

# Active Ingredients of Fresh Cannabis and Alternative Medicine

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## Abstract

The Ministry of Public Health of Thailand officially removed cannabis from the Category 5 Narcotics list on June 9, 2022, reclassifying it as a controlled herbal plant. Cannabis can now be utilized, particularly through the extraction of THC and CBD in concentrations not exceeding 0.2% by weight. Currently, cannabis is used in medical treatments, research studies, and various product developments, with the stipulation that all extracts must be produced domestically. Cannabis has also been incorporated into alternative medicine practices to treat symptoms and diseases that have not responded adequately to conventional medical treatments. Cannabis contains two major active compounds: THC and CBD. THC has been used for its anti-cancer, antiemetic, appetite-stimulating, and pain-relieving effects. Specifically, THC exhibits anti-tumor activity in brain tumors. Meanwhile, CBD has been incorporated into medications such as nabilone, a cannabinoid drug used to alleviate nausea and vomiting caused by chemotherapy. Additionally, CBD has been found to reduce tremors and improve mobility in Parkinson's disease patients. However, prolonged regular use of these substances can lead to tolerance, requiring increased dosages to achieve the same therapeutic effect, potentially resulting in dependency. Fresh cannabis primarily contains the acidic forms of these compounds: THCA and CBDA. The "A" denotes the natural acidic form. Over time, or when exposed to heat,

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these acidic phytocannabinoids undergo decarboxylation, converting into their neutral counterparts. THCA and CBDA are mainly found in the fresh flowers and leaves of the cannabis plant. THCA (tetrahydrocannabinolic acid) is a naturally occurring cannabinoid that is non-psychoactive when consumed in its unprocessed form. Studies conducted abroad on patients who had not improved with conventional treatments showed that switching to fresh cannabis juice could alleviate and even cure certain diseases, such as systemic lupus erythematosus (SLE), brain tumors, and rheumatoid arthritis. Nevertheless, the use of fresh cannabis requires caution. To ensure safety, cannabis must be cultivated without the use of any chemical substances, as contamination could pose significant health risks. Cannabis is known for its high capacity to absorb heavy metals from the soil. Consequently, fresh cannabis may be contaminated, particularly with heavy metals such as lead (Pb), cadmium (Cd), arsenic (As), and mercury (Hg), which tend to accumulate in the leaves and flowers. Excessive intake of THCA and CBDA contaminated with these substances could adversely affect health and potentially lead to the development of various diseases.

**Keywords:** Active ingredients of fresh cannabis; THCA; Alternative medicine

## Introduction

### 1. Background and Significance

Currently, cannabis has gained increasing acceptance for various uses, following the Ministry of Public Health's authorization for the utilization of THC and CBD extracts with concentrations not exceeding 0.2% by weight (Ministry of Public Health, 2022). These extracts are permitted for medical purposes, research, and the production of various products, such as pharmaceuticals, food, and cosmetics, provided that they are derived from cannabis cultivated within Thailand. Cannabis contains significant compounds known as cannabinoids, with THC (tetrahydrocannabinol) being the psychoactive component (BNH Hospital, 2022). When administered in appropriate amounts, THC can induce

relaxation and reduce stress; however, excessive intake may lead to dizziness, palpitations, hallucinations, and drug resistance. On the other hand, CBD (cannabidiol) exhibits opposing effects it does not cause intoxication or addiction but rather helps reduce inflammation, pain, seizures, and may possess anti-cancer properties. Although cannabis offers medical benefits, its use must be under the supervision of a physician, especially among high-risk groups such as young children, pregnant women, and breastfeeding mothers (Phyathai Hospital, 2022). Today, cannabis is utilized in various forms such as sprays, oils, capsules, and food products. In modern medicine, THC was discovered first, followed by CBD. Although both compounds are structurally very similar, they produce different effects. THC and CBD share the same molecular formula -comprising 21 carbon atoms, 30 hydrogen atoms, and 2 oxygen atoms (Eloise Theisen, 2024) yet they differ in their atomic arrangements (Department of Mental Health, 2019). Nevertheless, cannabis consumption should be carefully moderated, as excessive use may result in long-term adverse health effects (Sikarin Hospital, 2022).

