Dermal Open Flow Microperfusion (dOFM) for the bioequivalence assessment of topical products based on skin PK

The availability of generic topical dermatological drug products may be constrained by the limited methods currently accepted for the assessment of topical Bioequivalence (BE). Therefore, the development of pharmacokinetics-based BE approaches has been proposed. Dermal Open Flow Microperfusion (dOFM) is one such in vivo methodology to continuously assess the cutaneous kinetics of topically administered drugs (as well as endogenous analytes) directly in the dermis. We evaluated whether dOFM performed with healthy human subjects could appropriately characterize the kinetics (rate and extent) of intradermal Bioavailability (BA) of acyclovir from identical vs. different 5% acyclovir creams. A single-center clinical study (EudraCT No. 2013-005062-19) was performed with 20 healthy subjects in a pivotal study (7 women, 13 men, 28±5 years). A marketed 5% acyclovir cream was used as a reference product (R), and a different marketed 5% acyclovir cream with different composition and inequivalent in vitro release characteristics was used as a test product (T). Three (3) small product application sites on each thigh were treated with either the R product in duplicate (R1, R2) or the T product to compare the in vivo BA of the R product with itself (R1 vs. R2) and to compare the in vivo BA of the T vs. R products. This was performed twice on each subject, once on each thigh (dosed as R2-R1-T and T-R1-R2). Two (2) certified dOFM probes per product application site profiled intradermal acyclovir kinetics for 36 h. Acyclovir in the perfusate was quantified by UHPLC-MS/MS. The equivalence (R2 versus R1) and inequivalence (T versus R1) of acyclovir BA was evaluated statistically based on log (AUCo-36 h) and Cmax. The BA of acyclovir from R2 vs. R1 was found to be equivalent. The BA of acyclovir from T vs. R1 was found to be non-equivalent.

Biography
Frank Sinner has completed his PhD in 2002 at University of Innsbruck, Austria. He is the Director of Joanneum Research HEALTH, an Institute for Biomedicine and Health Sciences. He has published more than 25 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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