

Oil-in-water (O/W) emulsions are among the dispersion systems commonly used in food, and these emulsions are in thermodynamically unstable or metastable states. In this paper, various methods for preparing O/W emulsions are outlined. Since the commodity value of food is impaired by the destabilization of O/W emulsions, experimental and theoretical approaches to assess the stability of O/W emulsions are overviewed, and factors affecting the dispersion stability of emulsions are discussed based on the DLVO theory and the concept of the stability factor. The oxidation of lipids in O/W emulsions is unhealthy and gives rise to unpleasant odors. Factors affecting the autoxidation of lipids are discussed, and theoretical models are used to demonstrate that a reduction of the oil droplet size suppresses or retards autoxidation. Microencapsulated lipids or oils exhibit distinct features in the oxidation process. Models that explain these features are described. It is demonstrated that a reduction in the oil droplet size is also effective for suppressing or retarding the oxidation of microencapsulated oils.

Methods for preparing O/W emulsions, experimental and theoretical approaches to assess the stability of O/W emulsions, and factors affecting the oxidative stability of lipid in O/W emulsion and microencapsulated systems are described.

