



SPOONSHOT®

# A LEGAL ALTERNATIVE TO CBD: COPAIBA

Copaiba essential oil has broken onto the functional ingredients scene as a potential aid for pain, mood, and sleep management.

EXPLORER SERIES



# CONTENTS

Executive Summary	01
Copaiba emerges as a new functional oil	02
What is copaiba?	04
The upper: The food industry is on a cannabis high	06
The downer: Stricter regulations for CBD are not too far away	09
Copaiba oil is a potential alternative to cannabis-derived compounds	12
Mood management is becoming an important health metric	14
Home chefs can pave the way for copaiba use in packaged food	17



# EXECUTIVE SUMMARY

- Copaiba essential oil has broken onto the functional ingredients scene as a potential aid for pain, mood, and sleep management.
- Copaiba oil, a traditional South American remedy rich in the dietary cannabinoid  $\beta$ -caryophyllene (BCP), could prove to be crucial as an alternative to cannabis-derived ingredients. Copaiba is said to offer functional benefits similar to that of cannabis-derived CBD and THC.
- CBD is revolutionizing the mainstream food and beverage industry but its unclear legal status, the potential for psychoactive contamination, along with false perceptions of CBD itself being psychoactive will make it a challenging ingredient to work with.
- The search for safe, non-cannabis sources of BCP will push copaiba essential oil into the spotlight, making it an ingredient to watch, specifically in relation to management of mood and well-being.
- In the long term, other more familiar essential oils have the potential to also be seen as source of BCP, including black pepper, cloves, rosemary, basil and cinnamon.
- There are no packaged food and beverage products currently on the market that feature copaiba for its functional benefits. To capitalize on this opportunity of being a trend setter, manufacturers can look to online chef influencers and food and wellness bloggers who are already incorporating copaiba into recipes.



# COPAIBA EMERGES AS A NEW FUNCTIONAL OIL

Essential oils have become an increasingly 'essential' part of our daily lives, found today in consumer products ranging from packaged food and beverage to surface cleaners. They are gaining traction as consumers turn to herbal and natural ingredients as alternatives to chemical and pharmaceutical products in treating various conditions. Not surprisingly, sales<sup>1</sup> of essential oils globally are expected to double to **US\$14.6 billion by 2026, from US\$7.0 billion in 2018.**

Essential oils are also becoming an important ingredient in the food and beverage space as natural flavor enhancers with functional benefits. They are purported to have anti-toxicogenic, anti-insecticidal and anti-parasitic properties that offer the potential for increasing shelf life and product safety. Food regulators are rapidly approving the use of essential oils in packaged food and beverage.

Another major factor driving the sales of essential oils is consumer demand. Consumers across the world are rejecting artificial additives in their food and are instead calling for natural ingredients, forcing manufacturers to respond.

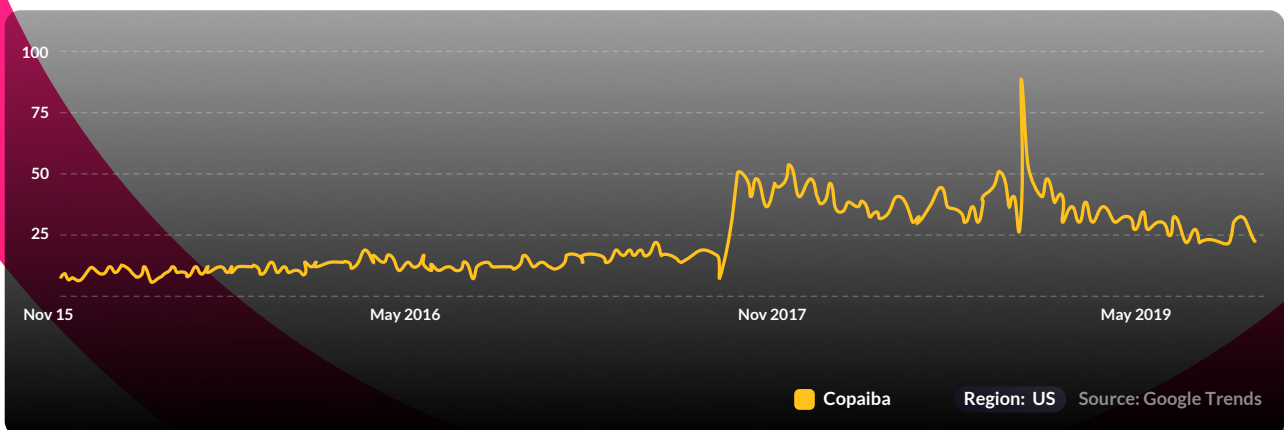
An essential oil is a concentrated hydrophobic liquid containing volatile (easily evaporated at normal temperatures) chemical compounds from plants

