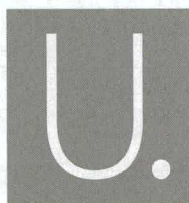




# Beyond THC: Exploring the Topical Uses of Cannabis

Holly Hutton

Holly Hutton just completed the East West School of Planetary Herbology Certified Herbalist program. She has been working as a clinical herbalist for five years and mentors with KP Khalsa. She owns Herbal Goddess Medicinals, an herbal product company, teaches, grows and sells medicinal plants. She is currently working on a self-published book about central Oregon herbs, wildcrafting and native uses.



U.S. federal law currently considers cannabis as a Schedule I controlled substance, yet in many states, it is considered legal under medical marijuana laws. Medical cannabis (or medical marijuana) refers to the use of cannabis and its constituent cannabinoids as medical therapy to treat a designated disease or alleviate symptoms. Currently, 20 states have medical cannabis available to their residents and Colorado, Washington, Alaska and Oregon consider it legal. Research on its medical benefits in the United States has been limited due to its legal status. The medical research that has been done has primarily focused on its harmful effects, reinforcing its place as an illegal narcotic.

## Chemical Constituents

Cannabis' historical and contemporary taxonomy is as complex as its current legal status. Modern taxonomy considers all strains of cannabis as one species: *Cannabis L*, which includes *Cannabis sativa* and *Cannabis indica* (American Herbal Pharmacopoeia 2013).

The cannabis plant contains an enormous variety of phytochemicals. Over 750 secondary metabolites in cannabis have been identified (American Herbal Pharmacopoeia 2014). The primary phytocannabinoids include the well-known psychoactive Delta-9-tetrahydrocannabinol (THC), cannabidiol

(CBD) and cannabitol (CBN). Table 1 incorporates several authors' findings to provide a summary of currently identified phytocannabinoids and their potential therapeutic actions (Russo 2011, Brenneisen 2012/2011, American Herbal Pharmacopoeia 2013).

The distinctive scent of cannabis is composed of 200 different terpenoids. Some have speculated that it is possible that the combination of terpenoids and phytocannabinoids may play a role in cannabis' therapeutic actions and act to temper the intoxicating effects of THC (Russo 2005, 2011). Current research is focused on these individual chemical constituents and their effectiveness in addressing pain, inflammation, depression, anxiety, addiction, epilepsy, cancer, and fungal and bacterial infections (Ibid).

In the late 1980s, scientists researching the effects of cannabis consumption discovered the endocannabinoid (EC) system and the presence of cannabinoid receptor sites in the human body. These sites were identified and categorized as CB1 and CB2. CB1 receptors are located on cells in the nervous system and CB2 sites are found in the immune system. Current research indicates that phytocannabinoids react with these receptor sites, aiding in its therapeutic value (Lee 2012).

## Topical Application of Cannabis: Historical Accounts

Topical use of cannabis is documented in healing traditions worldwide. The 18th-century Persian medical text *Makhzan-al-Adwiya* describes

Table 1: Identified phytocannabinoids and their potential therapeutics (Russo 2011, Brenneisen 2012/2011, American Herbal Pharmacopoeia 2013)

Compound		Pharmacological Characteristics
Cannabigerolic Acid	CBGA	Antibiotic
Cannabigerol	CBG	Antibiotic Antifungal Anti-inflammatory Analgesic GABA uptake inhibitor Reduces keratinocyte proliferation in psoriasis Effective against MRSA
Cannabichromene	CBC	Antibiotic Antifungal Anti-inflammatory Analgesic (weak)
Cannabidiolic Acid	CBDA	Antibiotic
Cannabidiol	CBD	Anxiolytic Antipsychotic Analgesic Anti-inflammatory Antioxidant Antispasmodic Anti-emetic Antifungal Anticonvulsant Antidepressant Antagonizes effects of THC Decreases sebum/sebocytes proliferation Effective against MRSA Pro-apoptotic against breast cancer cell lines
Cannabinol	CBN	Sedative Antibiotic Anti-convulsant Anti-inflammatory Decreases breast cancer resistance protein Effective against MRSA
Delta-9 tetrahydrocannabinol	THC	Euphoriant Analgesic Anti-inflammatory Antioxidant Antiemetic Antipruritic Bronchodilator
Delta 9 tetrahydrocannabivarin	THCV	Analgesic Euphoriant Anticonvulsant in vitro
Delta-9 Tetrahydrocannabinoid acid	THCA	Immuno-modulating

