

Next-Generation Solid Cannabinoid Formulations

Formulating a highly lipophilic and poorly water-soluble active pharmaceutical ingredient (API), such as cannabidiol (CBD), presents significant challenges. Beyond issues related to physical and chemical stability, CBD exhibits very low oral bioavailability in humans (approximately 6%), largely due to incomplete gastrointestinal absorption and extensive pre-systemic hepatic metabolism.

To address the need for more patient-centric options, we helped develop a solid dosage alternative to a market dominated by liquid formulations. This patent-pending, proprietary drug delivery solution creates new opportunities for patients, healthcare professionals, and pharmaceutical manufacturers.

The CBD API Challenge:

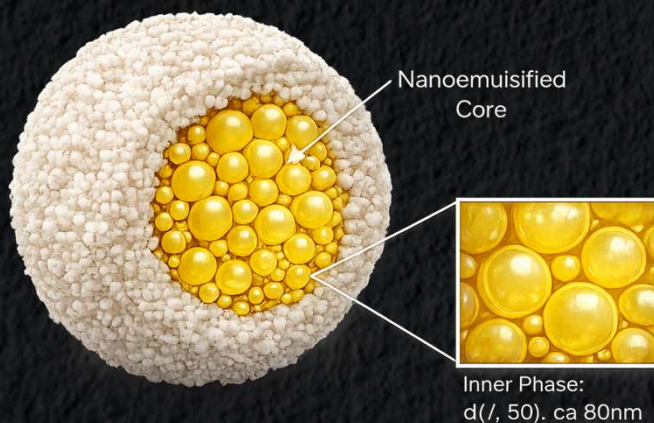
- Inherent **poor bioavailability**, leading to inconsistent therapeutic effects and suboptimal patient outcomes.
- Very **poor solubility** in water and limited solubility in standard lipophilic carriers.
- Achievement of a higher **drug loading** than what is currently available in oil-based formulations.
- Enhance **patient convenience and compliance** & open the application space

Our Solution: Nano-emulsified Intermediate

Our InSciTe Consulting experts helped develop a cutting-edge spray-dried, nano-emulsified drug product intermediate.

This transforms lipid-based cannabinoid nanoemulsions into a stable solid, free-flowing powder – $d(v, 50)$: ca. $40\mu\text{m}$ – using cost effective excipients and commonly available manufacturing technologies, thus opening the application space to more patient-compliant products.

Cross Sectional View of Spray Dried Nano-emulsified Drug Intermediate



Scale Bar: $10\mu\text{m}$

Unprecedented Bioavailability Boost

- **3-4X Increase:** Compared to conventional formulations, our approach delivers a significant boost in bioavailability.
- **Optimal Stability:** Maintains excellent physical and chemical stability, ensuring product integrity over time.
- **Consistent Uptake:** Offers more consistent and reliable drug absorption, reducing dependence on food intake.

Beyond Liquids: The Solid-State Advantage

In a market currently dominated by liquid cannabinoid products, our solid-state approach offers a compelling alternative. This innovation not only improves patient convenience and acceptance but also unlocks new opportunities for cannabinoid research and the development of differentiated oral solid dosage forms.

Partner with InSciTe Consulting

How is your team approaching the challenges of cannabinoid formulation, and what hurdles are you facing in accelerating your product development? Contact InSciTe Consulting or visit www.inscitemconsulting.com to explore how we can help you achieve your goals.

Visit Our Website

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