1 <https://www.reuters.com/brandfeatures/venture-capital/article?id=141694>

An impact of turning to essential oils for natural flavorings and functional benefits is that many lesser-known oils are emerging. Many of these niche oils have been used as traditional remedies from various parts of the world.

One such essential oil remedy hailing from South America, is copaiba oil. An article published in Science Daily in 2017 indicated that sales of copaiba essential oil were on the rise in the US due to its purported benefits for **pain management in the case of arthritis**.

### Interest in copaiba shot up in 2017 in the US



Patients are turning to natural remedies that have little or no known side effects. In fact, people with joint pain and inflammation who used copaiba reported favorable results, though robust studies on this have yet to be conducted.

This brings us to the question of what is copaiba and why it has a potentially important role to play in the food industry in the coming years.

<sup>2</sup> <https://www.sciencedaily.com/releases/2017/06/170606101417.htm>



# WHAT IS COPAIBA?

Copaiba is an oleoresin obtained from the trunk of the *Copaifera* species of trees, found in parts of South America, particularly in the Amazon rainforests in Brazil. The balsam of this resin is steam distilled to prepare copaiba essential oil, which has uses across multiple industries, from making varnishes and lacquers to being additives in cosmetics as well as in food and beverage. While there are several species of *Copaifera*, the resin is extracted only from a few specific species.

Copaiba oleoresins have been used extensively in traditional medicine in Brazil to heal or treat inflammations,<sup>3</sup> ulcers, skin diseases, wounds, bronchitis, acne, and various other issues; many of these properties of copaiba have also been confirmed by pharmacological in-vitro studies. The ingredient has since found its way into complementary medicine as a dietary supplement, in the production of flavoring agents and food additives, and even in several cosmetic and pharmaceutical products in Brazil.

<sup>3</sup> <https://www.sciencedirect.com/science/article/pii/S0731708510006011?via%3Dihub>





38%

The essential oil of cannabis flower can contain up to **38%** BCP, while CBD oil can contain between **2%** and **30%** of BCP.

To get a little technical, the high therapeutic potential of copaiba comes from the fact about 90% of the oleoresin composition is hydrocarbon sesquiterpenes, of which  $\beta$ -caryophyllene (or BCP) is the most abundant. Some copaiba essential oil products claim that they contain up to 60% of BCP.<sup>4</sup>  $\beta$ -caryophyllene is said to be the first known “dietary cannabinoid” with a Generally Recognized as Safe (GRAS) status and FDA approval for food use. It is found in a number of other plants as well, including pepper, clove, basil, hops, and, wait for it... cannabis.

BCP was one of the first cannabis-derived compounds<sup>5</sup> other than tetrahydrocannabinol (THC), cannabidiol (CBD), and cannabinol (CBN) shown to bind directly to endocannabinoid receptors in the body. The essential oil of cannabis flower can contain up to 38%<sup>6</sup> BCP, while CBD oil can contain between 2% and 30% of BCP. Initial studies of BCP have indicated that it might be directly beneficial for colitis, osteoarthritis, diabetes, cerebral ischemia, anxiety and depression, liver fibrosis, Alzheimer-like disease types, and even tumor suppression.

