



Permeability Testing – Parallel Artificial Membrane Permeability Assay (PAMPA)

Summary

Due to the membrane barriers most drugs must pass through to reach their target, the permeability of a drug compound is an important factor to consider during development. Quantitative measurement of compound permeability is an ideal early test to perform when screening for potential drug candidates.

One of the Permeability tests BioAssay Systems offers is the Parallel Artificial Membrane Permeability Assay (PAMPA). This test measures passive diffusion of compounds and is ideal for early stage drug development because it is fast and low cost relative to other cell-based permeability assays.

Method

A membrane mimicking solution and full permeability control solution are loaded on to separate well membranes of a PAMPA donor plate. The donor plate is then loaded with the desired concentration of test compound in a buffer of customer's choice. The receiver plate is loaded with either the same buffer or another of the customer's choice. The donor plate is gently placed into the receiver plate and incubated for a set duration at ambient temperature (or desired temperature).

After the incubation, the solutions in the receiver plate are collected and analyzed by UV-spectroscopy alongside test compound standards in DMSO. The test compound permeability is calculated by comparing the membrane mimicking system to that of the full permeability control.

Examples

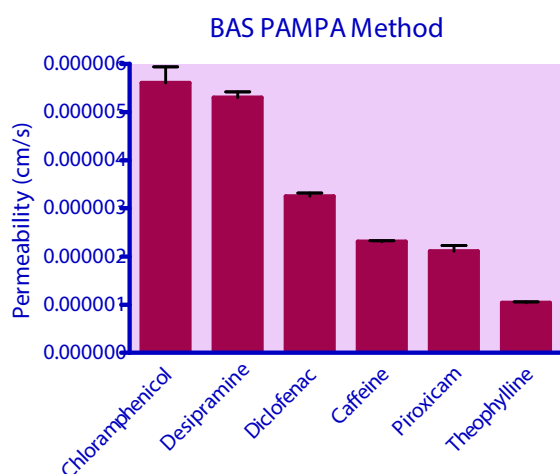


Figure 1 & 2 : Drug compound permeability determined using the PAMPA method. Testing was repeated three times on separate days.

Test Compound	Average	SD	% Error
Chloramphenicol	5.60E-06	5.76E-07	10%
Desipramine	5.30E-06	2.01E-07	4%
Diclofenac	3.25E-06	1.25E-07	4%
Caffeine	2.31E-06	3.17E-08	1%
Piroxicam	2.11E-06	2.10E-07	10%
Theophylline	1.04E-06	3.41E-08	3%

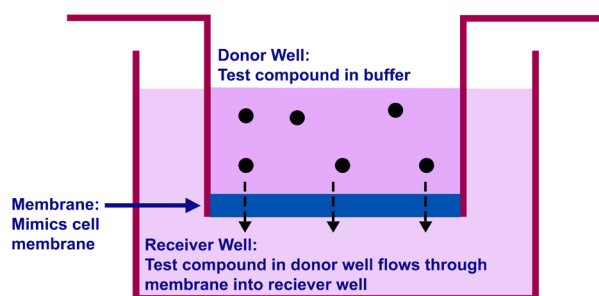


Figure 3: Diagram of PAMPA method.