



CASE STUDY

Improving Drug Delivery Performance vs Marketed Products with MedSpray®

Enhancing permeation, release, and
formulation flexibility across multiple APIs

The Challenge

Many marketed topical and transdermal drug products, including patches, gels, and creams, can be limited by low drug flux, poor permeation, and inconsistent delivery. These limitations can reduce therapeutic effectiveness and make it difficult to differentiate new products.

Sponsors needed a way to improve drug delivery performance while maintaining flexibility in formulation design and development.

Approach

MedPharm applied its MedSpray® film-forming technology to improve drug delivery across multiple APIs and compare performance against marketed products:

- Developed and optimized MedSpray® formulations for a range of compounds
- Evaluated drug release and permeation using in vitro testing methods
- Compared performance to marketed patches, gels, and creams
- Optimized formulation composition to enhance permeation and control release
- Enabled both rapid and sustained delivery profiles depending on formulation design
- Assessed performance across human skin and synthetic membrane models

Outcome

- Demonstrated improved drug delivery performance across multiple APIs
- **Methylphenidate**: Comparable or improved permeation vs Daytrana patch
- **Betamethasone**: Improved delivery vs cream and foam formulations
- **Diclofenac**: Up to **3.7x higher vs gel and 33x higher vs patch** in drug flux
- Enabled clear control over drug release profiles (rapid or sustained)
- Improved formulation flexibility for different therapeutic needs
- Delivered superior performance compared to traditional dosage forms

Why This Matters

Improving drug delivery performance is critical for both clinical success and product differentiation. By outperforming traditional patches, gels, and creams, MedSpray® enables more effective therapies and supports stronger positioning in competitive markets.