Fresh cannabis contains two primary compounds. THCA (tetrahydrocannabinolic acid) and CBDA (cannabidiolic acid), which exist in their natural acidic forms and do not exhibit direct psychoactive effects. However, when cannabis is stored for extended periods or exposed to heat, THCA is converted into THC (Figure 1, p. 4), a compound that possesses psychoactive properties. This transformation process is known as decarboxylation. THCA, or tetrahydrocannabinolic acid, is a naturally occurring cannabinoid (Figure 2, p. 4) that is abundant in fresh cannabis and is non-psychoactive (Kariuki, 2023). Similarly, CBDA undergoes decarboxylation to form CBD when exposed to heat, which is known for its anti-inflammatory, anti-nausea, and antidepressant properties. Consumption of fresh cannabis should start with a low dosage and be gradually adjusted, as the concentrations of THCA and CBDA may fluctuate, making dosage control challenging. THCA has minimal psychoactive effects because of the presence of a carboxylic acid group (COOH) attached to its molecular structure (Figure 2, p. 4), and thus it is

not classified as a narcotic. It is recommended that consumers begin with a small amount and incrementally increase the dose until an individually appropriate level is identified (Kariuki, 2023). CBDA acts by inhibiting enzymes proteins capable of accelerating biochemical reactions within living cells resulting in reduced inflammation, nausea, and depression (Kongchai, 2022). Moreover, it is essential to be cautious of potential contamination with chemical residues, heavy metals, and fungi that may occur during cultivation and harvesting.

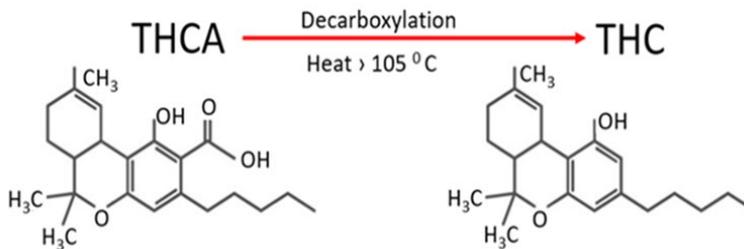


Figure 1 Illustrates the heat that induces decarboxylation.

Source : <https://sensiseeds.com/en/blog/raw-cannabis-juice-what-are-the-benefits-how-does-it-work/>

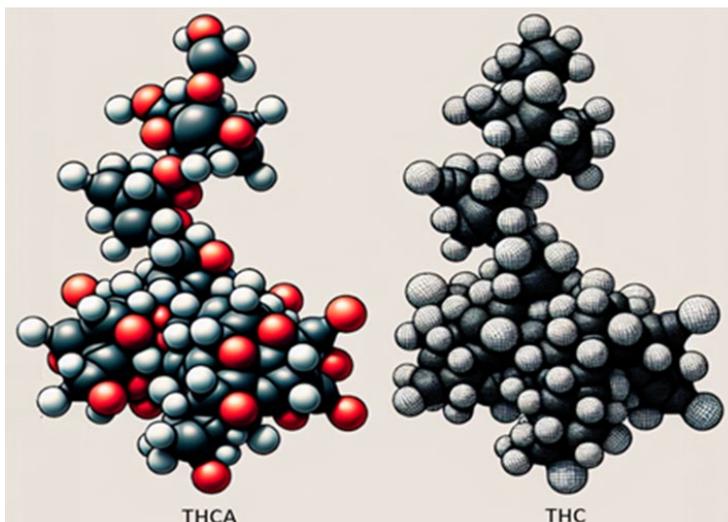


Figure 2 The red carboxylic acid group (COOH) is attached to the molecular structure of THCA but is absent from the structure of THC.  
 References : <https://floreispensary.com/thc-vs-thca/>