The growing acceptance of cannabis for medical and recreational purposes in some parts of the world is revolutionizing several industries, including food and beverage. But there is still a significant amount of wariness in relation to cannabis-derived products because of the complex legal status and psychotropic effects. In spite of less clinical evidence, people are turning to CBD because of the steady rise of anxiety levels for the past five years.

Consumers are, however, on the lookout for safe BCP sources that don't come from cannabis, making copaiba essential oil a vital functional ingredient.

---

4 <https://www.linkedin.com/pulse/cannabis-vs-copaiba-becki-baumgartner/>

5 <https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/caryophyllene>

6 <https://drug-dev.com/non-cannabis-therapy-cannabinoid-therapy-without-using-cannabis-direct-effects-topical-%CE%B2-caryophyllene/>

# THE UPPER: THE FOOD INDUSTRY IS ON A CANNABIS HIGH

To understand the potential of copaiba oil, it is important to look at how softening attitudes towards cannabis is changing the food industry.

Two countries – **Uruguay** and **Canada** – have completely legalized cannabis for both medicinal and recreational use. Several states in the US have done so as well, though cannabis is still considered illegal at the federal level. A number of European countries have already or are in the process of legalizing medical cannabis. Other countries are all at different stages of exploring regulation regarding cannabis. Even the World Health Organization is recommending that whole-plant marijuana and cannabis resin are removed from Schedule IV, the most restrictive category of drugs agreed upon globally.







# 40%

A recent report on the state of CBD-infused food and beverage found that among CBD consumers in the US, **40%** used such products for general health and wellness.

A major driver for cannabis legalization is the various medical uses for cannabis-based compounds. More than 110 cannabinoids (compounds that act on the body's endocannabinoid system) have been identified in cannabis, but the most commonly talked about ones are THC (tetrahydrocannabinol) and CBD (cannabidiol). Both have the same molecular structure and are chemically similar to our body's own endocannabinoids. They also affect the release of neurotransmitters in the brain, which are responsible for relaying messages between cells. THC and CBD have many of the same medical benefits and can potentially provide relief for conditions such as chronic pain, inflammation, insomnia, seizures, irritable bowel syndrome, nausea, anxiety, and depression. The main difference is that CBD does not induce the sense of euphoria – or high – that THC does, making it far more acceptable for many users.

Many medical users have, in fact, reported that CBD has helped them feel less anxious, sleep better, and relieve joint pain. A recent report<sup>7</sup> on the state of CBD-infused food and beverage found that among CBD consumers in the US, 40% used such products for general health and wellness. Consumer interest in CBD is clearly piqued and manufacturers are responding with CBD-infused foods touting wellness benefits.

A study in 2018 found that **41% of US consumers** said they would be willing to try a cannabis-infused food product. And in the last couple of years, we've seen CBD make a debut in products ranging from supplements, essential oils, and tinctures to foods, such as candy, snacks, tea, coffee, beer, plant-based milk, and even in pet foods.

<sup>7</sup> <https://www.fooddive.com/news/cbd-entering-food-and-drink-at-an-astounding-pace-report-says/555096/>





UK-based company Good Hemp has announced the launch of its plant-based milk variant containing CBD in November 2019

This enthusiasm for CBD products has resulted in its rather explosive growth<sup>8</sup> – in 2018, the global CBD market was estimated to be worth US\$462 million, and is expected to hit US\$2.2 billion by 2023. The 2018 Farm Bill introduced in the US removed industrial hemp from the US government's list of controlled substances. This gave companies – including food and beverage – the green light to use hemp-based products. And manufacturers quickly capitalized on this wiggle room – **more than 1,000 CBD-infused<sup>9</sup> products are said to be available online in the US.**

However, we expect this growth to be tempered by the fact that it will not be all smooth sailing for CBD in the coming years.

