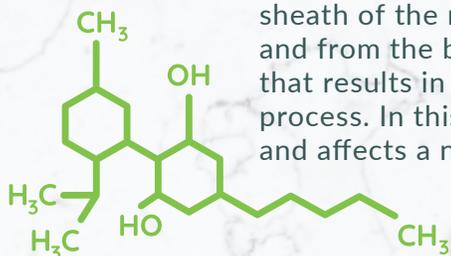
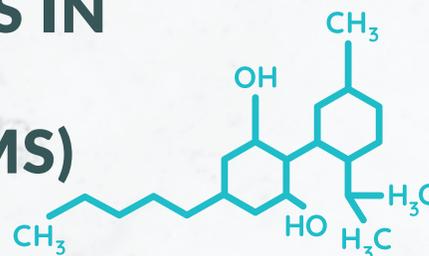


THE ROLE OF CANNABIS IN THE TREATMENT OF MULTIPLE SCLEROSIS (MS)



Multiple Sclerosis is an autoimmune disease in which the protective myelin sheath of the nerves is damaged, affecting the transmission of messages to and from the brain and spinal cord. This is a progressive, debilitating disease that results in nerve deterioration which is, unfortunately, an irreversible process. In this disease, the body's own immune system attacks the nerves and affects a number of functions, like coordination, vision, and balance.¹

MS has a wide range of Symptoms¹

Vision

Blurred vision, irregular eye movement, visual impairment



Muscles

Spasm, cramping, weakness, lack of coordination



Senses

Increased sensitivity to pain, tingling, burning, pins-and-needles feeling



Central Nervous System

Anxiety, Impairment, mood swings, fatigue, dizziness, hearing loss



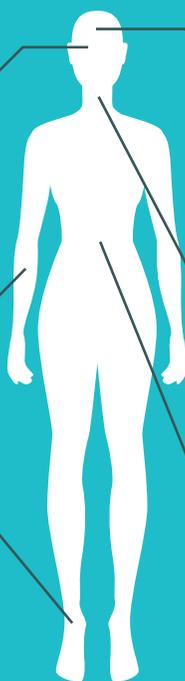
Speech and Mouth

Difficulty swallowing food, sudden slurring or stuttering in speech



Digestive System

Sudden change in urinary frequency, constipation, diarrhea



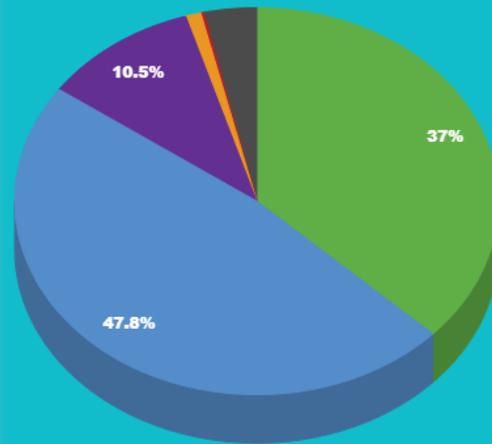
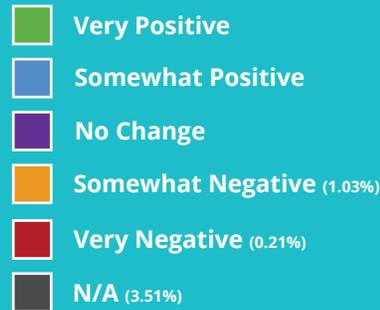
Top 10 Medical Conditions Treated with Medical Cannabis⁴

- | | | | |
|---|------------|----|----------------------------|
| 1 | Anxiety | 6 | PTSD |
| 2 | Insomnia | 7 | Fibromyalgia |
| 3 | Arthritis | 8 | Migraines/Headaches |
| 4 | Back pain | 9 | Multiple Sclerosis |
| 5 | Depression | 10 | Inflammatory Bowel Disease |



84.79% of Harvest Medicine patients with MS self-report that medical cannabis has somewhat or very positively affected their quality of life.⁴

Total Sample Size 1453 | February 2017 - Q1 2021



Entourage Effect

The Entourage Effect, first posited in 1988 by Mechoulam and Ben-Shabat, describes the synergistic nature of the many pharmacologically active compounds in cannabis, including cannabinoids, terpenes and flavonoids

Cannabinoids

THC is not currently approved by the FDA for use by people with MS¹³

CBD – “it is our opinion that CBD supplementation may be advisable for patients with MS to reduce fatigue, pain, spasticity, and ultimately improve mobility”¹⁴, however “the exact method through which CBD interacts with the mechanisms that are thought to cause MS remains unclear.”¹⁵ If trying CBD, a patient should ‘start low and go slow’¹⁶ and consider gel caps as an easy to dose and relatively low health risk format, while Sativex is available as an oral spray.

