

skin surface lipid, although for a given individual, the fatty acid component of the skin surface lipid remains relatively constant with time. Thus, each individual shows an inverse relationship between the amount of free fatty acids and the triglycerides characteristic of their skin surface lipids.

A hydrolysis reaction is the source of one of the important structural components of the epidermal lipids. The enzyme sphingomyelinase hydrolyzes sphingomyelin to ceramide and phosphorylcholine (17). This enzyme degrades all cellular phospholipids before the cells move from the granular layer of the epidermis into the stratum corneum. The ceramides then become one of the main components of the layered intercellular lipids found between the terminally differentiated cells of stratum corneum. The other hydrolysis product, phosphorylcholine, does not fill the stratum corneum spaces but, rather, the phosphorus is thought to be reabsorbed and reutilized by the epidermis. This is an explanation for why the skin surface lipids are void of phospholipids (18).

In addition to the substances listed in Table 1, small quantities of other compounds have been found in sebum. Detectable amounts of androgens are present in skin surface lipids (19); however, the amounts of these steroids are considered too small to claim that the sebaceous glands play a notable role in the total body excretion of androgens. Paraffinic hydrocarbons, such as pristane, also have been shown to be of sebaceous origin (2). Their presence is speculated to be linked to diet.

The influence of diet on skin lipids is another factor that adds to the chemical complexity of skin surface lipids. Fasting causes a 50% reduction in the synthesis of fatty acids, wax esters, and triglycerides, although not influencing squalene production (19). Likewise, the absence of dietary essential fatty acids (linoleic acid) results in a stratum corneum with a changed appearance and a significantly reduced barrier function (2). Nicolaides (21) showed that feeding 1-[¹⁴C] octadecane to the rat led to the presence of the labeled substance in the skin. Although a complete understanding of skin metabolism is not yet available, it is important to remember that some of the components found in the skin surface lipids are present simply because the skin was the most efficient route of "waste" removal.

When examining the components found in skin surface lipids, the possibility that the trace substances are from exogenous sources must be considered. The obvious sources are cosmetics, topical pharmaceuticals, toiletries, and environmental pollutants. Although most studies that use skin surface lipids collected from human donors try to eliminate these contaminants, the reservoir function of the stratum corneum makes it particularly difficult to remove totally some substances from the skin surface. Because chemicals can be