

# Caliper delivers CBD into the bloodstream **significantly faster** — up to **424x** faster than isolate and up to **64x** faster than tinctures\*

## Clinical Substantiation Matters

At Caliper Ingredients, we invest heavily in **credible research to substantiate our product claims**. Pharmacokinetic data (including rate and speed of absorption) are a critical foundation for claims such as “fast acting,” or “superior bioavailability.” This is the **first human clinical substantiation** of such claims—and the first to do so using **commercially available CBD products**.

### THE STUDY

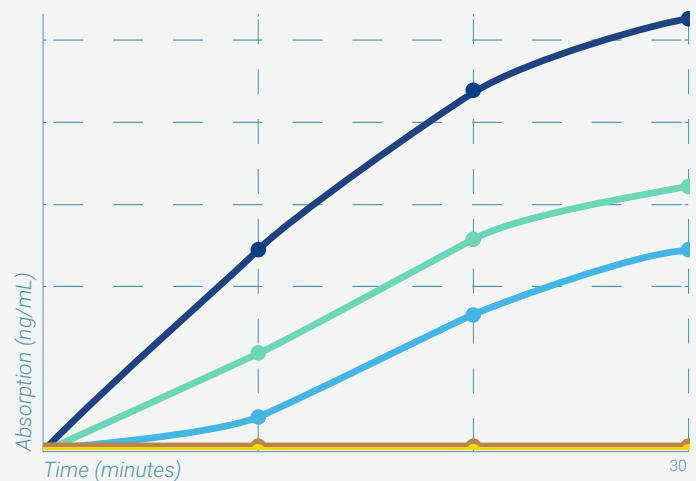
## Human Subjects, Rigorous Design

Colorado State University researchers compared pharmacokinetics of Caliper’s suite of soluble cannabinoid ingredients with two controls: oil-based CBD tincture and unemulsified CBD isolate—the forms most widely available to today’s consumers.

- Colorado State University IRB-approved
- Double-blind, randomized crossover design
- 15 healthy male & female subjects, ages 21–62
- 30mg dose of each product given on five different days
- All subjects had fasted for 6 hours
- Blood samples were taken at 0,10, 20, 30, 45, 60, 120, 180, & 240 minutes following ingestion
- CBD blood levels were determined using UHPLC mass spectrometry

**All Caliper CBD formats were absorbed dramatically faster than oil-based CBD tincture or CBD isolate.**

## Absorption of Caliper CBD Formulations versus CBD Isolate & Tincture



- Caliper 5% CBD Liquid Concentrate (gum arabic-based)
- Caliper 5% CBD Powder (quillaia-based)
- CBD Isolate
- Caliper 20% CBD Liquid Concentrate (quillaia-based)
- CBD Tincture

- **Absorption began within 10 minutes**—significantly faster than either control, which did not reach appreciable blood levels until 60 minutes.
- How formulations delivered CBD into the bloodstream at 30 minutes:
  - **Caliper 5% CBD Liquid Concentrate (gum arabic-based): 424x faster** than isolate & **64x faster** than tincture
  - **Caliper 20% CBD Liquid Concentrate (quillaia-based): 218x faster** than isolate & **33x times faster** than tincture
  - **Caliper 5% CBD Powder: 142x faster** than isolate & **22x faster** than tincture

\*2020 Colorado State University study, *Pharmaceuticals*.

**We’re ready to help you innovate with *clinically proven* cannabinoid products.**

Contact your account manager or email us at [ingredients@caliper.life](mailto:ingredients@caliper.life) | [www.caliperingredients.life](http://www.caliperingredients.life)