Terpenes¹⁷

Caryophyllene, Myrcene, Pinene & Humulene demonstrate anti-inflammatory properties, while Linalool & Myrcene may be helpful for pain

Flavonoids¹⁸

An appropriate luteolin formulation that permits sufficient absorption and reduces its metabolism could be a useful adjunct to Interferon Beta (IFN-β) in MS therapy



Additional Resources

Speak with your healthcare practitioner about possible interactions with your current medications.

Patients can track results and progress using the Strainprint App.

strainprint.ca

Enter Harvest Medicine's unique activation code upon sign up: **HMED**

Call or visit us online to learn more

1-844-488-4633 | **hmed.ca**

References

- 1) What Are The Signs and Symptoms of MS? Retrieved from <https://www.findatopdoc.com/Healthy-Living/What-Are-the-Signs-and-Symptoms-of-Multiple-Sclerosis>
- 2) Countries with the highest prevalence rates of Multiple Sclerosis (March 2015). Retrieved from <https://www.statista.com/statistics/372361/prevalence-rate-of-ms-in-select-countries/>
- 3) Canada has the highest rate of MS in the world. (Dec 2013). Retrieved from <https://mssociety.ca/resources/news/article/canada-has-the-highest-rate-of-multiple-sclerosis-in-the-world>
- 4) Harvest Medicine patient reported outcomes and top conditions
- 5) History of Medical Cannabis. Retrieved from <https://hmed.ca/patient-resources/history-of-medical-cannabis/>
- 6) Mack, A. and Joy, J. (2001). Marijuana as Medicine: Science Beyond the Controversy. Washington, DC: The National Academies Press. (p.15)
- 7) Wade, D. T., Makela, P., Robson, P., House, H., & Bateman, C. (2004). Do cannabis-based medicinal extracts have general or specific effects on symptoms in multiple sclerosis? A double-blind, randomized, placebo-controlled study on 160 patients. Multiple Sclerosis Journal, 10(4), 434-441. <https://doi.org/10.1191/1352458504ms1082oa>
- 8) Rog, D. J., Nurmiikko, T. J., Friede, T., & Young, C. A. (2005). Randomized, controlled trial of cannabis-based medicine in central pain in multiple sclerosis. Neurology, 65(6), 812-819. <https://doi.org/10.1212/01.wnl.0000176753.45410.8b>
- 9) Guidance for the use of medicinal cannabis in the treatment of multiple sclerosis in Australia. Australian Government Department of Health Therapeutic Goods Administration. Retrieved from <https://www.tga.gov.au/publication/guidance-use-medicinal-cannabis-treatment-multiple-sclerosis-australia>
- 10) Allan, M. et al. (February 2018). Clinical Practice Guidelines. Simplified guideline for prescribing medical cannabinoids in primary care. Journal of the Canadian Family Physician, (64), 111-120. <https://www.cfp.ca/content/cfp/64/2/111.full.pdf>
- 11) Position Paper: Medical Cannabis. Retrieved from <https://arthritis.ca/getmedia/4a17bc86-ac46-41f2-9515-b74b7325adb/Medical-Cannabis-Position-Paper-October-2018-FINAL-EN.pdf>
- 12) Approval of Sativex With Conditions. (April 2005). Retrieved from <https://www.canada.ca/en/health-canada/services/drug-health-products/drug-products/notice-compliance/conditions/fact-sheet-sativex.html>
- 13) Medical Marijuana FAQs. Retrieved from <https://www.nationalmssociety.org/Treating-MS/Complementary-Alternative-Medicines/Marijuana/Marijuana-FAQs>
- 14) Rudroff, T. & Sosnoff, J. (March 2018) Cannabidiol to Improve Mobility in People with Multiple Sclerosis. Retrieved from <https://www.frontiersin.org/articles/10.3389/fneur.2018.00183/full>
- 15) Beadle, A. (Sept 2018). Analytical Cannabis, How CBD Reduces Multiple Sclerosis Symptoms Has Now Been Revealed. Retrieved from <https://www.analyticalcannabis.com/articles/how-cbd-reduces-multiple-sclerosis-symptoms-has-now-been-revealed-309463>
- 16) Cannabis: Lower Your Risks. Retrieved from <https://www.canada.ca/en/health-canada/services/drugs-medication/cannabis/resources/lower-your-risks.html>
- 17) Bailey, R. (Oct 2014). Understanding Cannabis Testing: A Guide to Cannabinoids and Terpenes. Retrieved from <https://www.leafly.ca/news/cannabis-101/understanding-cannabis-testing>
- 18) Theoharides, T.C. (Oct 2009). Luteolin as a therapeutic option for multiple sclerosis. J Neuroinflammation 6, 29. <https://jneuroinflammation.biomedcentral.com/articles/10.1186/1742-2094-6-29#citeas>



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