

Ibugel Study 1

Skin Penetration of Topical Formulations of Ibuprofen 5%: An in vitro Comparative Study

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ABSTRACT: An in vitro isolated human skin technique with known reliable predictive value for in vivo performance was used to compare the skin penetration of the proprietary ibuprofen gel formulation, Ibugel™, with five other commercially available topical formulations containing ibuprofen 5%: Ibuspray™, Ibumousse™, Proflex Cream™, Fenbid Gel™, and Deep Relief Gel™. There was a marked difference between some formulations in the percentage of applied ibuprofen penetrating the skin samples, with Ibuspray™, Ibugel™ and Ibumousse™ showing the most efficient penetration. The percentage of applied ibuprofen penetrating the skin samples from these formulations was significantly greater ($p < 0.05$) at all sampling intervals when compared with Proflex Cream™, Fenbid Gel™ or Deep Relief Gel™. By 48 h, the percentage of applied ibuprofen that had penetrated through the skin samples from Ibuspray™, Ibugel™ and Ibumousse™ was approximately 2.5 times greater than that from Deep Relief Gel™, 3 times greater than that from Proflex Cream™ and 5 times greater than that from Fenbid Gel™. The data demonstrate that, with topically applied preparations, the composition of the vehicle can have a significant impact on the percutaneous penetration of the active medicament. The possible reasons for this are discussed in terms of partition and diffusion phenomena. Different topical presentations of the same drug substance – especially agents like ibuprofen which are intended for subcutaneous action – cannot be assumed to be pharmaceutically and clinically equivalent or indeed interchangeable.