of the hemp plant and its compounds very much point to their advantage’ (von Bibra, 1855).

In this period, most European countries, as well as the USA, included Indian hemp in their national pharmacopoeia. The monographs *Herba Cannabis indicae*, *Tinctura Cannabis indicae* and *Extractum Cannabis indicae* enjoyed increased prominence, whereas *Semen/Fructus Cannabis* and *Oleum Cannabis* became more and more rare. It was first of all France and England, and to a lesser extent the USA, that significantly contributed to the definitive breakthrough of the drug into Western medicine.

The study of Indian hemp was even pursued in Germany. A comprehensive work of Bernhard Frommüller, written in 1869, is frequently cited. He had studied the qualities of the hemp plant for a long time, and carried out cannabis experiments within the framework of ‘clinical studies on the euthanising effect of the narcotic drugs’ with exactly 1 000 test patients. These test patients suffered from heavy insomnia due to various illnesses. The results of his investigation were positive. Thus, he concluded in his work: ‘The Indian hemp is, among the known anaesthetic drugs, the narcosis which most perfectly achieves a replacement of natural sleep, without particular repression of expulsions, without bad repercussions, without paralyses’ (Frommüller, 1869).

Well-known medical experts or pharmacologists of the time wrote more-or-less comprehensive essays on *Cannabis indica*. Some of these articles criticise the unreliability of hemp compounds. Indeed, the standardisation problem continued to be an issue for cannabis compounds until they disappeared. Kobert is one of very few who discussed the dangers of long-term consumption: ‘The habitual consumption of any effective hemp compound deprives the human being and brings him to a mental institution’ (Kobert, 1897).

The period 1880 to 1900 can be considered a peak in the medical use of cannabis. The use of hashish compounds had become commonplace in almost all European countries and in the USA. Nonetheless, it was still scientists from England, France, Germany and the USA who persistently continued cannabis research. It is, therefore, not a coincidence that most of the products on the market (‘specialities’) originated in these countries. It is first of all through the contribution of the company E. Merck of Darmstadt, Germany, that cannabis compounds became more widely used in Europe towards the end of the 19th century. One of the preferred source materials in the production of cannabis compounds in this period was *Cannabinum tannicum Merck*. In addition, the company Burroughs, Wellcome & Co. in England produced cannabis compounds. In

the USA, cannabis compounds were manufactured by Squibb and sons in New York ('Chlorodyne and Corn Collodium'), and, later, Parke-Davis & Co. in Detroit ('Utroval' and 'Casadein') and Eli Lilly ('Dr Brown's Sedative Tablets', 'Neurosine' and 'The One Day Cough Cure'). These companies delivered sufficient quantities of high-quality raw materials and produced compounds for the market. Probably the most-used hemp compound was the sleeping pill *Bromidia*, of the American company Battle & Co. This was a combined drug, that is, in addition to cannabis extract it contained bromine potassium, chloral hydrate and henbane. While single compounds dominated during the 19th century, combination compounds were preferred in the 20th century. Most cannabis drugs were for internal use, but there existed topical compounds, for instance, creams or the common clavus tinctures.

In the meantime, France continued its 50-year tradition and honoured medical doctors and pharmacists with doctoral degrees based upon works on hashish. In 1891 Georges Meurisse (born 1864) published his work *Le Haschich*, and five years later *Le chanvre indien* by Hastings Burroughs (born 1853) appeared. The latter is strongly based on Villard's work, but also upon his own therapeutic experiments. He summarises: 'In therapeutic doses, the Indian hemp is safe and would deserve to be more frequently used' (Burroughs, 1896).

