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Improving Emulsion Formation, Stability and Performance using Mixed Emulsifiers: A Review

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Abstract

The formation, stability, and performance of oil-in-water emulsions may be improved by using combinations of two or more different emulsifiers, rather than an individual type. This article provides a review of the physicochemical basis for the ability of mixed emulsifiers to enhance emulsion properties. Initially, an overview of the most important physicochemical properties of emulsifiers is given, and then the nature of emulsifier interactions in solution and at interfaces is discussed. The impact of using mixed emulsifiers on the formation and stability of emulsions is then reviewed. Finally, the impact of using mixed emulsifiers on the functional performance of emulsifiers is given, including gastrointestinal fate, oxidative stability, antimicrobial activity, and release characteristics. This information should facilitate the selection of combinations of emulsifiers that will have improved performance in emulsion-based products.

Keywords: emulsifiers; mixed; emulsions; nanoemulsions; competitive adsorption; performance.