【学会発表】

演題名	Preparation of maslinic acid nanodispersions by solvent displacement method
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【発表内容】

目的

In this study, the objective was to find how the particle size and its polydispersity index are affected by the processing parameters of the solvent displacement method, and how the physicochemical stability was affected during the storage time.

方法

Maslinic acid (MA) solution was extracted by magnetic stirring for 24 h, by dissolving 5g MA powder into 100mL 99.5% of ethanol, which was used as dispersed phase, different emulsifiers were dissolved into Mill-Q water with a weight fraction of 0.3 wt% as aqueous phase. As mentioned the solvent displacement method was performed in this experiment. First, the dispersed phase was added to the aqueous phase at different fraction of 1:9 by volume, by using syringe pump at a speed of 2.5 mL/min, at room temperature, under continuous magnetic stirring for total 10 min. Secondly, the nanodispersions were evaporated at 36 ºC under 67 HPa to remove the ethanol. At last, the HPLC was applied to measure the concentration of maslinic acid.

結果

The results showed that it is possible to obtain dispersions at a nanoscale range via solvent displacement. Processing parameters such as addition rate, stirring speed and different emulsifiers were applied that affected the particle sizes and the particle size distribution. Different polysorbate emulsifiers (Tween series) were used as the continuous phase to produce nanodispersions, Tween 40 resulted in the largest particle size range from 121 nm to 132 nm, Tween 60 contributed the smallest particle size range from 116 nm to 126 nm. Among the different groups of emulsifiers, modified lecithin contributed the smallest droplet size below 97 nm at the emulsifier concentration of 0.9 wt%, sodium caseinate gave the largest particle size of 143 nm at the emulsifier concentration was 0.7 wt%. The lowest emulsifier concentration of 0.3 wt% produced maslinic acid nanodispersions with small particle size and narrow particle size. No consistent trends were observed for particle size, when the emulsifier concentration was increased from 0.3 wt% to 0.9 wt%. When the concentration of 0.3 wt% modified lecithin was used to produce nanodispersion, the particle size had a downward tendency with stirring speed increasing (100, 300, 500, 700 rpm). During the 30 days of storage, all samples showed excellent chemistry stability, the concentration of maslinic acid gave the highest result when the addition ratio (dispersed phase: continuous phase) is 1:9 prepared by using ML as emulsifier is 582 μg/mL.