Table 1 Key Compounds and Their Beneficial Properties for Human Health Found in THCA and CBDA

Order number	Active Substance	Properties and Health Benefits	Potential impacts
1	Vitamin C	Essential for the immune system and acts as an antioxidant. Enhances iron absorption, supports tissue repair, and promotes tissue growth.	Allergic reaction
2	Vitamin K	Supports blood clotting and stimulates proteins that prevent calcium accumulation in arteries.	Allergic reaction
3	Calcium	Involved in the formation of bones and teeth, increases bone mass density, and strengthens bones.	Allergic reaction
4	Iron	Essential for the production of red blood cells, facilitates oxygen transport to various organs, supports hormone production, strengthens immunity, and aids sleep.	Allergic reaction

Order number		Active Substance	Properties and Health Benefits	Potential impacts
5		Potassium	Regulates muscle contraction (including cardiac muscles), maintains fluid and acid-base balance, and controls blood pressure in patients with chronic kidney disease.	Allergic reaction
6		Zinc	Supports DNA and protein synthesis, enhances immune and metabolic function, promotes wound healing and tissue repair, supports cell growth, and is involved in taste, smell, and prevention of mental health disorders.	Allergic reaction
7		Folic Acid / Vitamin B9	Crucial for DNA synthesis, essential for reproductive cell formation, fertilization, and pregnancy.	Allergic reaction
8		Carotenoids	Precursors of vitamin A; also function as antioxidants, enhance immunity, inhibit mutagenesis, prevent tumor formation, and provide anti-cancer effects.	Allergic reaction
9		Selenium	Essential for normal sperm production, contributes to hair and nail health,	Allergic reaction

Order number	Active Substance	Properties and Health Benefits	Potential impacts
		supports immune and thyroid function, and helps delay aging.	
10	Beta-carotene	Plays a significant role in maintaining health, boosting immune function, acting as an antioxidant, and promoting eye and skin health.	Allergic reaction
11	Limonene	Exhibits antibacterial properties, aids in weight loss, prevents cancer, and treats bronchitis.	Allergic reaction
12	Anthocyanin	Prevents platelet aggregation and helps protect against chronic diseases such as cancer, diabetes, and cardiovascular disease.	Allergic reaction
13	Terpenes	Provide characteristic aromas, promote relaxation, relieve stress, exhibit anti-inflammatory and analgesic effects, help alleviate depression, anxiety, insomnia, enhance immunity, and have antibacterial, antimicrobial, and antioxidant properties.	Allergic reaction
14	Dietary Fiber	Found in plant-based foods such as vegetables,	Allergic reaction

Order number		Active Substance	Properties and Health Benefits	Potential impacts
			fruits, grains, and seeds; indigestible by gastric and intestinal enzymes. Although it provides no energy, it offers various health benefits.	
15		Cannabinoid	A group of compounds found in cannabis plants; two medically recognized types are Tetrahydrocannabinol (THC) and Cannabidiol (CBD), both being fat-soluble substances.	Allergic reaction

Source: Thai Traditional Medicine Institute Apai Phubet. The Use of Cannabis in Food.

2021.

## 2. Fresh Cannabis: Nutritional Value and Process of Extracting Fresh Cannabis Juice

Fresh cannabis or raw cannabis contains essential nutrients beneficial to health, such as vitamin C, which helps strengthen the immune system, vitamin K, which aids in blood clotting, dietary fiber, which supports the digestive system, and calcium, which strengthens bones. Additionally, it contains iron, which helps in the production of hemoglobin, potassium, which regulates blood pressure, and zinc, which supports the immune system (Table 1, page 5). Other important nutrients include folate (vitamin B9) which is essential for cell production and DNA synthesis (Chanwej Tanthikalyaporn, 2022) carotenoids and beta carotene, which act as antioxidants, support eye health, and improve skin, and are also anticancer agents. Selenium helps prevent and slow down aging

