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Access to Cannabis for Medical Purposes Regulations - Daily Amount Fact Sheet (Dosage)

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Cannabis (marijuana, marihuana) is not an approved therapeutic drug in Canada. At present, while pointing to some potential therapeutic benefits, the scientific evidence does not establish the safety and efficacy of cannabis, to the extent required by the Food and Drug Regulations for marketed drugs in Canada, unless a particular cannabis product has received a notice of compliance from Health Canada and a Drug Identification Number (DIN) (e.g. nabiximols/Sativex®). However, the Access to Cannabis for Medical Purposes Regulations provide a mechanism for patients to access cannabis for medical purposes with the support of their physician or nurse practitioner (where authorized by provincial regulatory authorities).

When considering the use of cannabis for medical purposes, it is understandable that patients and healthcare practitioners may have questions regarding dosage and daily amounts of cannabis for specific medical conditions. The following information has been prepared to provide patients and healthcare practitioners with information related to daily amounts and dosing. The information provided in this fact sheet should be used in combination with the Consumer Information Insert that accompanies each shipment of marijuana for medical purposes.

General remarks

There are no precise doses or established uniform dosing schedules for products such as fresh marijuana, smoked/vapourized marijuana, or cannabis oil.

Dosing remains highly individualized and relies to a great extent on titration (i.e. finding the right dose where potential therapeutic effects are maximized while adverse or harmful effects are minimized). The most prudent approach to dosing in the absence of evidence-based guidelines is to "start low and go slow."

Other than for products that have received a notice of compliance from Health Canada and a DIN, the dose of cannabis required to achieve therapeutic effects and avoid adverse effects is difficult to estimate and is affected by many variables. However, higher doses of THC (and CBD) are associated with an increased risk of experiencing adverse or harmful effects.

Patients with no prior experience with cannabis and initiating such therapy for the first time are cautioned to begin at a very low dose (e.g. 1 mg THC) and to immediately stop therapy if unacceptable or undesirable side effects occur (e.g. disorientation, dizziness, and loss of coordination, agitation, anxiety, rapid heartbeat, chest pain, low blood pressure/ feeling faint, depression, hallucinations, or psychosis).

When beginning therapy with cannabis it is best to try to have someone you trust with you in case you experience an adverse effect and require medical attention.

While there have been a few clinical studies of smoked/vapourized dried cannabis for therapeutic purposes, there are no clinical studies of fresh marijuana or cannabis oil for therapeutic purposes. As such, providing precise dosing guidelines for such products is not possible although existing sources of information can be used as a reference (see below).

Onset, peak, and duration of effects

With inhalation (smoking, vaporizing), effects may be felt within a few minutes of dosing and will generally peak within 30 mins. ¹ Acute effects generally last between 2 and 4 hours but may be longer (e.g. 24 hours). ²

With oral ingestion (e.g. oils, foods, capsules), acute effects may begin to be felt as quickly as 30 mins and as late as 3 or 4 hours after administration. ³ This variability in timing depends on a number of factors (e.g. amount of food in stomach). It is prudent to wait a minimum of 2 hours between administration of single doses of oral products to avoid possible overdosing. ⁴ Acute effects generally peak between 3 and 4 hours after dosing and can last up to 8 hours or longer e.g. 12–24 hours). ⁵

With topical application, it is not known how long it takes for potential therapeutic effects to appear, nor how long they last. There have been reports of hypersensitivity reactions (e.g. rashes, itching) when skin has come into contact with cannabis. ⁶

Dosing amounts

Information obtained from a limited number of small and short-term clinical studies of cannabis for medical purposes indicate the daily doses of smoked or vapourized dried cannabis ranged from as little as 75 mg of dried cannabis (9.4% THC by weight) (i.e. 7 mg THC/day) to a maximum of 3.2 grams of dried cannabis (1–8% THC by weight; i.e. 32 to 256 mg THC). ^{7, 8}

Doses of THC as low as 2.5–3 mg of THC (and even lower) are associated with a therapeutic benefit and minimal psychoactivity. ^{9, 10, 11}

Various surveys published in the peer-reviewed scientific and medical literature have suggested that the majority of people using smoked **or** orally ingested cannabis for medical purposes reported using between 10–20 grams of

cannabis per week, or approximately 1–3 grams of dried cannabis per day. ¹²

One study reported the average daily dose of dried cannabis (of various potencies) used by patients in the Netherlands' Medical Cannabis program was 0.68 grams per day (range: 0.65 –0.82 grams per day). ¹³

Another study suggests that regardless of route of administration (inhalation vs. oral), individuals reporting use of cannabis for medical purposes reported consuming equivalent amounts of cannabis per day and that amount averaged at around 3 grams per day. ¹⁴

- For smoking and vapourizing, the median reported dose was 1.5–2.0 grams per day respectively.
- For edibles, the median reported dose was 1.5 grams per day.
- For teas, the median reported dose was 1.5 grams per day.

There is no information available on dosing amounts for topically applied cannabis products (e.g. ointments, creams, lotions, oils, balms, salves), however one study suggests approximately 5% of individuals who use marijuana for medical purposes use such products. ¹⁵

There is no information available on dosing amounts for fresh marijuana.

In the absence of any clinical studies conducted with cannabis products, such as oils that are ingested orally, the following information has been provided as a reference to give some potential guidance around dosing.

