The Franz Cell Chamber

The Franz Cell chamber is an in vitro skin permeation assay frequently used in formulation development. The Franz Cell apparatus consists of two primary chambers separated by a membrane. Although animal skin can be used as the membrane, human skin is preferred. The test product is applied to the membrane via the top chamber. The bottom chamber contains fluid from which samples are taken at regular intervals for analysis. This testing determines the amount of active that has permeated the membrane at each time point. The chamber is maintained at a constant temperature of 37°C. Depending on the vehicle, the rate of permeation for a given drug as determined via Franz cell analysis can vary significantly (perhaps from 10- to 50-fold).

Whereas the in vivo vasoconstrictor assay for corticosteroids may indicate—though not prove—efficacy (a potent vasoconstrictor is expected to have a clinical effect), it is often not known how much of an active ingredient or its metabolite must penetrate to provide a clinical effect. As such, results of the Franz cell assay cannot necessarily predict the efficacy of a drug formulation; it does allow formulators to determine whether a particular formulation delivers an active agent through the skin. As such, generic manufacturers typically rely on Franz cell analysis during the formulating process to try to devise a vehicle that matches the penetration rates of an innovator. The “optimal” formulation identified is then subject to the in vivo vasoconstrictor assay.