

# Meeting a high demand



In recent years, the cannabis plant has begun to shed some of the stigma that has traditionally haunted it.

While cannabis still remains an illegal substance in most parts of the world for recreational use, legislation has begun to relax, especially in North America.

Canada and US states such as California and Colorado have legalised the recreational use of cannabis, hoping that the now taxable drug can bring in some income for state authorities and lower the number of people arrested for minor infractions of drug laws.

But even in places where recreational cannabis remains illegal, the medical opportunities of the plant are being explored. Several countries and states in both the Americas and Europe now allow the cultivation and use of cannabis for medical purposes.

Beyond medical use, cannabis products are also finding their way into skincare products and health foods, with Coca-Cola even looking to introduce extracts into new “wellness drinks”.

### **Cannabis vs hemp vs marijuana**

So what exactly is the difference between cannabis, hemp and marijuana? Cannabis is a family of plants with two primary classifications – *Indica* and *Sativa*. While marijuana can be considered a member of either classification, hemp is a member of the *Sativa* family (see Figure 1, following page).

Cannabis contains a variety of different

**Although cannabis is mostly associated with being a recreational drug, demand for cannabidiol (CBD) oil and products is growing for medical and skin care applications. What exactly is CBD and what is driving the increasing demand for it?**

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compounds called cannabinoids, the two most common ones being cannabidiol (CBD) and tetrahydrocannabinol (THC).

THC induces psychoactive effects (a ‘high’) while CBD does not contain any psychoactive properties.

Hemp contains a very low concentration of THC (0.3% or less) while marijuana has 15%-40% THC. Because of this, hemp is mainly grown for industrial purposes while marijuana is grown for recreational and medicinal purposes. However, with the fast-growing popularity of CBD, hemp is also used to produce a wide variety of THC-free CBD products.

These differences explain the distinction between cannabis oil and CBD oil.

Cannabis oil – sometimes called hash oil – is a general label for oleoresins (a mix of oils and resins) extracted from the flowers of the marijuana plant (making it cannabis oil) or all parts of the plant (making it hash oil) using a solvent, such as butane or ethanol.

Demi Pradolin, community manager at Netherlands-based hemp product and CBD oil producer Endoca, explains to *Oils & Fats International* that the

cannabis oil produced through the above-described extraction process is a thick and molasses-like extract. The most important thing, however, is the high level of tetrahydrocannabinol (THC) in the final product. Although the levels of THC vary wildly between different products, Pradolin says cannabis oil generally has a THC content of anywhere between 4% and 35%.

“CBD oil, on the other hand, does not contain high levels of THC and is therefore not psychotropic, nor does it produce a ‘high.’”

The industrial hemp plant used in CBD production is a strain of *Cannabis sativa* that has been used for fibre production for more than 10,000 years. The actual THC content found in industrial hemp differs according to regional laws, with the allowable limit in Europe set at 0.2% and the USA at 0.3%.

Despite a distinction in the chemical properties of the two oils, differing regulations between different regions keep muddying the waters. In the USA, for example, even low-THC products are sometimes labelled as “cannabis oil”, ▶

# CANNABIDIOL OIL

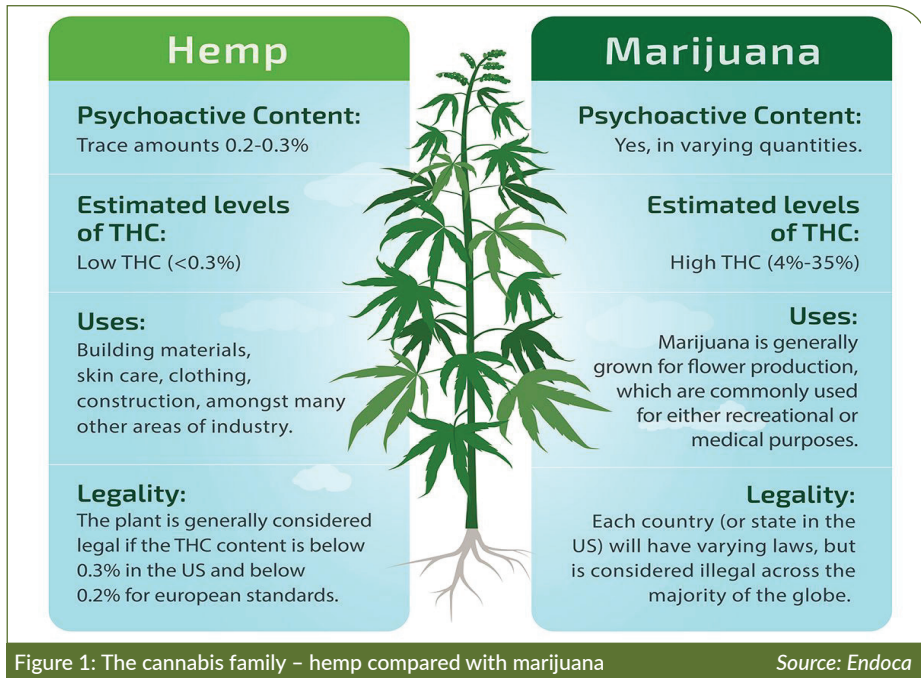


Figure 1: The cannabis family – hemp compared with marijuana

Source: Endoca

▶ according to Spanish cannabis seed firm Royal Queen Seeds.