(Pathama Thepchaishri, 2022). Limonene and anthocyanins have antibacterial properties, reduce the risk of chronic diseases, and terpenes help relax, reduce inflammation, and have antimicrobial effects. Fresh cannabis also contains beneficial fatty acids, including omega-3 and omega-6, which support brain health, the cardiovascular system, and reduce fat buildup in blood vessels. The cannabinoids in fresh cannabis, THCA and CBDA, have potential anti-inflammatory effects, help reduce symptoms of depression, stress, and promote better sleep. Zinc, as a crucial nutrient, supports DNA synthesis (deoxyribonucleic acid) and protein production, enhances immune system and metabolic functions, aids in wound healing or repair of inflamed tissues, contributes to cell growth development, and supports the sense of taste and smell. It also plays a role in preventing mental health disorders such as depression and anorexia nervosa, a condition where individuals perceive themselves as overweight and attempt to achieve an abnormally low body weight due to an overwhelming fear of gaining weight, despite their actual weight being below healthy standards (Sutthiphong Treerat, 2021)

Preparation of Fresh Cannabis Juice and Appropriate Dosage To prepare fresh cannabis juice, the leaves and flowers should be washed with clean reverse osmosis (RO) water and then soaked in cold water for 5 minutes. If using other types of water, contaminants such as pesticides or acaricides should be checked. Cultivating cannabis with chemicals is not recommended for making fresh cannabis juice. The appropriate dosage of cannabinoid compounds is as follows: CBDA (Cannabidiolic Acid) should be 10-50 mg/day (up to 100 mg for chronic conditions, and 200+ mg should be consulted with a doctor), while THCA (Tetrahydrocannabinolic Acid) should be 2.5-5 mg per dose. It is advisable to start with a low dose and gradually increase carefully. Leaves and flowers contain varying concentrations of cannabinoids, with buds being more concentrated. The selection should align with the intended use. The cultivation and harvesting processes should be optimized for continuous consumption. Seeds should be planted or cuttings should be taken daily. A greenhouse setup can be used for consistent production

year-round. High-quality cannabis flowers should have milky trichomes; amber-colored trichomes indicate a decline in quality. When extracting large amounts of juice, the machine should be paused periodically to prevent heat buildup, which may cause a decarboxylation process. Fresh cannabis juice has a potent taste and should be mixed with fruit juice, yogurt, or herbs such as garlic and turmeric. According to Dr. Courtney's recommendations, a daily intake of 250-500 mg of phytocannabinoids is ideal. Mixing fresh cannabis juice with carrot, broccoli, or beetroot can enhance its benefits. Supplementing with hemp seed oil may reduce the risk of heart disease and diabetes (Alchimia, 2014).

**Fresh Cannabis Juice and Preparation Method** Consuming fresh cannabis juice without heat treatment is the best method to obtain complete nutrients. The juice can be extracted using a juicer or blender, which helps reduce the loss of cannabinoids. Juicing is suitable for extracting large quantities, while blending helps preserve the essential compounds more effectively. If fresh cannabis is exposed to light or heat, a process of decarboxylation occurs, converting THCA into THC, which has psychoactive effects. The temperature and duration significantly affect this process, such as 100°C for 3 hours or 200°C for just 1-2 seconds. For a fresh cannabis juice recipe, the ingredients can be adjusted according to preference. A suggested formula includes: 5 bunches of spinach, 1 piece of fresh ginger, 10 large cannabis leaves (or 12 medium-sized leaves), 2-3 fresh cannabis buds, half a cucumber, 2 mint leaves, 1 apple, and half a lime. Blend these ingredients with cold water and drink immediately to preserve maximum nutritional value. It can also be mixed with other fruit juices, such as carrot juice, using a ratio of 9 parts fruit juice to 1 part cannabis juice (Erik Collado Vidal Wit, 2024)

