Top 10 Questions to Ask Your CBD Supplier

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Education is Empowerment

- What is CBD?
- What is Hemp?
- What is adulteration?
- Top 10 questions to ask your supplier...
Cannabidiol (CBD)

- **Cannabidiol**
  - CAS #: 13956-29-1
  - 2-[(6R)-3-methyl-6-prop-1-en-2-ylcyclohex-2-en-1-yl]-5-pentylbenzene-1,3-diol
  - 2-[1R-3-methyl-6R-(1-methylethenyl)-2-cyclohexen-1-yl]-5-pentyl-1,3-benzenediol;
  - Physical Appearance: Crystalline solid
  - Molecular Formula: C_{21}H_{30}O_{2}
  - Molecular Weight: 314.47 g/mol
  - Stereoisomers: CBD is naturally occurring as the (-) enantiomer. (+) CBD has been synthesized, but has not been noted as equivalent or available.
  - Melting point: 62-63°C
  - Solubility: water insoluble. Soluble in DMSO and ethanol
Q: What is Hemp?

A: Depends on its Form...

• Maybe a food?
• Maybe a supplement?
• Maybe a drug?
• Maybe a cosmetic?
• Maybe an animal feed?
• Maybe a tobacco-like product?
• Maybe a fiber?
• Maybe a seed oil or protein?
• Maybe marijuana if it contains more than 0.3% THC
Fiber type vs. Drug type vs...

• **Hemp “Fiber type” – HIGH CBD**
  - Industrial hemp
  - Not psychoactive like the drug type
  - Temperate heritage
  - Used for fiber, seed oil, animal feed
  - Now, we have “CBD Type” as a subset of “Fiber Type”
  - MOSTLY LEGAL IN MOST STATES

• **Marijuana “Drug type” – HIGH THC**
  - Psychoactive
  - Ganja, sinsemilla, weed
  - Tropical heritage
  - Used for recreation & medicine
  - MOSTLY ILLEGAL IN MOST STATES

• **Intermediate types**
  - When hemp and marijuana love each other...
  - When hemp is stressed or grows in warmer climates...
  - When cannabis is bred for specific yields or ratios...
Fun Fact:
CBD has been historically consumed as part of “marijuana”, and is a major abundant cannabinoid in wild-grown “ditchweed”, hash and hash oil.
Fiber-type hemp vs. intermediate hemp....

Fig. 2. THC/CBD-Ratio. The pattern shows aggregation in two distinct areas, representing intermediate and non-drug type hemp. The position of the lines crossing the drug type, intermediate type and non-drug type areas is based on experience and not derived from the data set shown.
What Impacts Cannabinoid Amounts & Ratios?

Photosynthesis and Cannabinoid Content of Temperate and Tropical Populations of *Cannabis sativa*

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Key Word Index—*Cannabis sativa*; Cannabinaceae; photosynthesis; cannabinoids; population studies.

Abstract—Four populations of *Cannabis sativa* L. grown from seeds collected in Panama, Jamaica, Nepal, and east central Illinois were grown under controlled conditions in growth chambers. One set was grown under warm conditions (32° day and 23° night) and the other set was grown under lower temperatures (23° day and 18° night). CO₂ exchange and transpiration were examined under various temperatures and light intensities. Observations on growth, and analyses for chlorophyll and Δ₁THC (tetrahydrocannabinol) content were made. Under warm growth conditions, the central Illinois population had the highest photosynthetic rate at all temperatures investigated. The Nepal population had intermediate rates, while the Jamaica and the Panama populations had the lowest rate. The Jamaica and Panama populations had insignificant changes in photosynthetic response to changes in temperatures between 15° and 30°. Under cool growing conditions the central Illinois population had the highest rate of photosynthesis with a definite peak at 25°. Nepal plants had intermediate rates of photosynthesis, while the Panama and Jamaica populations had the lowest rate. Differences in chlorophyll and drug content were also significant between these populations. From these data it is suggested that the four populations can be grouped into different ecotypes genetically adapted to their respective environments.

Introduction

Hemp (*Cannabis sativa* L.) is a widely distributed plant in various parts of the world. Originally indigenous to temperate parts of Asia, probably to the desert region near the Caspian Sea [1], it now grows as a weed in a variety of habitats ranging from sea level in tropical areas [2] to 7000 ft in the Himalaya Mountains [3]. The species was first introduced into the United States from England in 1632 by the pilgrims and later from China [4]. Presently, it is a common weed in the eastern and mid-western United States [5].

*Cannabis* has had a long history of association with man. Schultes estimates that it has been used for over 6000 years, and regards it as one of the oldest cultivated plants [6]. The plant is a source of fiber, oil, and a narcotic drug. The illicit use of *Cannabis* as a source of marijuana (plant shoots) and hashish (resin) is widespread throughout the world synthetically oxidized into cannabinol (C₂₁H₂₄O₂) [7]. It has been reported that plants from different geographic locations differ in the amount of resin they produce. For example, plants from warm climates produce 10 times as much of the active principle, tetrahydrocannabinol, as plants from central Europe grown under identical conditions [8]. Furthermore, it has been suggested that temperature and humidity affect the resin content; thus there is evidence that the drug content is both genetically and environmentally controlled.

In this paper we examine the differences in photosynthetic capacity and the cannabinoid content of populations of *Cannabis sativa* from four different geographic locations grown under two distinct environmental regimes. On the basis of these differences, we suggest that the populations from these areas may be grouped into temperate and tropical ecotypes.
3 Pillars of Supplier Value

- Control & Traceability
- Verification & Documentation
- Transparency
What is adulteration?