In Europe such labelling practices are not allowed and, therefore, the low-THC product is called hemp oil. But, going back to the other side of the Atlantic, hemp oil and CBD oil are more or less interchangeable terms, even though an American “CBD oil” product often has a higher CBD content than an American “hemp oil” product.

It is no wonder that with such wildly fluctuating labelling practices, neither regulators, consumers or the industry are quite clear on what exactly all the different kinds of cannabis-derived oils are. And this is all without even mentioning the hemp seed oil used in cooking.

As a general rule of thumb, however, the distinction suggested by Pradolin will suffice in most situations: cannabis oil contains THC while CBD oil is virtually THC-free.

## Production and extraction

China is the leading industrial hemp producer in the world, being responsible for some 70% of total world output. Far behind it, France is the second largest hemp producer, growing roughly 25% of global output. Together, these two countries dominate global hemp production with a nearly 95% share, while 30 more countries produce globally negligible amounts of hemp.

However, when it comes to global CBD oil production, Pradolin says that estimating outputs becomes increasingly difficult. “The global amount of CBD or even cannabis oil itself is not something I can give an answer to. There are new

companies joining the space every day, and a quantity that is correct today will most likely be out of date by tomorrow.”

However, she says that there has been a huge increase in the demand for CBD products globally, and production is constantly growing. According to Pradolin, the CBD industry is poised to be worth US\$22bn by 2020.

While global production numbers for CBD oil are vague, the extraction methods are easier to explain. “The oil can be produced in a wide variety of ways,” says Pradolin, “from tincture form – which requires the use of a solvent-like alcohol or vegetable glycerin to extract the vital plant molecules – to the industry gold standard of CO<sub>2</sub> extraction, which is what Endoca uses.”

In CO<sub>2</sub> extraction, plant material is placed into a chamber. CO<sub>2</sub> is pumped into the chamber, and its temperature and pressure are set. The gas is compressed, which turns it into a fine mist that ‘washes’ the plant material and extracts the desired plant compounds.

“Once the pressure is released, the plant material and extracted compounds remain separated. This is what we refer to as our ‘first extract’ and it is then used to formulate various CBD products.”

## Medical applications

One of the major applications where cannabis and CBD oils are gaining traction is the field of medicine. Many medical benefits have been attributed to the oils, particularly low-THC CBD oil, but the topic remains contentious.

“Using CBD oil as medicine is a hotly debated topic within both the cannabis

and medical industries,” says Pradolin. “Currently scientific research into the benefits of CBD is considered limited, but there are some promising studies and literature that support CBD as a therapeutic alternative to prescription medicine.”

Endoca has carried out reviews of scientific literature surrounding the use of CBD in medicine. The studies suggest that CBD is effective in the areas of pain relief, neurological disorders and autoimmune disorders.

In pain relief, CBD helps to stimulate the body’s endocannabinoid system to produce more of a pain-fighting cannabinoid called anandamide. This natural compound works to regulate pain and high levels of anandamide can reduce pain responses. This could be useful for patients suffering from, among others, arthritis pain, multiple sclerosis, migraines, joint and nerve pain. Medical marijuana is already prescribed as a pain medication in certain parts of the world, so it makes sense that CBD oil would also work in similar roles.

On 25 June 2018, the US Food and Drug Administration (FDA) approved a medicine called Epidiolex for the treatment of seizures associated with two rare and severe forms of epilepsy, namely Lennox-Gastaut syndrome and Dravet syndrome. The effective substance in Epidiolex is CBD, and the drug does not contain THC, according to the FDA.

Studies reviewed by Endoca showed that CBD could also help with other neurological conditions including schizophrenia, Alzheimer’s, Parkinson’s and strokes.

In the area of autoimmune disorders, Endoca says CBD works as an antioxidant that can help fight inflammation by stimulating the body’s vanilloid pain receptors. This activity prevents the body from destroying the previously mentioned anandamide by inhibiting a process known as fatty acid amide hydrolase (FAAH). One medical condition where this property might prove beneficial is Crohn’s disease. An Israeli study – the first of its kind – found in October 2018 that a treatment with cannabis oil containing 15% CBD and 4% THC showed a significant reduction in the symptoms of Crohn’s disease. However, the same study said that despite cannabinoids’ “profound anti-inflammatory effects”, the researchers found that the medicine did not impact the gut inflammation associated with Crohn’s disease.

In addition to these fields, Endoca says that CBD could help in regulating anxiety and panic attacks, combating addictions

and treating hormonal and digestive issues. However, Pradolín calls for more research to be performed on CBD's benefits.

"There needs to be more support for double-blind, placebo-controlled studies looking at CBD and its benefits. Without this scientific research behind us, we will continue to see a stigma surrounding the use of CBD as a medicine," says Pradolín.