In Germany, the PhD students H. Zeitler ('On Cannabis indica', 1885) and M. Starck ('How to apply the new cannabis compounds', 1887) first wrote their graduation dissertations, before the pharmacist Leib Lapin in 1894 published his dissertation, 'A contribution to the knowledge of *Cannabis indica*', under the guidance of the leading figures Johan Georg Dragendorff (1836–1898) and Rudolf Kobert (1854–1918). In the first part of his work, he gives an overview of 'common, manufactured and officinal hemp compounds' in use at the time. In the second part he describes the pharmacology of 'cannabindon', a cannabis derivat first studied by him. In the preamble of his investigation, he makes a remark which shows the uncertainty that existed regarding the medical safety of Indian hemp:

Had it been so simple to solve the hashish question, it would certainly have been solved by one of the numerous previous investigators. I believe that I have contributed to the definitive resolution, and this belief gives me the courage to publish the following as a dissertation.

(Lapin, 1894)

A scientific contribution of extraordinary importance within the cannabis research of the 19th century was the so-called *Indian Hemp Report* of 1894. This census, carried out by Great Britain in its colony India, primarily studied the extraction of drugs from cannabis, the trade in these drugs and the implications for the total population. Additionally, the study set out to clarify whether prohibition of the compounds might be justified, and an expert commission was established for this purpose. Its report impressively shows the significance of the stimulant and drug cannabis in India towards the end of the 19th

century. The main conclusion of the commission was: 'Based upon the effects of the hemp drugs, the commission does not find it necessary to forbid the growing of hemp, nor the production of hemp drugs and their distribution' (Leonhardt, 1970).

Towards the 20th century, Indian hemp enjoyed an important position in the *materia medica* of Western medicine. Evidence of misuse of cannabis compounds was practically non-existent until then. Kunkel writes:

The chronic misuse of cannabis compounds — cannabism — is believed to be widespread in Asia and Africa. It results in chronic, heavy disruption of the entire organism, especially mental disorder — attacks of raving madness and a subsequent condition of weakness. It is not observed in Europe, Indian doctors report however daily frequent cases of this disease.

(Kunkel, 1899)

To sum up, hashish played a significant role as a medicine in Europe and in the USA towards the end of the 19th century. The most important applications were against pain, especially migraine and dysmenorrhoea, pertussis, asthma and insomnia. Additionally, hashish was relatively frequently used as an additive in clavus supplements. Rare applications were stomach ache, depressions, diarrhoea, diminished appetite, pruritus, haemorrhage, Basedow syndrome and malaria. Cannabis compounds were also used in numerous single cases, partly with good results. These were, however, of smaller significance.

Typically, doctors who worked intensively with cannabis drugs for years would classify them as valuable medicines. Others criticised them, and frequently looked upon them as worthless or even dangerous. However, both groups agreed on the unpredictable effect of cannabis compounds.

After keen use of cannabis compounds around the turn of the century, they disappeared completely in the middle of the 20th century. The main reasons for the disappearance of hashish medicaments are medical developments. Even before the 20th century, new, specific medicines were introduced for all main applications of cannabis compounds. Vaccines were developed for the treatment of infectious diseases (cholera, tetanus, etc.), which not only fought the symptoms as cannabis did, but also gave protection against infections. Other bacterial illnesses, such as gonorrhoea, that were frequently treated with cannabis could somewhat later be treated successfully with chemotherapeutica. *Cannabis indica* received competition as a sleeping and tranquillising drug in the form of chemical substances such as chloral hydrate or barbiturate. Contrary to the numerous opium drugs, cannabis compounds were also replaced as analgesics by chemical substances. In this area, aspirin achieved great importance shortly after its introduction in 1899.

Another reason for the decline of cannabis as medicine was pharmaceutical instability. The varying effectiveness of the hashish compounds has often been noted. Very different factors, such as origin, age, storage and galenic preparation, affected effectiveness of the medicine. Unlike, for instance, alkaloid drugs such as opium, the isolation of active ingredients was not successful until the middle of the 20th century. This resulted in standardisation problems. There were also legal constraints. The use of cannabis compounds became more and more restricted in international and national law. Hashish compounds were defined as anaesthetics some time in the 20th century. This complicated their use enormously, until finally a general ban made it impossible to apply them.

