

TABLE 5.5
Aqueous Partition Coefficient of Hydrocortisone
with Normal and Psoriatic Stratum Corneum

Stratum Corneum Type	Partition Coefficient ^a	
	Mean	SE
Normal sheet (abdominal)	1.04	0.88
Normal powdered (plantar)	1.70	0.47
Psoriatic	1.94	0.42

^a No statistical significance ($p > 0.05$).

5.6 PHSC AND DISEASED SKIN

The PHSC has potential application in medical treatment. For instance, a set of vehicles can be screened to determine which vehicle most readily releases a given drug into the SC. This information would assist in determining the most effective approaches to drug delivery via the skin. Furthermore, diseases involving the SC can be studied using PHSC. An example is Table 5.5, which is the partitioning of hydrocortisone from normal and psoriatic PHSC. In this case, we have shown that there is no difference in partitioning between normal and psoriatic PHSC. It should be noted that there is no difference between in vivo percutaneous absorption of hydrocortisone in normal volunteers and in psoriatic patients (21).

5.7 PHSC AND ENVIRONMENTALLY HAZARDOUS CHEMICALS

The leaching of environmentally hazardous chemicals from soil and their absorption by the skin of a human body is a major concern. Knowledge of the extent and degree of such absorption will aid in determining the potential health hazards of polluted soil. Our laboratory's interest is in the potential percutaneous absorption of contaminants from soil. Soil can be readily mixed with PHSC, but centrifugation does not separate the two. However, centrifugation readily separates PHSC from any liquid to varying degrees. Thus, the partition coefficients of various liquids may be determined relative to a common third liquid. These relative partitions can then be compared to those of other compounds and to skin absorption values (22–24) to evaluate the degree of hazard. We have determined such coefficients for several environmentally hazardous chemicals partitioning from soil into PHSC (Table 5.6).

TABLE 5.6
Partition Coefficients of Four Environmental Hazardous
Chemicals in PHSC/Water and Soil/Water

Test Chemicals	Partition Coefficient	
	PHSC	Soil
Arsenic	1.1×10^4	2.4×10^4
Cadmium chloride	3.6×10^1	1.0×10^5
Arodor 1242	2.6	1.7
Arodor 1254	2.9	2.0

Abbreviation: PHSC, Powdered human stratum corneum.