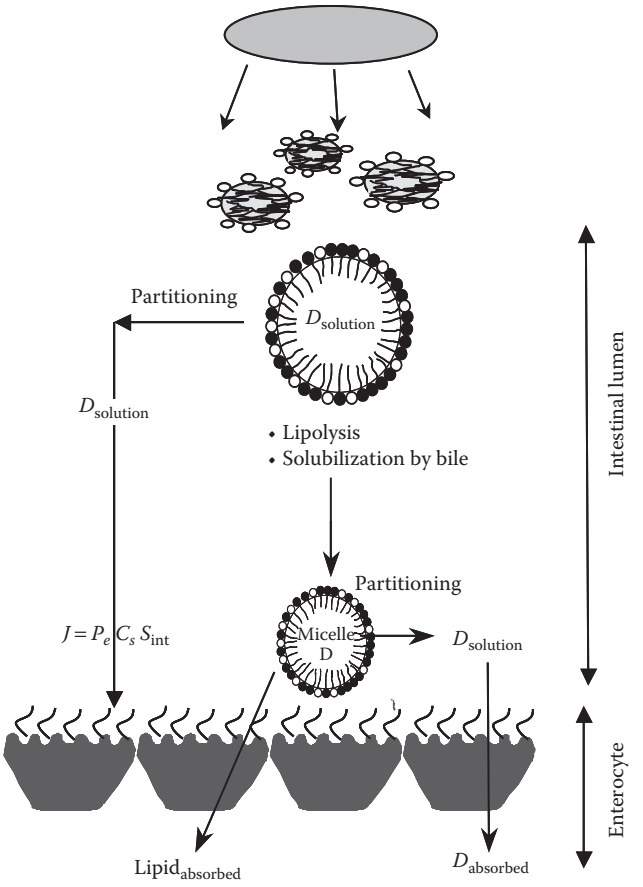


**FIGURE 11.2** Illustration of the dispersion and intestinal processing of LBDDSs.

then the digestion process is responsible for the dispersion and breakdown of the formulation to extract the drug. In the 1970s, Carrigan and Bates assessed the absorption of griseofulvin in rats from a sesame oil suspension, an o/w emulsion, and an aqueous suspension (see Figure 11.3). While the emulsion was found to have the highest bioavailability, the oil suspension significantly increased absorption, apparently due to digestion of the oil and subsequent solubilization of the drug. Furthermore, the variability in $C_{max}$ and $AUC_{\infty}$ decreased in the following order: aqueous suspension > oil suspension > emulsion. Hence, the emulsion formulation was found to enhance drug absorption in a reproducible and uniform manner (Carrigan and Bates, 1973). In contrast to formulations composed only of triglyceride, a self-emulsifying formulation may have very little dependence on digestive processes.

Pouton (2000) has proposed a classification system that balances the inherent dispersibility of the formulations and their reliance on digestion to facilitate breakdown (Table 11.4). Type I formulations are simple drugs in triglyceride or mixed glycerides. These are expected to form coarse emulsions and maintain their solubilizing capacity for the drug *in vivo*. Type II formulations have added surfactant to improve the dispersibility, but have used more lipophilic surfactants to reduce potential for partitioning of the surfactant into the aqueous phase and ensure continued solubilization of the drug. Type III formulations are self-emulsifying systems using hydrophilic surfactants and cosolvents that increase the driving force for formation of oil-in-water emulsions or, with the right composition, microemulsions. These formulations have a high potential to lose solubilizing