

# ENHANCING PRECISION IN PERSONALIZED MEDICINE: COMBINING POWDOSE® AND DIFFUCAPS® FOR PRECISE SOLID ORAL DOSING

The era of “one-size-fits-all” medicine is fading, as personalized medicine can often provide more accurate dosing that ensures efficacy, minimizes adverse effects, and helps achieve optimal therapeutic outcomes. To meet these needs, a new generation of dosing technologies are emerging. A combination of two of these technologies – AbbattiaLabs SA's POWDOSE® and Adare Pharma Solutions' Diffucaps® – were the subject of a recent study exploring their use as a powerful solution for precise, individualized dosing of solid oral medications.



## Personalized Dosing: A Growing Need

Conditions such as ADHD, cardiovascular diseases, and antibiotic resistance benefit from treatments tailored to specific patient characteristics. In pediatric care, weight-based dosing is critical for ensuring safety and efficacy. These scenarios require accurate, flexible dosing mechanisms that can adjust to individual needs, enhancing the safety and effectiveness of treatments.

## POWDOSE Technology: A User-Friendly Solution

POWDOSE, developed by AbbattiaLabs SA, is a novel dosing device designed to allow users to administer precise, individualized doses of solid oral medications. POWDOSE features a simple and patient-friendly two-step mechanism: a dial to preset the desired dose, and a knob to dispense it accurately. This design aims to minimize dosing errors and provide an easy-to-use solution for self-administered treatments, allowing patients to adjust their doses in incremental steps. The device is also fully customizable, with flexibility to suit varying patient needs.

## Diffucaps: Improving Drug Release and Bioavailability

Adare Pharma Solutions' Diffucaps is a multiparticulate system designed to improve drug solubility, control drug release, and enhance absorption in specific areas of the gastrointestinal tract. Diffucaps minimizes side effects like gastric irritation and reduces food interactions, which can lead to more predictable therapeutic outcomes. The technology can be utilized in several different dosage forms, including capsules and rapidly disintegrating tablets, to provide versatility in treating a range of conditions.

Diffucaps' ability to enhance solubility and bioavailability makes it a valuable addition to personalized dosing regimens, particularly when paired with the POWDOSE system.

## Study Overview: Testing POWDOSE with Diffucaps

The study evaluated the performance of POWDOSE in delivering precise, reproducible doses when combined with Diffucaps granules. Four different pre-production POWDOSE devices were tested, each designed to deliver a specific portion of the maximum dose—25%, 50%, 75%, and 100%. The study used Diffucaps Sugar Sphere granules, which contained no active pharmaceutical ingredients (APIs), allowing the focus to remain on evaluating dosing consistency.





### Key Findings

With 1,200 doses tested, the results showed that the POWDOSE system delivered highly consistent and precise doses, with the relative standard deviation (RSD) for each device registering well below the 7% target.

The results also indicated consistent dosing throughout the entire usage period of the device: 30 to 120 doses. No variation in dose delivery was observed, regardless of whether the dose was administered at the start of the device's use (with a full reservoir) or at the end of its lifetime (when the reservoir was nearly empty).

These findings indicate that the POWDOSE system is capable of delivering precise, repeatable doses, even with varying granule sizes.

### Benefits & Advantages

The study's results validate the potential of combining POWDOSE with Diffucaps to offer a reliable, user-friendly solution for personalized dosing. Even in its pre-production form, the POWDOSE device demonstrated excellent precision and repeatability, ensuring consistent delivery of doses across different stages of use.

This combination offers significant advantages in personalized medicine. Patients can self-administer doses with high accuracy, ensuring that their treatment is tailored to their individual needs.

The POWDOSE system, when paired with Diffucaps, presents drug developers and formulation teams with an innovative tool for creating and delivering customized solid oral medications.

### Final Thoughts

The integration of POWDOSE and Diffucaps offers precise dosing of solid oral medications, enhanced safety, and improved efficacy for patients. As personalized medicine continues to evolve, technologies like these will be key in shaping the future of individualized healthcare, providing a pathway to more effective treatments and improved patient outcomes.



### Adare Pharma Solutions

Adare Pharma Solutions is a global technology-driven CDMO providing end-to-end integrated services, from product development through commercial manufacturing and packaging, with small molecule expertise focusing on oral dosage forms. Adare's specialized technology platforms provide taste masking, customized release, solubility enhancement, and patient-centric dosing solutions. With a proven history in drug delivery, Adare's seven facilities in the US and Europe have developed and manufactured more than 65 products sold by customers worldwide. Learn more at <https://adarepharmasolutions.com>

### AbbatiaLabs SA

AbbatiaLabs SA specializes in the individualization of doses for solid drugs. The company is dedicated to enhancing drug delivery systems, offering innovative solutions that cater to the unique needs of patients and healthcare providers alike. Services include drug delivery devices and systems as well as finished dosage forms. AbbatiaLabs is committed to providing cutting-edge solutions within the pharmaceutical sector, ensuring optimal efficacy and patient compliance. For further details, please visit <https://abbatialabs.com>