Finally, economic aspects contributed to the decline in use of medical cannabis. Import into Europe of high-quality Indian hemp became more and more difficult due to constraints in the producing countries (mainly India) and the influences of the two world wars. Laws of supply and demand also applied to cannabis, resulting in a massive price increase for raw materials (e.g. herba *Cannabis indicae*) as well as for compounds (e.g. extractum *Cannabis indicae*).

Cannabis as medicine — the contemporary situation

As already mentioned, hemp compounds were still frequently used at the beginning of the 20th century, and scientific research on the plant was promoted. However, its standing declined rapidly, and towards the middle of the 20th century cannabis as a medicine gradually faded into insignificance. Finally, the use of cannabis was prohibited worldwide through international agreements.

In particular, use of cannabis as a medicine was made impossible by the Convention on Narcotic Drugs of 1961 (see Ballotta et al., this monograph). Only lately have individual countries begun to stretch the application of this regime, as in Holland, where since September 2003 cannabis can be bought in pharmacies on prescription. In specific cases, cannabis can be used as medicine in Canada and in some US states without sanctions against the patients. In Canada, the cannabis medicine *Sativex* as a spray was licensed for treatment of neuropathic pain for multiple sclerosis patients in April 2005. Until then, only the two cannabinoids, THC and Nabilon, had been legally traded since the 1960s (IACM-News, 2005). Other European countries, such as the United Kingdom, Spain, and more recently Switzerland and Italy, have for some time undertaken efforts to explore possible benefits of cannabis for medical purposes (see Witton, this monograph).

In spite of the ban on cannabis, research on the medical effects of this ancient drug plant has not stood still. In many countries, scientific work with cannabis was and is allowed. The discovery of Δ^9 -tetrahydrocannabinols (THCs) in 1964 and the cannabinoid

receptors (CBs) in 1988 are important milestones in cannabis research. Four years later, the existence of endocannabinoids was proven, that is substances produced by the human body that function as agonists to cannabinoid receptors. Presently, the first selectively working CB1 receptor antagonist rimonabant is being clinically tested (phase III). It seems that this receptor may be used against overweight and metabolic risk factors, as well as with tobacco withdrawal (Heinzl, 2005).

Since the cannabinoid system was discovered, agents that make use of the therapeutic effects of the cannabinoids have been intensively searched for, thereby avoiding the psychotropic side-effects. Just in the years following the discovery and investigation of the chemical structure of THC's until 1986, approximately 6 000 scientific studies of the chemistry, pharmacology, clinical properties and metabolism of the THC's have been published (Mechoulam, 1986). During the last 20 years, research on the hemp plant has intensified. It is hardly possible to provide an overview the abundance of data and scientific publications. Presently, various clinical studies of the effects of hemp on certain illnesses are being undertaken.

A summary of research focal points and possible fields of cannabis application is given below. According to Grotenhermen (2004), therapeutic effects of cannabis or segregated THC (or dronabinol) may, based on current science, be divided as follows:

- 1 Established effect: nausea and vomiting, anorexia and loss of weight.
- 2 Relatively well-proven effect: spasms, pain conditions, movement disturbances, asthma, glaucoma.
- 3 Unproven effect: allergies, itchiness, inflammations and infections, epilepsy, depressions, and anxiety disturbances.
- 4 Basic research: auto-resistant diseases, cancer, neuroprotection, fever and blood pressure disturbances.

As previously mentioned, some of these applications had already been in use for a long time based on experience. Interestingly, long-proven indications have more recently been scientifically documented. In spite of the ban on cannabis, it is frequently used by patients in the form of tea or tinctures and sometimes recommended by medical doctors against the law. In practical terms, some multiple sclerosis patients successfully use cannabis as an antispastic, and some migraine patients frequently use it as a pain reliever.

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