**Alternative Medicine and the Benefits of Fresh Cannabis Juice** Research on THCA in fresh cannabis juice has found various medical benefits, such as alleviating neurological symptoms, reducing seizures, muscle spasms, and symptoms of epilepsy, multiple sclerosis (MS), Parkinson's disease, Alzheimer's disease, and Huntington's disease (Elena Schmidt, 2023) It also reduces inflammation and relieves pain, aiding

patients with Crohn's disease, an inflammatory bowel disease (IBD). Furthermore, it helps slow the progression of cancer cells, particularly prostate cancer, and improves memory. The compounds CBDA and THCA may help reduce the risk of Alzheimer's by inhibiting the accumulation of beta-amyloid plaques and tau proteins (Juyong Kim et al., 2023) Regarding medical cannabis and its treatment of insomnia, Canada has approved medical cannabis use since 2001 for individuals with sleep disorders. Research from Hybrid Pharm, Ottawa, found that 87% of patients with insomnia experienced an impact on their quality of life, with 39% able to reduce or stop using prescription sleep medications. Furthermore, 71% reported improved sleep, and 21% reported manageable side effects. The use of low doses of THCA helps promote easier sleep and reduces sleep onset latency (National Library of Medicine, 2022)

Research continues to monitor the effects of cannabis on various medical conditions, particularly fresh cannabis juice with high THCA content (Thai Traditional Medicine Innovation Center, 2022), to assess its ongoing efficacy and safety. Fresh cannabis juice in alternative medicine contains high levels of cannabinoids in acid forms, such as THCA, CBDA, and CBGA, which exhibit antioxidant, anti-inflammatory properties, and neuroprotective effects without causing psychoactive effects (Manager Online, 2023). These compounds help relieve pain, nausea, seizures, and promote bone health, as well as support the immune system and reduce chronic fatigue. When consuming fresh cannabis juice, it is recommended to start with a small amount. If cannabis flowers are used, begin with 1-3 milligrams per day and gradually increase to 10-15 grams per day. If only leaves are used, up to 30 grams per day can be consumed (Panthep Phuapongpan, 2023) It is best to mix it with fruits and vegetables, such as lemon juice, yogurt, or spices, to enhance flavor, and blend with ice to prevent degradation of the active compounds. The recommended consumption is 60-100 milliliters per serving, 5-6 times a day (Patpong Kesombun, 2022).

### **3. Case Study from a Sample Group Using Fresh Cannabis Juice for Disease Treatment**

Dr. William L. Courtney, from California, USA, is a pioneer of the concept of consuming fresh cannabis juice for medical treatment. He is a cannabis expert and psychiatrist with a background in microbiology, forensic science, and toxicology, having earned his degrees from the University of Michigan. He holds a medical degree from Wayne State University. Currently, Dr. Courtney is a member of several cannabis medical organizations, including the American Academy of Cannabinoid Medicine and the International Association of Cannabis as Medicine. He also teaches clinical cannabis courses. His notable research involves the use of fresh cannabis juice in patients who did not respond to conventional medical treatments. He administered 250-500 milligrams of phytocannabinoids daily in the form of non-psychoactive acids, considered essential nutrients in medical treatment. Dr. Courtney has shared his expertise on medical cannabis through research publications, lectures, and international conferences (Pattpong Kasomboon, 2022), including at institutions such as the Institute of Molecular Psychiatry in Bonn and the Hebrew University of Jerusalem. He is also the founder of a medical research laboratory in California and serves as the Vice President of the Association Luxembourgeoise des Méthodes Préventives. Below is a case study of successful use of fresh cannabis juice in disease treatment, which serves as evidence of the potential of alternative medicine.

