



Nanoemulsion preparation

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Abstract

This protocol demonstrates the preparation of *Alpinia galanga* oil nanoemulsion composed of water, surfactant (Tween 20, Tween 80, and Triton X-100), and the essential oil (active pharmaceutical compound; *Alpinia galanga* oil).

Materials

MATERIALS

- ⊗ Triton® X-100 **Catalog #0694**
- ⊗ Tween® 80 **Merck Millipore (EMD Millipore) Catalog #822187**
- ⊗ Tween® 20 **Merck Millipore (EMD Millipore) Catalog #822184**
- ⊗ Ethanol absolute **Merck Millipore (EMD Millipore) Catalog #107017**



Preparation of the water phase and oil phase

- 1 The water phase was prepared by adding water soluble ingredients (water and surfactant; Tween 20, Tween 80, and Triton X-100) and then vortexed for 5 min. The oil phase consists of oil soluble ingredient (*Alpinia galanga* oil).

Preparation of the pre-emulsions

- 2 The water phase and the oil phase were heated to 50-55°C. Subsequently, the heated water phase was added to the heated oil phase and the obtained mixture was stirred at 50°C for 5 min.

High speed stirring and high pressure homogenizer

- 3 The pre-emulsions obtained from step 2 were subjected to high speed stirring using an Ultra-Turrax T25 (Janke and Kunkel GmbH, Germany) at 16,000 rpm for 5 min and were then passed through a high pressure homogenizer (Avestin Inc., Canada) under pressure of 10,000 psi for 7 cycles at room temperature.