topical preparations including the leaves, the juice, the bark and flowers (Russo 2005). Indian and Arabic medicine used the plant in similar ways. The oil was used as a painkiller for earaches, to soothe neurological pain, and to heal hemorrhoids (Ratsch 2001). A tea of the boiled leaves was used as a wash to remove lice, nits and other parasites (Ibid). A poultice of the fresh leaves was used to treat tumors and furuncles. The fresh juice of the leaves was used as a disinfectant wash for skin diseases, abscesses, ear infections, dandruff, and lice (Lozano 2001). The dried flowers and leaves of cannabis were powdered, moistened and applied to wounds. In northern India, it was reported that fresh juice was applied externally to hemorrhoids (Ibid.) In Malaysia, cannabis flowers and leaves were used with *Hydnocarpus anthelmintica* oil for the external treatment of leprosy (Ratsch 2001). The Chinese burned the dried leaves and flowers of *da ma* (cannabis) over the surface of the skin as moxa to disperse swelling and promote tissue healing (Xiaorang et al 2013).

Prominent historical physicians Galen and Dioscorides and ancient Egyptians used cannabis shoots externally for their antiseptic, antibiotic and analgesic qualities. In European folk medicine, cannabis leaves were used topically as a paste for wounds and as an analgesic (Kabelik 1955). In Argentina, the ground dried flowers and leaves were mixed with fat as a burn medicine (Ratsch 2001). The *New English Dispensatory* of 1764 recommended boiling hemp roots and applying them to the skin to reduce inflammation, a folk medicinal treatment that had been popular in Eastern Europe for centuries, as well as for shrinking tumors and dissolving deposits in the joints (Abel 1980). Seventeenth-century herbalist Nicholas Culpeper described a burn treatment made from fresh cannabis juice mixed with a little oil and butter (Ibid.).

In 1856, a popular Western treatment for rheumatism was a pain-relieving oil made from cannabis, poppy and henbane (Ratsch 2001). Cannabis was first listed in the U.S. Pharmacopeia's 3rd edition in 1851 and remained there until its removal from the 12th edition in 1942. Cannabis medicines were produced by

Eli Lilly and other American pharmaceutical companies until the federal Marihuana Tax Act of 1937 sharply reduced U.S. cannabis production and prescriptions (Hermes 2013). Cannabis was listed in the Canadian pharmacopeia until it was added to a list of restricted drugs in 1923.

### Current Research and Anecdotal Data on Topical Applications for Cannabis

Despite its long history of topical use, cannabis' classification as an illegal substance has obstructed human clinical trial investigations into its medicinal efficacy, used topically or otherwise. The research that has been undertaken has mostly been limited to murine or in vitro studies. Still, the last decade has yielded limited but promising research on the plant's usefulness for skin cancer, inflammation, and microbial and fungal infection.

Several studies point to cannabis' effectiveness for a variety of skin conditions (Kupczyk et al 2009), including inflammatory skin diseases (Karsak 2007) and pruritus. One study found that topically applied THC might effectively decrease contact allergic inflammation without the side effects common to pharmaceuticals used for the same purpose (Gaffal, Cron et al 2013).

Pain management is another area of research where topical cannabis may be found useful. Several studies show that cannabis can provide pain relief without apparent side effects. One such study focusing on cannabinoid receptors CB1 and CB2 found that topically administered cannabinoid agonists may reduce pain without the psychoactive side effects of internal consumption of cannabis (Dogrul, Gul et al 2003). Another study using cannabinoids including THCA, CBD, and CBN to address pain suggested that topically administered cannabinoid agonists may reduce pain without the side effects of opiates (Jorge, Feres et al 2011). Yet another study found that ethanol concentrations of 30 to 33% significantly increased the transdermal transmission of THC and CBD (Stinchcomb, Valiveti et al 2004). This points to the possibility that utilizing ethanol in transdermal patch formulations or in liniments might help to potentiate its topical effects.

Thanks in part to patients and advocates, more attention is being given to potential uses for topical cannabis applications. Based on anecdotal and clinician reports, national advocacy group Americans for Safe Access says topical use of cannabis may benefit several conditions including dermatitis, psoriasis, herpes, furuncles, corns, certain nail fungi, rheumatism, and arthritic pain (Americans for Safe Access, Guide to Using Medical Cannabis 2014).

