face lipid present on healthy, unprotected skin will plateau a few hours after the skin has been thoroughly washed (33).

The rate of sebum production does not show seasonal changes (9), although it is again possible to demonstrate seasonal variations in perceived oiliness of the skin, primarily because of the amount of perspiration and other factors that affect the sebum refatting and redistribution processes.

V. MODEL SKIN SURFACE LIPIDS

One approach to determining the effect that skin surface lipids have on topical formulations is to model either the properties or composition of skin surface lipids by using readily available materials. This avoids the laborious task of pooling lipids from volunteers and provides the investigator with convenient quantities of lipid material. Skin surface lipid models are of interest to not only cosmetic and pharmaceutical industries but, also, to the detergent industry, for which they are used to compare the abilities of laundry formulations to clean soiled fabrics. Because of this interest from various factions of the industrial research community, a number of model skin surface lipids are cited in the literature. However, most of these models were designed for specific studies, thus, limiting their practicality in evaluating cosmetic and pharmaceutical topical agents. The compositions of some of these model lipids will be given, and the advantages and disadvantages of each model will be discussed, in this section.

The Friberg–Osborne model skin surface lipid (34) given in Table 4 is based on the chemical composition elucidation studies that have been carried out by various investigators. In this model, each of the major chemical factions of human sebum are represented by a purified commercially available chemical. For instance, the triglycerides are represented by triolein, whereas the wax esters are represented by oleic acid palmitic ester. This model has two major advantages: it chemically mimics natural sebum, and it is a single-phase liquid that is easy to work with at ambient temperatures. This second advantage is also the model's strongest disadvantage, because the physical properties of sebum (melting point about 35°C) are not obtained. This model was initially used to describe the phase behavior of a simplified cosmetic system when mixed with the model lipid. It is in this capacity that a single-phase liquid model becomes essential for practical studies.

Another model, which is based on the chemical components found in natural skin surface lipids, is given in Table 5. Again, the major advantage to this model is that it chemically mimics the skin lipids. At room temperature, this mixture is a waxy solid that