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Enhancing encapsulation efficiency of food-grade double emulsions containing resveratrol or vitamin B_{12} by membrane emulsification

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ABSTRACT

Monodisperse food-grade water-in-oil-in-water ($W_1/O/W_2$) double emulsions containing either *trans*-resveratrol (RSV) or vitamin B_{12} were prepared with high encapsulation efficiencies. Two techniques were employed: Conventional and membrane emulsification (ME).Encapsulation efficiency (EE) and storage release with time were determined. The emulsions were characterized by droplet size distribution, stability (by Turbiscan analysis) and rheological behaviour. EE was determined by RP-HPLC using UV-vis and fluorescence detectors.

Mechanical agitation leads to polydisperse emulsions, while ME gives emulsions with uniform droplets of 59.82 ± 0.21 µm controlled mean size and span values in the range of 0.87-0.90. The EE for both bioactive compounds was considerably higher with ME, resulting in an initial increase of 24.7% for $W_1/O/W_2$ double emulsions containing RSV and of 8% for emulsions