## Skincare use

Outside the medical field, cannabis and CBD oils have found popular use in the skincare products industry, with Hollywood stars and the public in the USA embracing the 'cannabis craze'.

In a presentation for the American Academy of Dermatology, Dr Jeanette Jacknin says the skin has an endocannabinoid system that helps regulate the production of various hormones and proteins with research suggesting that cannabinoid receptors in the skin can affect epidermal differentiation and skin development.

Jacknin says several studies have shown that cannabinoids produce lipids that regulate acne and seborrhea. Due to their anti-inflammatory properties, CBD may also help in fighting eczema and atopic dermatitis. Jacknin notes that hemp oil's "anti-inflammatory and moisturising properties make it wonderful for skin care". It no surprise, then, that the cosmetics industry is one of the major end-users of cannabis oil products and that the CBD skincare boom is now looking to cross the Atlantic to the EU.

## Hazy legal status

However, the big obstacle standing in the way of cannabis and CBD products is that they are extracts of a plant best known for illicit drugs. That means that they will inevitably run into two major hurdles – regulations and public perception.

Despite recent legalisation and decriminalisation decisions, marijuana remains an illegal substance in most parts of the world for recreational use. With medical marijuana, the regulatory situation is slightly more lenient, with a good number of countries having some kind of prescription system in effect. However, cannabis and CBD oils keep running afoul of cannabis laws, sometimes even in cases where their end uses are purely industrial.

As mentioned earlier, the legal limit for THC content in industrial hemp – from which CBD products are manufactured – is 0.2% in Europe and 0.3% in the USA.

According to the *Hemp Business Journal*, the 2018 US Farm Bill effectively legalised hemp production in the USA but, in

‘The global market value for CBD hemp oil alone will reach US\$1.11bn by the end of 2025 with the entire cannabis market poised to grow to US\$22bn by 2020’

January 2019, four men were arrested in Oklahoma on suspicion of drug trafficking after law enforcement officials discovered they were transporting nearly eight tonnes of industrial hemp, worth some US\$850,000. Police tests discovered undisclosed levels of THC in the hemp batch, which led to the arrests.

The shipment was intended for Panacea Life Sciences, a hemp and wellness company specialising in hemp-based therapeutics. "This is such a grey area," Panacea Life Sciences president Jamie Baumgartner told *Hemp Business Journal*. "We're trying to work to clarify the situation that this was industrial hemp. We also hope that this is going to be a test case so that there is better clarification in the future for the transportation of what is an important agricultural product."

One of the issues in the USA is the cannabis field test kit provided to local police officers simply detects the presence of THC and not whether its levels surpass the legal federal limit.

In the EU, the situation is similarly muddled. The bloc's own CBD legislation is patchy and regulations vary wildly between member states. Germany and Finland, for example, allow medicinal use and cultivation of cannabis while, for instance, Sweden bans it altogether. However, these restrictions often apply only to smoked cannabis products. Whether they concern cannabis and CBD oils is questionable, although CBD/hemp oil produced through cold pressing can currently be sold in the EU without authorisation (within legal THC limits).

However, CBD oil produced through certain extraction and purification techniques – such as the CO<sub>2</sub> method – is classified as a novel food product.

To be able to sell CBD products in the EU, the seller must apply for novel food authorisation from the EU.

Apart from the legal question, there is also the matter of public perception. For a long time, cannabis has been presented to the public as a drug and parts of the population continue to regard it as such.

In recent years, though, attitudes have begun to change and the demand for hemp and CBD products is skyrocketing.

Market research firm QY Research, in a February 2019 study, forecasts that the global market value for CBD hemp oil alone will reach US\$1.11bn by the end of 2025 with the entire cannabis market poised to grow to US\$22bn by 2020.

It sees the cosmetics industry, alongside pharmaceuticals and food, to be the market drivers for CBD hemp oil through 2025.

"Technological advancements – such as the rising usage of CBD hemp oil in the form of tincture, spray and vape – is expected to boost demand in the coming years. Rising concerns for various neurological disorders, an increasing number of chronic diseases such as diabetes, and growing awareness of depression and stress among youngsters have led to increasing usage of CBD hemp oil in the healthcare sector. CBD hemp oil also helps in the treatment of skin problems such as acne."

Pradolín also agrees that the future might hold great promise for cannabis and CBD oil. According to her, more and more people across the globe have come to recognise the therapeutic benefits of CBD and cannabis and it is beginning to become more commonplace.

However, she says the explosion in demand has led to huge levels of production with many companies doing so without the attention to detail or understanding, so regulation and education "are still incredibly important".

Pradolín says that she can see regulation going one of two ways.

"The first, which is what we are hoping for, is that CBD becomes commonplace in all homes. Whether that be in a trendy food product, or in someone's medicine cabinet, I think there is space for both and different companies will fill different purposes in the industry. Nonetheless, we do know it's possible for legislation to go the other direction and for CBD to be a highly regulated and controlled medicine."

For the time being, the cannabis industry is riding a high of great demand and a promising future. Whether that high turns out to be reality or just a pipe dream depends on the regulators. ●

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