### Topical Applications for Cannabis in Clinic

Dr. Jake Felice ND, LMP, an adjunct professor at Bastyr University, specializes in the treatment of chronic pain and the improvement of human performance. Dr. Felice mainly works with patients who use cannabis topically in cases of mild to moderate pain including in cases of adhesive capsulitis, neuralgia, and muscle spasms. In a personal interview, he indicated that his patients report marked improvement within 24 hours after the application of a cannabis-infused salve, with some improvement within two to four hours. Recently informing Dr. Felice's work are two research studies: The first investigated the use of ethosomes (highly malleable vesicles made of phospholipids, a high concentration of ethanol, and water) in the delivery of cannabidiol (CBD). The study's conclusion states that "ethosomes enable CBD's skin permeation and its accumulation in a depot at levels that demonstrate the potential of transdermal CBD to be used as an anti-inflammatory treatment" (Lodzki, Godin et al, 2003). The second study highlighted the improvement in colonic inflammation through the combined use of CBD suppositories and systemic treatment (Schicho & Storr 2012). Dr. Felice has used this information to broaden his approach to treatment as well as expand his use of cannabis in other pain management scenarios.

Recently I have begun manufacturing topical cannabis products including salves and liniments after being approached by a medical marijuana dispensary owner. I currently hold a medical marijuana card to ensure I stay within the legal guidelines of my state's medical marijuana



*Cannabis sativa* plant by Chmee2 - Own work. Licensed under GFDL via Wikimedia Commons.

program. My products focus on cannabis' analgesic qualities for the treatment of pain from arthritis, physical trauma, muscle spasms, and fibromyalgia. My guidance to clients is to apply it at two- to four-hour intervals, depending on the severity of pain. Clients report that they have some minor pain relief within one to two hours; by day two of consistent use most clients report a significant reduction in their pain levels.

Many sites on the Internet offer directions on how to make topical cannabis products, making their manufacture a free-for-all, including for those lacking training in herbal medicine-making. Medical marijuana dispensaries sell topical products ranging from oils to salves. Currently, many of the topical cannabis products on the market are not formulated or manufactured by herbalists, and in some cases utilize harmful chemicals in the processing of the plant material. Due to the lack of regulation, an ingredient listing is often absent from the product label. Furthermore, the lack of regulation and coordination of state and local agencies where cannabis or medical marijuana is legal has not helped to ensure that cannabis products are following current manufacturing guidelines or are safe.

Recently the American Herbalists Guild (AHG) surveyed its professional members on the medical use of cannabis. Seventy-nine percent

of AHG members who completed the survey reported that that they would potentially use it clinically if it were not considered illegal (Romm & Romm 2010). Now is an opportune time for herbalists to increase their knowledge base and become current with recent research into its internal and external uses. My hope is that cannabis' medicinal uses, topical and otherwise, will be discussed more frequently among herbal practitioners whose expertise lies in the therapeutic use of plant medicine, rather than remaining on the fringe of mainstream herbalism. As herbalists, our materia medica encompasses many plants. Cannabis is just that, a plant that has chemical constituents and actions, like the hundreds of other plants used in clinical herbal practice. As laws change and there is increased research into its medicinal value, cannabis will return to a place in our materia medica. ■