<sup>8</sup> <https://www.foodmanufacture.co.uk/Article/2019/08/12/CBD-in-the-food-and-drink-industry>

<sup>9</sup> <https://www.chicagotribune.com/marijuana/sns-cbd-infused-food-still-illegal-20190724-yp3d7n3fpjd2zb4eyczwoepnla-story.html>




# THE DOWNER: STRICTER REGULATIONS FOR CBD ARE NOT TOO FAR AWAY



THC is highly regulated or illegal in most parts of the world. CBD may be the hot new ingredient in town, but it is in a regulatory gray area, and once rules start being put in place (or enforced), companies will be forced to rethink their strategy. Both THC and CBD have been used in select prescription drugs and formulations for specific conditions, but there is not enough robust clinical evidence to back up their effectiveness for other conditions. This is primarily why many countries are still reluctant to introduce cannabis into their pharmacopeia.

CBD can be derived from both high-THC cannabis plants as well as from industrial hemp, which has to have a THC content of 0.3% or less. Since hemp is a commodity grown for a number of industrial purposes, CBD extraction from hemp has not really been regulated with much gusto.



A close-up photograph of a green cannabis leaf with serrated edges, resting on a light-colored wooden surface. Several light-brown hemp seeds are scattered around the leaf. In the bottom left corner, there is a yellow circular graphic element.

This might seem like a done deal for CBD as an ingredient, but there's a catch.

CBD in food and beverage is actually illegal at the federal level<sup>10</sup> in the US, according to the Food and Drug Administration (FDA). This means that any interstate trade of CBD-infused foods is a crime. Many companies got around this little roadblock by coloring within the lines, that is, operating within their state.

Now, there are new wrinkles.

Some US states have recently stated that adding CBD to food and beverage is illegal, irrespective of the legality of cannabis in that state. For example, recreational cannabis is perfectly legal in California, but adding CBD to food is not. In addition, the FDA has doubled down on its stance by saying that because CBD has been approved as a drug to treat pediatric epilepsy (Epidiolex was approved in June 2018), it cannot be added to food or dietary substances.

The EU is also starting to take a firmer stance on CBD. In early 2019, it classified cannabis extracts and derived products as “novel foods”. It isn't yet legally binding, but this means that EU countries can refuse to allow the sale of food and beverage containing CBD unless the manufacturer gets formal approval from the European Food Standards Agency (EFSA) to do so. This would mean any claims made would have to stand up to scrutiny. It will only be a matter of time before this “guideline” becomes law.

10 <https://www.foodnavigator-usa.com/Article/2018/10/11/SPECIAL-FEATURE-What-is-the-regulatory-status-of-CBD-in-food-and-beverage-products>



There are a number of other reasons for CBD regulation to be forthcoming:

### **Inadvertent contamination:**

There is the risk of products becoming inadvertently contaminated with THC. The only way of ensuring the **0.3% or less THC content** in either hemp or CBD oil is through regular testing, the use of certified seeds, or strictly controlled indoor production. This means traceability and transparency of the crop will be of utmost importance.

### **Effective dosage:**

Given the health and wellness associations linked to CBD, the dosage will be an important factor. Initial studies point to **300 milligrams<sup>11</sup>** being the minimum dosage to have any effect on a consumer. But most products on the market have far less CBD than that and there is no way of knowing if these will have an impact without rigorous clinical trials.

### **Children and CBD:**

Many of the food and beverage containing CBD are available on supermarket shelves and there does not currently seem to be an age limit on who can buy these products. Prescription medication containing CBD is available for children who require them. This brings up the question of the effects on children consuming CBD for no particular reason. Consumption by children and the impact of that will need to be studied and defined.

### **Perception issues:**

Cannabis is seen in a negative light by many and that is not going to change in a hurry. For brands, a major concern will be whether this perception will rub off on their other line of established products, particularly if their products are also consumed by children.

