

International Conference and Exhibition on

# NANOMEDICINE AND DRUG DELIVERY

May 29-31, 2017 Osaka, Japan

## Aerosolized quercetin-loaded nanoemulsions for pulmonary delivery

Mohd Basyaruddin Abdul Rahman, Noor Hafizah Arbain, Norazlinaliza Salim and Ngan Cheng Loong  
Universiti Putra Malaysia, Malaysia

Quercetin is a hydrophobic drug commonly studied and used to treat lung cancer. However, poor hydrophilicity leads to low solubility and hinders its application in water-based formulation. Oil-in-water (o/w) nanoemulsion is capable of delivering poorly water-soluble drugs. D-optimal mixture design was used to optimize the particle size of quercetin (QT) nanoemulsions for lung cancer by aerosols delivery. A very small droplet size of emulsion can provide an effective encapsulation for delivery system in the body. The formulation was carried out using low and high pressure homogenizer. The effects of palm oil esters: ricinoleic acid, lecithin, Tween 80, glycerol, and water on the droplet size as a response were studied. Under optimum formulation, the corresponding predicted response value for droplet size was 109.05 nm, excellent agreement with the actual value (109.12 nm) with residual standard error, 0.06%. Volume median diameter of nanoemulsion was  $4.907 \pm 0.067 \mu\text{m}$ . These results suggest that quercetin nanoemulsion in this study is ideal for pulmonary delivery.

basya@upm.edu.my