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Characteristics of the Membrane Emulsification Method Combined with Preliminary Emulsification for Preparing Corn Oil-in-Water Emulsions

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A novel membrane emulsification method was used to prepare corn oil/water (O/W) emulsions (25 wt% oil phase) with sharp particle diameter distribution. When pre-emulsified O/W emulsions were used as dispersing fluids instead of the oil phase (corn oil+emulsifier), the membrane emulsification was carried out easily with a high emulsifying rate up to 3.5 m³/(h·m²-membrane). Mean particle diameters of the emulsions were about twofold those of the mean pore sizes of the porous glass membranes used. The particle diameter of the emulsions decreased with increasing applied pressure or flux of the pre-emulsified emulsion through the membrane. Because of the high stability of the membrane emulsified emulsion particles, little change in particle diameter distribution occurred over several weeks. The kind of emulsifying agent influenced the particle diameter distribution and the creaming rate.

Keywords: [membrane emulsification](#), [pre-emulsified emulsion](#), [particle diameter distribution](#), [emulsifying rate](#)



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