



Figure 9.25 (Continued)

### III. OPTIMIZATION TECHNIQUES

Before discussing how to design an experiment to optimize a formulation, some terminology should be clarified. First, the difference between trial and experiment, as used in this section, should be described. When considering formulations, the result of each *trial* is a finished product possessing a set of properties (e.g., potency, viscosity, density, appearance). After completing a sufficient number of trials, an optimized formulation can be selected to satisfy the critical product characteristics. A set of trials resulting in an optimized formulation is called an *experiment*. Thus, to design an experiment is to select a series of unique or replicate trials that will ultimately provide sufficient information to select an optimized formulation. Each trial will differ in the conditions, that is, in the *variables* used to formulate the product (variables might include