11 <https://www.theatlantic.com/health/archive/2019/01/cbd-food/580483/>





# COPAIBA OIL IS A POTENTIAL ALTERNATIVE TO CANNABIS-DERIVED COMPOUNDS



With the various complexities surrounding CBD's use in food and the inevitable tightening of regulations, manufacturers are going to be looking for a viable alternative – an alternative that is unlikely to be accidentally mixed with psychotropic substances and one that is known to be safe for consumption.



As we've already seen, copaiba oil ticks off some of these important boxes.

- It has been used in traditional medicine in Brazil to treat some of the same conditions that cannabis is being used for, including anxiety and mood improvement.
- It does not contain any THC and is a rich source of  $\beta$ -caryophyllene, also a non-psychoactive cannabinoid.
- Copaiba oil has approval in the US as a food additive and is already used in small amounts as a flavoring agent in foods and beverages.

In light of these positives, food manufacturers will want to investigate the use of copaiba if they are interested in entering the CBD space but are not ready to take the plunge unless the regulations are in their favor.

Using copaiba is, however, not without challenges. At present, copaiba's role in the food space is limited to flavor enhancers, so most consumers are unlikely to be familiar with it. Many manufacturers may also be unfamiliar with its functional benefits. The International Food Information Council Foundation's 2019 Food and Health Survey<sup>12</sup> found that familiarity is an important feature for consumers, with 6 in 10 saying that recognizing the ingredients that go into the product have at least some impact on purchasing decision. 3 in 10 consumers said this had a significant impact. Increasing awareness of copaiba's functionalities among consumers and manufacturers will be important in the immediate future.

Essential oil brands do this to a certain extent already, and it might initially be beneficial for food companies to partner with those that promote copaiba oil to benefit from halo of familiarity and functionalities of essential oils.

<sup>12</sup> <https://foodinsight.org/wp-content/uploads/2019/05/FIC-Foundation-2019-Food-and-Health-Report-FINAL.pdf>

**6 in 10**

say that recognizing the ingredients that go into the product have at least some impact on purchasing decisions.



# MOOD MANAGEMENT IS BECOMING AN IMPORTANT HEALTH METRIC

When it comes to food purchases, healthfulness has become a crucial determinant, with 1 in 4 consumers saying that they actively seek out foods or follow a diet for health benefits.

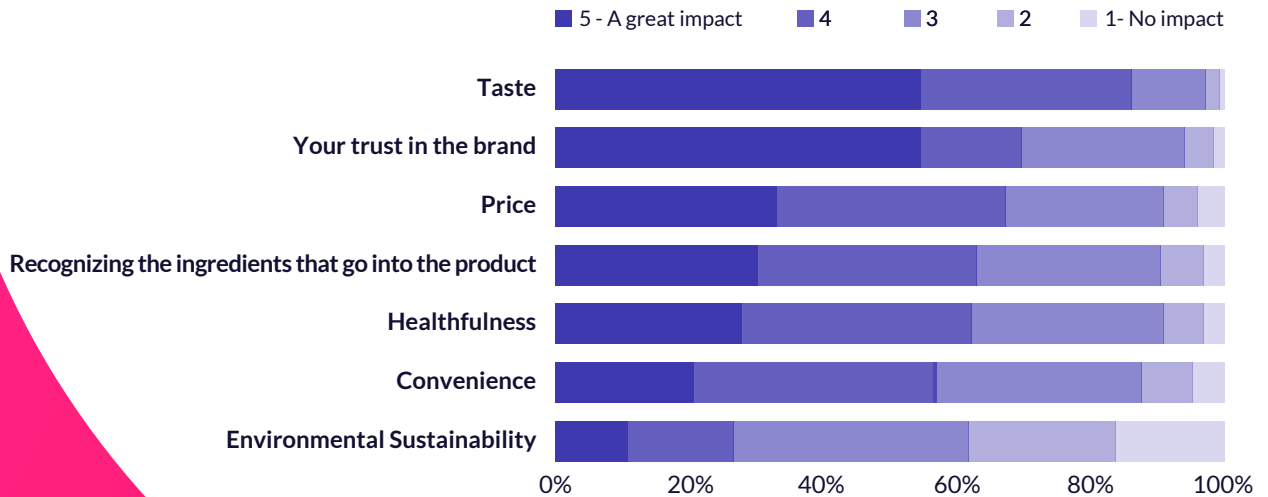
The health umbrella covers not just physical wellbeing, but also mental and emotional health. Among those who seek health benefits from their foods, 1 in 3 is specifically looking for emotional and mental wellbeing.



