Table 5.8 Composition of the Morris Skin Surface Lipid Model

Component	%
Squalene	8
Tristearin	23
Triolein	23
Stearic acid	15
Oleic acid	15
Cholesterol	8
Octadecanol	8

contains considerable crystalline material, even after repeated melting and cooling cycles. It is the presence of crystalline material, even at 60°C, that limits the usefulness of this model because it is difficult to manipulate samples of this nonhomogeneous mixture at ambient temperatures.

Spangler's sebum model (Table 6) dates back to 1964 and comprises a mixture of natural fats and oils (35). After melting, mixing, and then cooling these components, a homogeneous waxy material results that mimics well certain physical properties of skin surface lipids. This model has the chemical advantage of comprising multiple components that have a wide range of branching and of degrees of saturation. Unfortunately, the chemical properties of vegetable oils are unlikely to be similar to those of human sebum, and the rationale for the materials used appears to be based on obtaining a wax at ambient temperatures. This model has the added problem of crystal formation after approximately 1 month on the shelf.

The Gordon model (Table 7) resembles that of Spangler, but it was designed for the double-label radiotracer studies that are used to compare the detergency of a series of detergent systems (36). The advantages of this doubly labeled system also apply to topical formulations; namely, the selectivity of a formulation can be investigated, while the number of experiments is minimized. The commercial availability of the radiolabeled material dictated the composition of this model. The very similar Morris model (Table 8) was originally used to determine retention of an artificial oily soil on cotton and polyester–cotton durable-press fabrics after laundering (37). This model has the slight advantage that all of the components are readily available.