The case study of Kristen Perkuski, the wife of Dr. Courtney, who suffers from SLE (Systemic Lupus Erythematosus), an autoimmune disease that causes inflammation in various organs, is as follows. She was undergoing treatment with over 40 conventional medications daily, but her condition worsened. When traditional treatments proved ineffective, she turned to alternative medicine, starting with dry cannabis in capsule form, later switching to fresh cannabis mixed with vegetables and fruits. This treatment led to continuous improvement in her condition. She experienced increased focus, alertness, easier breathing, and no longer felt muscle or bone pain. Although her primary doctor was initially skeptical, he eventually acknowledged the surprising effectiveness of this treatment. Previously, Kristen had been diagnosed as unable to have

children, but after her recovery, she was able to give birth to a healthy daughter. Both Kristen and her daughter are in good health today. Kristen believes that cannabis saved her life and is determined to share her story to help others facing similar challenges (Alchimia, 2014)

A case study of a 2-year-old girl named Amber, who was diagnosed with terminal brain cancer, showed that she had only a 10% chance of survival, even after undergoing surgery, radiation therapy, and chemotherapy. However, the tumor continued to grow. Doctors recommended that her family take her home to care for her during the final stages of her life. Nevertheless, after Amber regularly consumed fresh cannabis leaf juice, her parents observed a reduction in the size of the tumor. They continued to administer 2-3 milliliters daily. After one month, the tumor significantly shrank. The National Cancer Institute has begun to acknowledge that cannabinoids possess anti-tumor properties. It is believed that cannabis may have medical benefits, and further research should be conducted to explore the potential of fresh cannabis juice in treating other diseases (Alchimia, 2014)

Case Study of Ms. Katie Mash She was diagnosed with rheumatoid arthritis, which made physical movement extremely difficult and painful. She was advised to try drinking fresh cannabis juice and began researching the topic, eventually discovering the research of Dr. William Courtney. After she started consuming a daily smoothie made with fresh cannabis juice, her symptoms gradually improved. She was able to reduce her reliance on conventional medication, and after 10 months, she completely stopped taking medication. The results became evident after just three days of consuming fresh cannabis juice, but continuous consumption for 4 to 8 weeks is necessary to achieve full results. This is because phytocannabinoids accumulate in the body's fat tissues, similar to fat-soluble vitamins (Alchimia, 2014).

A case study of Ms. Ray-Jay, a 28-year-old woman from Australia diagnosed with Crohn's disease, which causes chronic inflammation in the digestive tract, from the stomach to the anus. Symptoms include diarrhea, abdominal pain, and intestinal narrowing leading to bowel perforation,

significantly impacting both her work and mental well-being. Despite receiving conventional medical treatment for many years, her condition showed no improvement, and she lost 25 kilograms within a few months. As a result, she turned to fresh cannabis juice. After consuming it for 2-3 weeks, her symptoms, such as nausea, diarrhea, and bloating, significantly improved. While not a complete cure, the results were clearly noticeable. She and her husband grew their own cannabis without using chemicals to ensure the safety of consumption (Siobhan Wend, 2018)

The study of a sample group of four patients demonstrates that fresh cannabis juice can help alleviate symptoms of illness and may aid in recovery due to its compounds, which possess therapeutic and disease-preventing properties. Cannabis contains more than 568 types of molecules (Melissa M. Lewis, 2017) that can help regulate the physiology of cells within the cannabinoid system, with THCA being a primary component (Seattle Met, 2024), and it does not have any psychoactive effects. The consumption of THCA without heat treatment can be done in doses as high as 200-1,000 milligrams (Alchimia, 2014). In contrast, THC, which has undergone heat treatment, has psychoactive effects and should be consumed in limited amounts. Cannabinoids in fresh cannabis, such as THCA and CBDA, help reduce inflammation, alleviate spasms, and may help prevent cancer. THCA plays a crucial role in treating prostate cancer and Parkinson's disease, while CBDA helps counteract tumor cell mutations and reduce nausea. Fresh cannabis, when not heated, reduces psychoactive effects, allowing it to be consumed in larger quantities without undesirable side effects. Research confirms that cannabis can be used to treat and prevent a variety of diseases without causing psychoactive effects when used in its natural form. These cannabinoids act as nutrients that help regulate cell functions in the body.

