4 Benefits to Conducting Simultaneous Dissolution and Permeability Experiments in Drug Development

Membrane flux is a measurement of mass transport through a membrane, directly related to biological permeability. There are several advantages to combining flux measurements with dissolution experiments.

Pion's **Rainbow** and **Flux** apparatuses allow simultaneous monitoring of dissolution and flux in a controlled, *in vitro* environment. By employing this system, experiments elucidate the interplay between dissolution and permeability for formulations, intended to enhance drug absorption.

Our flux systems range from our small-volume MicroFlux system, which uses 20mL chambers for limited sample amounts, to the biorelevant-volume systems miniFlux and BioFlux up to 500mL, and compendial-volume systems MacroFlux for 900mL. These flux systems are comprised of a dissolution and Flux chamber separated by a PVDF membrane coated with a biomimetic lipid solution that mimics the *in vivo* absorption of a drug compound in the human jejunum.

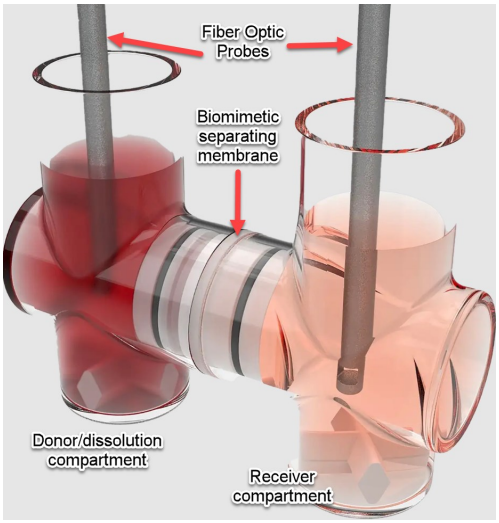
When a Flux system is combined with our Rainbow Dynamic Dissolution Monitoring System, concentration data from both chambers will be acquired and displayed in real-time using UV-Vis fiber optic probes, allowing scientists to achieve dissolution and flux profiles in a single experiment.

These systems offer several advantages:

1. Rapid Screening of Drug Candidates: For drug discovery and development, conducting these experiments simultaneously can be valuable for screening of multiple drug candidates quickly, helping to identify those with favorable dissolution and permeability characteristics.

2. Comprehensive Understanding of Drug Release and Absorption: Simultaneous experiments allow for a more holistic understanding of how a drug dissolves and might be absorbed in biological systems. This can provide insights into the drug's behavior during absorption in the gastrointestinal tract.

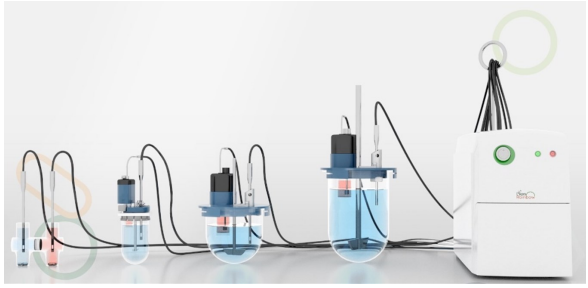
3. Rapid Identification of Formulation Issues & Formulation Optimization: Performing both tests simultaneously can expedite the identification of formulation-related issues. Scientists may then make adjustments to their formulations and determine the ideal conditions for both dissolution *and* absorption properties. This can lead to the formulation of drugs with improved absorption profiles.



A single microFlux apparatus

4. Predictive Modeling: Data obtained from simultaneous experiments can be useful in developing predictive models for drug absorption and efficacy. By analyzing dissolution profiles and permeation rates, one can better predict *in vivo* performance from *in vitro* data.

In summary, simultaneous dissolution and flux experiments provide a synergistic approach to understanding a drug's potential *in vivo* permeability, leading to more informed decisions during drug formulation processes.



Pion's Rainbow in-situ, fiber optic concentration monitoring system is the backbone of our dissolution and flux systems

Pion Inc. 10 Cook Street, Billerica, MA 01821 Tel: +1 978.528.2020
Pion Inc. (UK) Ltd. Forest Row Business Park, Station Road, Forest Row, East Sussex, RH18 5DW. +44 (0) 1342 820720

www.pion-inc.com