For products such as oils that are ingested orally

- The available clinical evidence for Marinol[®], an orally administered capsule that has received market authorization and that contains synthetic THC dissolved in sesame oil, indicates a dosing range from as low as 2.5 mg THC per day to a maximum dose of 210 mg THC per day. ^{16, 17, 18} Doses

lower than 2.5 mg (e.g. 1 mg) THC may further avoid incidence and risks of adverse effects.

- Average dose of Marinol[®] is 20 mg THC per day. ¹⁹
- Maximal recommended daily oral dose of Marinol[®] is 40 mg per day. ^{20, 21}
- Preliminary information from an open-label clinical trial with Epidiolex[®] (an orally administered oil extract containing mainly cannabidiol (CBD) for treatment of certain types of childhood epilepsy not responsive to conventional treatment), suggests a daily dosing range between 5 and 20 mg/kg CBD. ²² However, further clinical studies are required to substantiate this information.

Important Note

Equivalency Factor

- The quantity of product other than dried marijuana (for example, fresh marijuana or cannabis oil) that is equivalent to one gram of dried marijuana ("the equivalency factor") must be determined. However, the equivalency factor depends on the production method, form of supply and the THC/CBD yield. The licensed producers will provide this information on the label. The information about the equivalency factor will also be available on the licensed producer's website.
- If the patient chooses to produce cannabis themselves or to have it produced by another person, the patient and the designated person, if any, are required to manage their possession or storage limit based on the quantity of fresh marijuana, cannabis oil or other products that are equivalent to a given quantity of dried marijuana. As such, five grams of fresh marijuana is determined to be equivalent to one gram of dried marijuana and the quantity of products that is equivalent to a given quantity

of dried marijuana is calculated by taking into account the weight of fresh or dried marijuana that was used to make the products.

More Information

For additional information, please consult the "[Information for Health Care Professionals: Cannabis \(marihuana, marijuana\) and the Cannabinoids](#)" and the "[Consumer Information - Cannabis \(Marihuana, Marijuana\)](#)". Both documents can be found on the Health Canada website at www.hc-sc.gc.ca/dhp-mps/marihuana/med/index-eng.php

The College of Family Physicians of Canada has also published preliminary guidelines on authorizing dried cannabis for chronic pain and anxiety which can be found here: www.cfpc.ca/uploadedFiles/Resources/PDFs/Authorizing Dried Cannabis for Chronic Pain or Anxiety.pdf

If you experience an adverse reaction to cannabis, contact your healthcare professional immediately and report the adverse reaction to your healthcare professional and to the licensed producer or to the market authorization holder (in the case of a marketed health product), or to Health Canada's Canada Vigilance Program by one of the following three ways:

- [Report online](#)
- Call toll-free at 1-866-234-2345
- Complete a Canada Vigilance Reporting Form and:
 - Fax toll-free to 1-866-678-6789, or
 - Mail to:
Canada Vigilance Program
Health Canada
Postal Locator 0701D
Ottawa, Ontario K1A 0K9

Postage paid labels, Canada Vigilance Reporting Form and the adverse reaction reporting guidelines are available on the MedEffect™ Canada Web site.

Reference List

- 1 Health Canada *Information for Health Care Professionals: Cannabis (marihuana, marijuana) and the Cannabinoids* (2013).
- 2 *Ibid.*
- 3 *Ibid.*
- 4 *Ibid.*
- 5 *Ibid.*
- 6 *Ibid.*
- 7 Ware *et al.* (2010) Smoked Cannabis for Chronic Neuropathic. Pain *Canadian Medical Association Journal* 182(14): E694-701.
- 8 Health Canada *Information for Health Care Professional: Cannabis (marihuana, marijuana) and the Cannabinoids* (2013).
- 9 *Ibid.*
- 10 Ware *et al.* (2010) Smoked Cannabis for Chronic Neuropathic. Pain *Canadian Medical Association Journal* 182(14): E694-701.

- 11 Eisenberg *et al.* (2014) The pharmacokinetics, efficacy, safety, and ease of use of a novel portable metered-dose cannabis inhaler in patients with chronic neuropathic pain: a phase 1a study. *Journal of Pain and Palliative Care Pharmacotherapy* 28: 216-225.
- 12 Health Canada (2013) *Information for Health Care Professionals: Cannabis (marihuana, marijuana) and the Cannabinoids.*
- 13 Hazekamp *et al.* (2013) The Medicinal Use of Cannabis: An International Cross-Sectional Survey on Administration Forms *Journal of Psychoactive Drugs* 45(3): 199-210.
- 14 *Ibid.*
- 15 *Ibid.*
- 16 Abbott Products Inc. Marinol[®] Product Monograph. 2010.
- 17 *Ibid.* A maximal daily dose of 210 mg THC was tested in clinical trials in healthy volunteers and can also be derived from dosing at 90 mg/m² body surface area for a male, 250 lbs, 5'11 (i.e. 2.38 m²).
- 18 Doses of Marinol[®] can be escalated or de-escalated in 2.5 mg/m² increments.
- 19 *Ibid.*
- 20 *Ibid.*

21 For Marinol[®], the maximal recommended human dose (MRHD) for nausea and vomiting associated with cancer chemotherapy is 90 mg/m², whereas the MRHD for AIDS-related anorexia with weight loss is 15 mg/m².

22 dos Santos *et al.* (2015) Phytocannabinoids and Epilepsy *Journal of Clinical Pharmacy and Therapeutics* 40: 135-143.

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