

Data Review

New Hope for Better Health with Innovative Cannabinoid Science

Version 1.4

Predicated on Real Scientific Research

The Data Presented Herein Obtained at:









Ananda Scientific, Colorado

Hebrew University of Jerusalem, Israel

Lyotropic Delivery Systems, Israel

Science in Action, Israel

Care Research, Colorado



Cannabidiol (CBD)



- A non-psychoactive substance only in cannabis plants
 - Especially abundant in industrial hemp
- Many published studies suggest desirable antiinflammatory properties and a potential to positively impact adverse and even lifethreatening conditions
 - Cancer, diabetes, heart disease, osteoarthritis, rheumatoid arthritis, epilepsy, inflammatory bowel disease and more
 - Neurodegenerative diseases like multiple sclerosis, Parkinson's disease and amyotrophic lateral sclerosis (Lou Gherig's disease)
 - Protect the brain after concussion
 - Maybe trigger weight loss and lower blood sugar levels

Pure CBD from Industrial Hemp





CBD Crystal





- Non-Psychoactive and Non-Addicting
- Does Not Induce Catalepsy
 - Seizures with sensation loss, muscular rigidity, fixity of posture
- No Effects on Psychological or Motor Functions
 Movement, coordination, dexterity, strength, speed
- No Impact on Basic Physiological Parameters
 - Heart rate, blood pressure, body temperature
- No Changes in Food Intake or Gastrointestinal Transit
- Chronic Use and Larger Doses (> 1,500 mg/day) Well Tolerated – No Noticeable Side Effects



CBD Is Safe References

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Regular CBD Is a Problem



Insoluble in Water

- Solubility in water crucial for efficiently getting from the mouth into bloodstream
- Solubility essential to beverage manufacture

Very Low Bioavailability

 Only minor amounts can reach the bloodstream and therefore sites of action in the body

Most Regular CBD Is Instead Wasted

Either degrades in the stomach or passed in feces

Problems Uniquely and Outstandingly Resolved – for the First Time – VERUM CBD



CBD Insolubility & Low Bioavailability References

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CBD Insolubility & Low Bioavailability References

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High Solubility & Bioavailablity Entry of VERUM CBD Into the Body is Greatly Enhanced with Patented Technology

Empty Nano-Shell



- Receptacle 1/1600 Width of a Hair
- Made with Safe, Edible GRAS¹ Materials



- Low Bioavailability
- Barely Gets into the Body (Bloodstream) when Taken by Mouth
- Insoluble in Water

¹GRAS = generally recognized as safe, an FDA label for safe, edible substances

The statements made herein have not been evaluated by the U.S. Food and Drug Administration and are not intended for diagnosing, treating, curing or preventing any disease or medical condition.

VERUM



- CBD-Loaded Nano-Shell
- Elevated Bioavailability
- Entry Into the Body (Bloodstream) Greatly Amplified
- 100% Water Soluble

Cryo-Electron Microscopy

Transmission Electron Microscopy at -200 °C (-330 °F)



Nano-Shell

VFRUM20



Loaded

Nano-Shells

- Extraordinarily Small CBD-Loaded Vessels, 10–20 nm Diameter, Optimally Sized for Maximizing the Entry of CBD Into the Body
- Smaller than the Wavelength of Visible Light (500 nm) – Cannot Be Seen with a Light Microscope
- Human Hair 80,000 nm Thick, Red Blood Cell – 7,500 nm Diameter, Flu Virus – 100 nm Diameter



How VERUM CBD is Efficiently Brought from the Small Intestine to the Bloodstream







More VERUM CBD Gets Into the Body

Taken by Mouth

Amount in the Bloodstream at 30 Min.







More VERUM CBD Gets Into the Body

Taken by Mouth Amount in the Bloodstream at 0.5 & 2.0 Hours



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VERUM CBD & Inflammation

Swollen Tissue

- Inflammation Induced with DTH in Rats
- Inflammation Measured as the Thickness of a Swollen Ear
- Regular CBD and VERUM CBD Given by Mouth
- Inflammation Reduced About 4X More with VERUM CBD Compared with Regular CBD

N = 10 in Each Group No Treatment

Regular CBD

VERUM CBD





VERUM CBD & Inflammation



3D Model of TNF-α Protein

Tumor Necrosis Factor Alpha (TNF-α)

A Major Inflammation-Causing Protein

Made by immune system cells

• A Cause or Factor in Many Diseases

 Rheumatoid arthritis, osteoarthritis, psoriatic arthritis, ulcerative colitis, Crohn's disease, atherosclerosis, heart attack, diabetes



VERUM CBD Greatly Decreases TNF-α Levels



50-mg Regular CBD

versus 5-mg VERUM CBD

 70% less TNF-α Present with 5-mg VERUM CBD





LUMifuge™ Stability Analysis

- Breakthrough technology Only tool worldwide for accelerated and reliable, product stability testing
- Instabilities detected 2300X faster and more accurately
- Precise stability and shelf-life determinations in minutes or hours, not months or years

Breakdown detected as changes in light transmission



LUMIfuge Analysis of VERUM CBD







Full Strength

- No Breakdown
- Shelf Life 2 Years at Room Temperature

Diluted – 15% in Water

- No Breakdown Even When Diluted
- Same Shelf Life as Full-Strength VERUM CBD





LUMIfuge & Regular CBD Regular CBD = Unstable Products



A Typical Competitor's Product

Shows Sizable Levels of:

Flocculation Aggregation Coalescence Demulsification Sedimentation

Considerable Degradation

• Decreased, Questionable Shelf Life





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Stable Across Temperatures

After Storing for 68 Days, No Obvious Degradation, Even at Higher Temperatures







CBD in Aqueous Solutions: A Technical Challenge



Lipophilic CBD Has Virtually No Solubility in Water-Based Solutions

- Regular CBD precipitates from aqueous mixtures
- Attempts by Others to Make It Water Compatible
 - Emulsifiers and liposomal or micellar vessels often tried
 - But all are unstable
 - Constructs rapidly degrade -- CBD drops out of solution



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Regular CBD Nearly Insoluble in Water

100% Water Solubility with VERUM CBD: First Time for Any CBD Product



- Fully Water Soluble
- Clear Transparent
- Bacteriostatic, Inhibits Bacterial Growth



- Poorly Water Soluble
- Turbid Opaque
- Supports Bacterial Growth
- Solubility Uniquely Suited for Aqueous Solutions
 Prolonged Stability