• An adulterated product:
  • 1) Bears or contains any poisonous or deleterious substance which may render it injurious to health
    • Heavy metals, mold toxins, pesticides, or solvents at amounts higher than defect action levels
    • Pathogenic microorganisms (Salmonella, E. coli, Listeria) at ANY level
  • 2) Contains any undeclared substance that has been added to make it appear better or of greater value.
    • Diluents
    • Stabilizers
    • Solubilizers
Quality requirements for foods and supplements

1. Prerequisite GAP/GMP: Always required
2. Specifications and COA: Always required
3. Supplier verification: Always required
4. Hazard Analysis/Preventive Controls or Full Testing per Specification: Always required
The #1 Question is Age Old:

1. Where’d you get this material from?
   1. A farm?
   2. A bulk wholesaler?
   3. A consumer product manufacturer?
   4. A consumer product wholesaler?
   5. That guy on the corner?

1a. And where’d they get their material?

1b. And so on...
Example: Peanut Complexity: Not Peanuts
Question 2:

What information is on the Label, Product Specification and/or Certificate of Analysis?

“If it’s not written down, it didn’t happen.”
-- Regulators
Specifications vs Certificate of Analysis

• Specifications are the central written proof of product standards
• A Certificate of Analysis (COA) is the written proof that a specification was met for a particular lot or batch
  • COA may be 1) in the form of lab test reports, or 2) a specification with lab test results added
• Suppliers should have both a specification and COA
Q2: 30 Important CBD Specifications...
12 Are Critical Specifications

- Supplier’s name & contact
- Product Name
- Product Code
- Ingredient Disclosure
- Mfg Date or Shelflife
- Name and signature of responsible person
- Product Description/ “Full spectrum” etc
- Country / state of origin
- Certifications
- Storage conditions
- Packaging
- Intended Use

- ID Verified: Botanical name
- Plant part(s)
- Common name/ Strain
- Solvents / Processing Aids
- Appearance
- Odor/organolepsis
- Phase (solid/liquid at X melting pt)
- Density / Particle size
- Solubility

- % CBD & CBDA
- % THC & THCA (<0.3% THC)
- Allergens declared
- Microbiology
- Heavy metals
- Other cannabinoids
- Terpenes
- Mycotoxin
- Pesticides
Question 2a. How was it grown and processed?

• Is it hemp or marijuana type of cannabis?
• Were Good Manufacturing Practices used?
  • Which GMP??
• What is the THC content in the product?
  • Other than CBD & THC, what other cannabinoids and terpenes are present?
  • What else is added to the product other than cannabis?
• Is it “organic”?
  • Grown with organic practices?
  • Organic seed certification?
  • Organic farm certification?
  • Organic processor certification?
3. Can you share the test results/COA?

- Yes? Please share them! (Especially THC/cannabinoids and impurities!)
- No????

3a. Are the test results on the same product I am buying?

- Watch out for skip lot or random testing, improper sampling, and the old switcheroo.
- **Match the lot number** on test reports to the lot number on the package
4. For consumer products, how is the product packaged and labeled?

• Transparency in dosage, potency and ingredients
• Child resistant, tamper proof
• Label is legible with no typos
• Lot number and expiration
• QR Code in Indiana, other state specific labeling
• NO Disease or other outlandish claims
• Contact information (verify physical address and working phone #)
• Good Manufacturing Practices (GMP) statement or seal
• Relevant warnings and contraindications (pregnancy)
5. Is the product safe for me to take?

• Safety Determination (e.g. Generally Recognized as Safe or GRAS)
• Product format: Food, Nanotech
• Dosage: (How was the dosage determined?)
• Usage occasion, time of day
• Potency: Cannabinoids, Terpenes
• Purity: Allergens, microbiology, heavy metals, mycotoxin, pesticides, solvents
• Contraindications, warnings and drug interactions
6. Is the product effective?

1. Meta-analyses of multiple human trials
2. Randomized, controlled human trials (RCT)
3. Personal use
4. Virtual controlled human trials (VCT)
5. Systematic analysis of n=1 trials, clinical observations by trained physicians, legitimate and objective anecdotal reports
6. Published research on similar compositions
7. Animal efficacy data
8. Bioavailability?
Final Questions...

7. How do you ensure product consistency over time?
8. What is your / your company’s purpose and expertise working with CBD?
9. Why should I pick your product over others?
10. What is the price?
Reliable Internet Resources

For consumers:
• Americans for Safe Access
• American Botanical Council

For industry:
• American Herbal Products Association
• American Herbal Pharmacopoeia
• AOAC International
• ASTM International
• Hemp Industries Association
• USDA/AMS
• U.S. Hemp Roundtable
• U.S. Pharmacopoeia
More hemp resources...

- Indiana Hemp Industries Association (INHIA)
- [Industrial Hemp in North America: Production, Politics and Potential](https://www.industry.ca/hemp/research/)
- [Industrial Hemp Production](https://extension.ca.uky.edu/industrial_crops/industrial_hemp)
- [Industrial Hemp Production](https://extension.ca.psu.edu/industrial-crops/industrial-hemp)
- [University of Kentucky: An Introduction to Industrial Hemp, Hemp Agronomy, and UK Agronomic Hemp Research](https://www.uky.edu/)
- National Hemp Association
- Vote Hemp
- Canadian Hemp Trade Alliance (CHTA)
- [European Industrial Hemp Association (EIHA)](https://www.eiha.org/)

![NaturPro Scientific™ logo](image)
Hemp You Very Much!

Questions?

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