#### **4. Alternative Medicine and the Use of Fresh Cannabis Juice and Proper Dosage**

Alternative medicine using fresh cannabis and cannabis juice is gaining increasing attention, particularly in the use of cannabidiol (CBD), which has beneficial properties for treating or alleviating symptoms of various conditions, such as neurological disorders, epilepsy, and muscle spasms. The current use of medical cannabis focuses primarily on CBD and THC, compounds that are crucial in treating various medical conditions. The difference between traditional medical cannabis use and alternative methods lies in the use of fresh, unprocessed cannabis, such as cannabis juice made from fresh plants. This approach utilizes the cannabinoids and other compounds found in the plant that can provide benefits to the body in various forms. Using fresh cannabis is advantageous because it avoids the need for temperature adjustments or chemical processes that may lead to the loss of the active properties within the plant. The use of CBD from cannabis offers several benefits, such as higher antioxidant properties than vitamin E, and it is helpful in preventing conditions related to alcohol consumption, radiation exposure, and central nervous system disorders. However, selecting the appropriate cannabis strain with varying concentrations of CBD is an important factor in decision-making. The ideal ratio must be determined based on body weight and the amount an individual can tolerate. Storing fresh cannabis in the form of juice also requires careful attention to temperature and proper storage to maintain the quality of its compounds, ensuring its long-term usability and effectiveness in treating or alleviating symptoms. Research and experimentation on the use of cannabis and fresh cannabis juice in medical treatments remain vital. It is essential to understand the potential impacts and benefits of using cannabis in various conditions, as well as to develop effective guidelines for using cannabis to improve health outcomes.

The patient treatment process begins with consuming fresh cannabis water in a dosage of 1-3 milligrams to test for allergic reactions or psychoactive effects. If no adverse effects are observed, the dosage of cannabis water is gradually increased, starting with 10-15 grams of cannabis flowers per day or approximately 30 grams of fresh leaves per day,

assuming sufficient production. Drinking cannabis water multiple times a day will enhance its effectiveness, as the body eliminates it within 50 minutes after absorption. It is recommended to divide 300 milliliters of cannabis water into five doses of 60 milliliters every 3-4 hours (Alchimia, 2014). The cannabis water should be stored in the refrigerator and shaken before drinking to ensure even distribution of fatty acids. Patients with kidney or gallbladder conditions should exercise caution, as cannabis water carries potential risks. It is not recommended for use in treating hypercalcemia or high blood oxygen levels. Individuals taking blood thinners or consuming grapefruit or pomegranate juice should consult a doctor before starting fresh cannabis water, as the vitamin K in cannabis leaves may interfere with the action of certain medications. The effects of fresh cannabis water may be noticeable within 3 days or 2-3 weeks, depending on the individual. Continuous consumption for 4-8 weeks (Patpong Kasemsuboon, 2022) allows for the gradual accumulation of phytocannabinoids in body fat tissues, leading to therapeutic results.

A study published in the PubMed Central (PMC) database found that consuming fresh cannabis leaves poses less risk to lung health, the nervous system, and the brain when compared to smoking or vaping cannabis. This is due to the chemical process, such as decarboxylation, which increases the concentration of THC, CBD, and CBG, potentially leading to side effects if consumed in large quantities. Moderate consumption of fresh cannabis leaves provides more nutritional benefits than smoking, as it promotes appetite and offers advantages from the natural compounds in the cannabis leaves and flowers. However, cannabis used to treat certain conditions should be administered after the digestive system is cleared, as food in the stomach can slow down and reduce the absorption of cannabis effects. When used in food or beverages, attention should be paid to the THC content (not exceeding 0.2% by law), and the amount of THC per 100 milliliters or per serving should be specified, along with quality assurance through GC-MS techniques and certification from the Food and Drug Administration (Chanvetch Tantikalyaporn, 2022)

