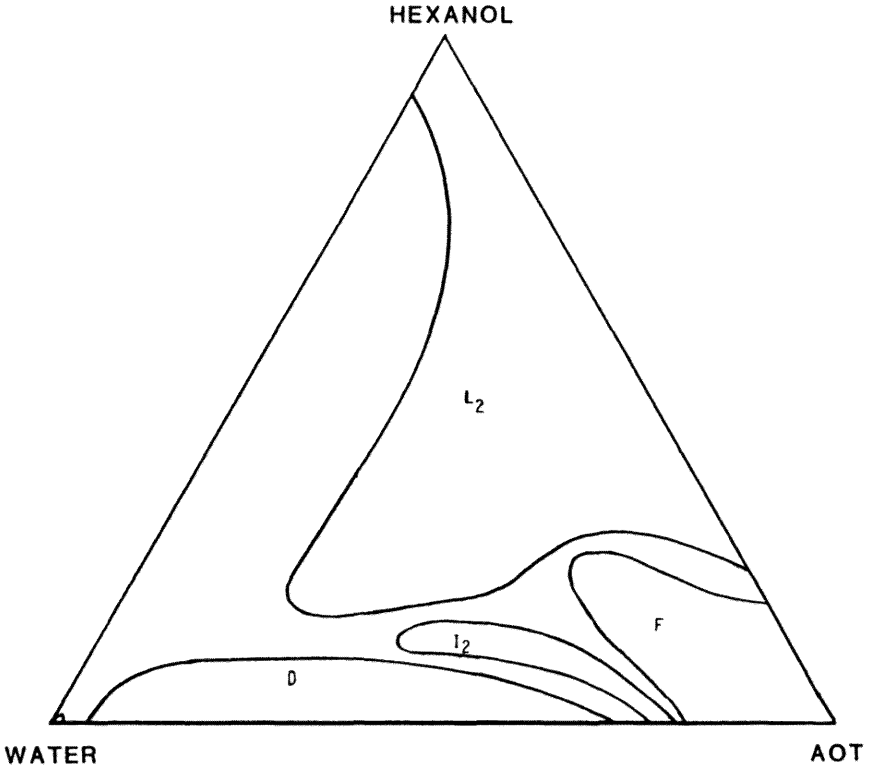

Figure 17.5 Phase diagram for the system water–hexanol–AOT at 24 ± 2°C. L_2 is the inverse micellar (microemulsion) region. Other phases are labeled the same as in Fig. 4.

prevents the formation of the cubic liquid crystalline phase that exists from 75% to 80% AOT in water. Thus, AOT-75 remains a liquid (viscosity approximately 200 cp), provided ethanol is not lost through evaporation. Unlike the medium-chain alcohols, ethanol shows very low irritation and toxicity. Thus, in these small amounts, ethanol is completely acceptable as a pharmaceutical ingredient. By determining the rheological properties of the miscible AOT-75–sorbitan laurate mixture, and characterizing the phase behavior of this surfactant mixture when combined with hexadecane and water, optimal compositions for a pharmaceutical low-alcohol microemulsion were determined.

As seen in Figure 8, addition of Arlacel 20 (viscosity approximately 5700 cp) does not dramatically increase the viscosity of AOT-