

compounds are determined by the protein domain and, possibly, by the sponge domain (18). These relationships can be expressed by the log PC PHSC/w of these chemicals as a function of the corresponding square of log PC o/w and log MW; see Equation (5.3), which is useful in predicting various chemical partitionings into the SC *in vitro*. However, a disadvantage in using the human callus is that it may display some differences in water and chemical permeation when compared with membranous SC (6).

This chapter has summarized a variety of potential applications for PHSC, ranging from basic science to applications in medicine and environmental impact studies. The PHSC, imagination, and a balanced study design can add to scientific knowledge.

REFERENCES

- Blank JH. Cutaneous barriers. *J Invest Dermatol* 1965; 45:249–256.
- Zatz JL. Scratching the surface: rationale approaches to skin permeation. In: Zatz JL, ed. *Skin Permeation Fundamentals and Application*. Wheaton: Allured Publishing Co., 1993;11–32.
- Surber C, Wilhelm KP, Hori M, Maibach HI, Guy RH. Optimization of topical therapy: partitioning of drugs into stratum corneum. *Pharm Res* 1990; 7(12):1320–1324.
- Surber C, Wilhelm KP, Maibach HI, Hall L, Guy RH. Partitioning of chemicals into human stratum corneum: implications for risk assessment following dermal exposure. *Fundam Appl Toxicol* 1990; 15:99–107.
- Potts RO, Guy RH. Predicting skin permeability. *Pharm Res* 1992; 9(5):663–669.
- Barry BW. Structure, function, diseases, and topical treatment of human skin. In: Barry BW, ed. *Dermatological Formulations: Percutaneous Absorption*. New York: Marcel Dekker, 1983;1–48.
- Jubli L and Shelly WB. New Staining techniques for the Langerhans cell. *Acta Dermatol (Stockh.)* 1977; 57:289–296.
- Knutson K, Potts RO, Guzek DB, Golden DM, McKie JE, Lambert WJ, Higuchi WI. Macro and molecular physical-chemical considerations in understanding drug transport in the stratum corneum. *J. contr. Rel.* 1985; 2:67–87.
- Knutson K, Potts RO, Guzek DB, Golden DM, McKie JE, Lambert WJ, Higuchi WI. Macro and molecular physical-chemical considerations in understanding drug transport in the stratum corneum. *J. contr. Rel.* 1985; 2:67–87.
- Hui X, Wester RC, Maibach HI, Magee PS. Chemical partitioning into powdered human stratum corneum (callus). In: Maibach HI, ed. *Toxicology of Skin*. Philadelphia: Taylor & Francis, 2000; 159–178.
- Wester RC, Mobayen M, Maibach HI. *In vivo* and *in vitro* absorption and binding to powdered stratum corneum as methods to evaluate skin absorption of environmental chemical contaminants from ground and surface water. *J Toxicol Environ Health* 1987; 21:367–374.
- Lampe MA, Burlingame AL, Whitney J, Williams ML, Brown BE, Roitman E, Elias PM. Human stratum corneum lipids: characterization and regional variations. *J Lipid Res* 1983; 24:120–130.
- Imokawa G, Akasaki S, Hattori M, Yoshizuka N. Selective recovery of deranged waterholding properties by stratum corneum lipids. *J Invest Dermatol* 1986; 87(6):758–761.
- Friberg SE, Kayali I, Suhery T, Rhein LD, Simion FA. Water uptake into stratum corneum: partition between lipids and proteins. *J Dispersion Sci Technol* 1992; 13(3):337–347.
- Middleton JD. The mechanism of water binding in stratum corneum. *Br J Dermatol* 1968; 80:437–450.
- Leveque JL, Rasseneur L. Mechanical properties of stratum corneum: influence of water and lipids. In: Marks RM, Barton SP, Edwards C, eds. *The Physical Nature of the Skin*. Norwell: MTP Press, 1988; Chapter 17.
- Hui X, Wester RC, Maibach HI, Magee PS. Chemical partitioning into powdered human stratum corneum: a mechanism study. *Pharm Res* 1993; 10:S–413.
- Rieger M. Factors affecting sorption of topically applied substances. In: Zatz JL, ed. *Skin Permeation Fundamentals and Application*. Wheten: Allured Publishing Co., 1993; 33–72.
- Raykar PV, Fung MC, Anderson BD. The role of protein and lipid domains in the uptake of solutes of human stratum corneum. *Pharm Res* 1998; 5(3):140–150.
- Scheuplein RJ, Bronaugh RL. Percutaneous absorption. In: Goldsmith LA, ed. *Biochemistry and Physiology of the Skin*. Vol. 1. Oxford: Oxford University Press, 1983; 1255–1294.
- Hansch C and Leo A (eds). *Substituent constants for correlation Analysis in Chemistry and Biology*. New York: John Wiley, 1979.