

## A Journey Through the Development of Cannabidiol (CBD) Solid Oral Dosage Forms:

Balancing API\* Loading,  
Physico-Chemical Stability & in-vivo  
Pharmacokinetic Performance

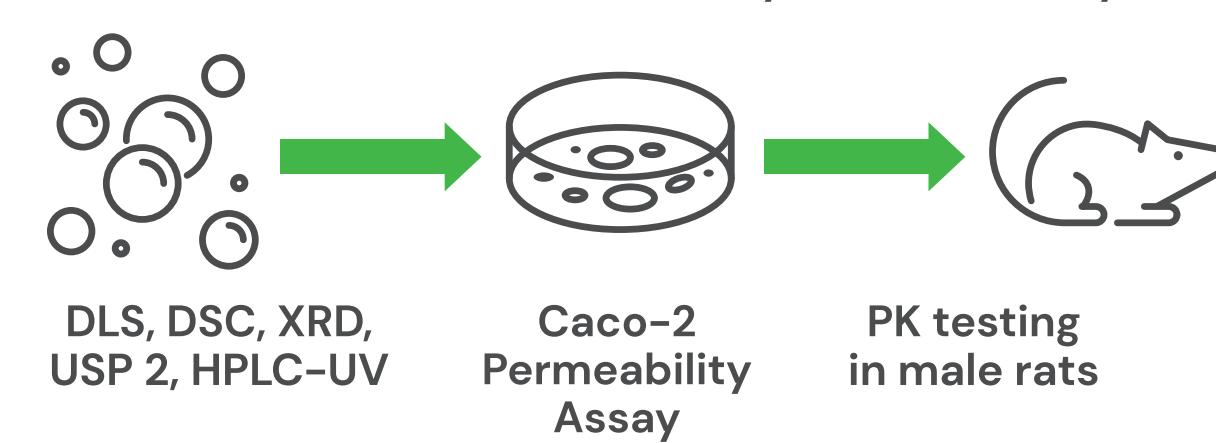


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**BACKGROUND:** While there is a remarkable opportunity for the development of CBD-based therapies in the pharmaceutical field, formulating a highly lipophilic ( $\log P = 6.3$ ) and poorly soluble crystalline API can be a complex task. In addition to physical and chemical stability challenges, the oral bioavailability of crystalline CBD has been shown to be very low in humans (approx. 6%) due to incomplete absorption in the gut and significant pre-systemic elimination in the liver.

**METHODS:** Using a combination of characterization techniques (e.g. DSC, XRD, DLS), in-vitro assays (Caco-2 cell assays) and animal models (Sprague-Dawley rat model) we aimed to determine the optimal balance between the physical properties of the formulated API, its in-vitro bioaccessibility profile and in-vivo pharmacokinetic performance.

Powder Characterization      In-vitro Bioaccessibility      In-vivo Bioavailability



**CONCLUSIONS:** Aiming to inspire more patient-centric solutions than those currently available on the market, we successfully developed CBD solid oral dosage forms with high API loading, good re-dispersibility and enhanced bioavailability vs. a commercially available CBD oil. These results are a positive step towards the creation of next generation CBD products capable of overcoming the ingredient's exploration of the promising therapeutic potential of CBD.

\*Active Pharmaceutical Ingredient

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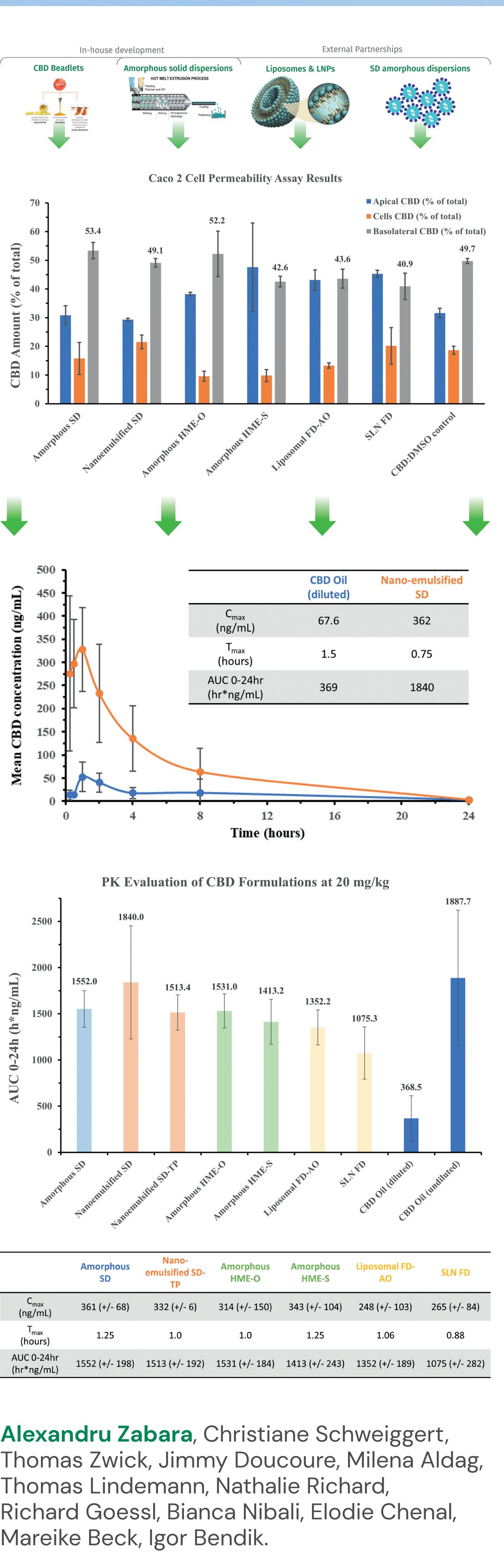
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that puts  
**patient-centrality**  
center stage

Formulating CBD oral dosage forms  
with optimized physical and chemical  
stability, high loading and superior  
pharmacokinetic performance.



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