#### REFERENCES

- Americans for Safe Access, Database of Clinical Research and Case Reports. Online. Available at <http://www.cannabis-med.org/studies/study.php> Accessed: March 10, 2014.
- Ibid, Guide to Using Medical Cannabis. Online. Available at [http://www.safeaccessnow.org/using\\_medical\\_cannabis](http://www.safeaccessnow.org/using_medical_cannabis) Accessed: Nov. 25, 2014.
- Brenneisen R 2007, Chemistry and Analysis of Phytocannabinoids and other Cannabis Constituents *Forensic Science and Medicine: Marijuana and the Cannabinoids*. Humana Press Inc., New Jersey pp 17-49
- Dogrul, Gul, et al, 2003, Topical cannabinoid antinociception: synergy with spinal sites Pain. 105(1-2):11-6
- Felice J 2013, Topical cannabis: low-toxic pain relief without a head-high. Online. Available at <http://www.drjakefelice.com/2013/11/topical-cannabis-low-toxic-pain-relief-without-a-head-high/> Accessed: March 10, 2014.
- Gaffal, Cron et al 2013, Anti-inflammatory activity of topical THC in DNFB-mediated mouse allergic contact dermatitis independent of CB1 and CB2 receptors. *Allergy*. 68(8):994-1000
- Hermes K 2013, World's Leading Experts Issue Standards on Cannabis, Restore Classification as a Botanical Medicine. Online. Available at [http://www.safeaccessnow.org/world\\_s\\_leading\\_experts\\_issue\\_standards\\_on\\_cannabis](http://www.safeaccessnow.org/world_s_leading_experts_issue_standards_on_cannabis) Accessed: November 25, 2014.
- Izzo, Borrelli, et al 2009, Non-psychoactive plant cannabinoids: new therapeutic opportunities from an ancient herb. *Trends in Pharmacological Sciences*. 30(10): 515-527
- Jorge, Feres, et al 2011, Topical preparations for pain relief: efficacy and patient adherence *Journal of Pain Research*, 4: 11-24
- Kabelik J 1955, *Hemp as Medicament: History of the medicinal use of hemp*. Online. Available at <http://www.bushka.cz/KabelikEN/kabelikEN.pdf> Accessed: Feb. 15th, 2014
- Karsak et al 2007, Attenuation of allergic contact dermatitis through the endocannabinoid system *Science*. 316: 1494-1497
- Kumar, Chambers, et al 2008, Pharmacological actions and therapeutic uses of cannabis and cannabinoids *Journal of the Association of Anaesthesia of Great Britain and Ireland*. Online. Available at <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2044.2001.02269.x/full> Accessed: March 28, 2014.
- Kupczyk, et al 2009. Cannabinoid system in the skin - a possible target for future therapies in dermatology *Experimental Dermatology*. 8: 669-679
- Lee M 2012, *Smoke Signals: A Social History of Marijuana - Medical, Recreational, and Scientific*. Scribner, New York, p 212
- Li H 1975, The Origin and Use of Cannabis in Eastern Asia: Their Linguistic-Cultural Implications, Rubin, V (Ed) *Cannabis and Culture*. Mouton de Gruyter, Berlin, 51-52
- Lodzki, Godin et al 2003, Cannabidiol-transdermal delivery and anti-inflammatory effect in a murine model. *Journal Control and Release*. 12:93 (3) 377-87
- Lozano I 2001, The Therapeutic Use of Cannabis sativa (L.) in Arabic Medicine. *Journal of Cannabis Therapeutics*, Vol. 1 (1). Online. Available at [www.cannabis-med.org/data/pdf/2001-01-4\\_0.pdf](http://www.cannabis-med.org/data/pdf/2001-01-4_0.pdf) Accessed: Feb. 5, 2014.
- Ratsch C 2001, *Marijuana Medicine*. Healing Arts Press, Vermont. Pp. 26,23,34,39,53.
- Romm & Romm 2010, AHG Professional Member Survey: Medical use of Cannabis. *Journal of the American Herbalists Guild*. Volume 9, Number 2. p 25
- Russo E 2011, Taming THC: potential cannabis synergy and phytocannabinoid-terpenoid entourage effects. *British Journal of Pharmacology*. Online. Available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3165946/> Accessed: Feb. 25, 2014.
- Russo G 2006, A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol *Medical Hypotheses*. Online. Available at [http://analytical360.com/wp-content/uploads/2011/08/Russo\\_Tale\\_of\\_Two\\_Cannabinoids\\_Med\\_Hypoth\\_2006.pdf](http://analytical360.com/wp-content/uploads/2011/08/Russo_Tale_of_Two_Cannabinoids_Med_Hypoth_2006.pdf) Accessed May 18, 2014
- Schicho & Storr 2012, Topical and systemic cannabidiol improves trinitrobenzene sulfonic acid colitis in mice *Journal of Pharmacology*. 89 (3-4):149-55
- Stinchcomb, Valiveta, et al 2004, Human skin permeation of Delta8-tetrahydrocannabinol, cannabidiol and cannabinol *Journal of Pharm Pharmacol*. 56 (3) 291-7
- Topical uses of Cannabis, Online. Available at <http://www.cannabiscure.info/pdf/Topical%20Cannabis.pdf> Accessed: Feb, 12, 2014.
- Upton, Cracker, et al 2013, Cannabis Inflorescence Standards of Identity, Analysis, and Quality Control. *American Herbal Pharmacopoeia* p33-34, 38-39.
- Verhoeckx, Korthout et al 2006, Unheated Cannabis sativa extracts and its major compound THC-acid have potential immuno-modulating properties not mediated by CB1 and CB2 receptor coupled pathways *International Immunopharmacology*. (4) 656-65
- Xiaorong, Chang, et al 2013, *Illustrated Chinese Moxibustion*. Singing Dragon, p.124

Copyright of Journal of the American Herbalists Guild is the property of American Herbalists Guild and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.