The research by J. Pharmak published in the British Journal of Pharmacology in 2017 found that THCA exhibits neuroprotective effects in an in vivo model and may serve as a therapeutic option for Huntington's disease, as well as other neurodegenerative and inflammatory disorders, particularly Alzheimer's and Parkinson's diseases. Additionally, THCA has anticonvulsant properties and helps alleviate symptoms of nausea, vomiting, and loss of appetite. However, the researchers noted that the instability of THCA could pose a challenge in drug development. The study also demonstrated that THCA has anticancer properties, limiting tumor growth, and is associated with CB1 and CB2 receptors (Lydia Kariyuki, 2023)

Heating cannabis with low heat in an oven at temperatures of 110-120°C for 30-60 minutes results in decarboxylation without damaging cannabinoids, flavonoids, and terpenoids. Studies have shown that this process can decarboxylate THCA by up to 70%, or as little as 30% in some cases. At a temperature of 85°C, THC begins to degrade into CBN during decarboxylation. Recent evidence suggests that cannabinoid acids, such as THCA, may offer greater biological benefits than their decarboxylated counterparts. THCA may help in the treatment of Huntington's disease, metabolic disorders, and other neurodegenerative conditions. Terpenoids and flavonoids may enhance blood circulation in the brain and assist in alleviating various diseases such as Alzheimer's, as well as having antimicrobial and anti-inflammatory properties. While they do not have psychoactive effects, they may induce sedative effects. The drawback of consuming fresh cannabis is the variability of cannabinoid acids in the leaves, making it difficult to determine the exact amount, particularly in the absence of precise testing. CBD is beneficial in reducing inflammation, nausea, stress, increasing appetite, alleviating pain, and may have anti-cancer properties.

THCA (Tetrahydrocannabinolic Acid) in fresh cannabis is a potent antioxidant, along with essential minerals such as Vitamin C, Vitamin K, calcium, iron, potassium, and zinc, which support the immune system, blood clotting, bone formation, oxygen transport, and the maintenance of water and acid-base balance in the body. Additionally, it helps reduce

blood pressure in patients with chronic kidney disease. Vitamin B9 contributes to cell formation and DNA synthesis, while antioxidants such as carotenoids, selenium, and beta-carotene promote eye health and skin condition. Anthocyanins protect against chronic diseases such as cancer and diabetes, while terpenes help with relaxation and stress relief. THCA and CBDA reduce inflammation, alleviate pain, protect brain cells, aid in bone formation, and assist in the treatment of Parkinson's disease, as well as prevent the degeneration of dopamine-producing neurons.

## 5. Summary of Fresh Cannabis and Alternative Medicine

A study of Dr. William L. Courtney's treatment process, who applies alternative medicine to treat patients who have not recovered with conventional methods, reveals that he uses fresh cannabis juice from the leaves and flowers mixed with various herbs. This has led to relief and eventual recovery in patients. The use of fresh cannabis juice as a treatment alternative has gained attention because the juice is not subjected to heat, preserving the THCA and CBDA compounds, which have anti-inflammatory properties, alleviate pain, and promote healing, without causing psychoactive effects. Many scholars and researchers believe that THCA and CBDA may help with immune system disorders, such as rheumatoid arthritis, and neurodegenerative diseases like Parkinson's and Alzheimer's, as well as alleviate nausea and vomiting in cancer patients undergoing chemotherapy. However, caution must be exercised when using fresh cannabis due to the potential for contamination with chemicals or fungi. Additionally, there is a lack of sufficient clinical research on the safety and efficacy of this treatment. Thus, the use of fresh cannabis should be under the supervision of a doctor or expert, with appropriate dosage, and in strict adherence to applicable laws. Further research will be needed to confirm the efficacy and safety of fresh cannabis in the future. Nonetheless, more scientific evidence should be studied before it is widely adopted in alternative medicine.

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