**1 in 4**

Consumers say that they actively seek out foods or follow a diet for health benefits.

### Factors that have a significant impact on food purchases



Source: International Food Information Council Foundation's 2019 Food and Health Survey  
Base: Online survey of 1,012 American adults aged 18-80

**1 in 3**

specifically look for emotional and mental wellbeing during food purchases

Mood management is an emerging aspect of emotional wellbeing and an increasing number of consumers are looking for ways to deal with stresses and anxieties of everyday life. Anxiety and mental health issues are on the rise globally, with around 300 million people said to be suffering from an anxiety disorder, according to the World Health Organization. In fact, ingredients called adaptogens have cropped up that are helping with this need and are becoming a crucial part of functional foods.

CBD's popularity in recent times stems from the fact that people are seeing it as both a functional ingredient as well as a mood enhancer. This is actually an important direction for food manufacturers to take note of, and one that will be key to the acceptance and use of copaiba oil as well.

**300mn**

people said to be suffering from an anxiety disorder



The benefits of copaiba essential oil are linked to the presence of BCP, and in the long term, this biochemical compound is likely to gain a lot of significance. What makes it interesting is that it isn't dependent on just copaiba. A number of spice essential oils also contain quantities of BCP, many of which are more easily available than copaiba and are quite well-known, including:



**Black Pepper**



**Cloves**



**Black Caraway**



**Basil**



**Oregano**



**Lavender**



**Rosemary**



**Cinnamon**



**Hops**

# CHEF INFLUENCERS CAN PAVE THE WAY FOR COPAIBA USE IN PACKAGED FOOD

At present, there are no packaged food and beverage products that call out the use of copaiba as an ingredient on the pack, and only a few food recipes online by chef influencers and wellness food bloggers/influencers that use copaiba oil in them. But these are worth exploring for ideas on how to incorporate the ingredient into foods, both cooked and uncooked. Some recipes just incorporate a couple of drops of copaiba oil into them for flavoring as well as for the functional benefits.



Copaiba protein balls



Roasted peanut butter copaiba cookies

At the same time, reports of copaiba's functional efficacy are mostly anecdotal or fairly basic, so a lot more clinical research is needed to establish these benefits as well as dosage requirements. This is especially important as consumers are increasingly turning to food and beverage for their specific medical needs.



# ABOUT SPOONSHOT

Spoonshot is a food AI company that is raising the bar for insight-led innovation. Spoonshot's belief is that exploration is the catalyst behind the novel, successful products, the very fuel to help food and beverage companies shape the future, to set the trend.

Spoonshot equips the food and beverage industry with unprecedented foresight of emerging market needs. By transforming long-tail, open information from diverse, authentic sources, Spoonshot's proprietary food science infused algorithms connect disparate data sets, to deliver personalized insights, predict trends, and identify novel opportunities. Today, Spoonshot is supporting the world's best-known brands in meeting the future needs of its customers. For more information, please visit <https://spoonshot.com>

To request a demo of our AI-powered insights platform, send us an email at [hello@spoonshot.com](mailto:hello@spoonshot.com)



**SPOONSHOT<sup>®</sup>**

**Be The Trendsetter**

 [spoonshot.com](https://spoonshot.com)

 [hello@spoonshot.com](mailto:hello@spoonshot.com)

