

10th International Conference & Exhibition on

PHARMACEUTICS & NOVEL DRUG DELIVERY SYSTEMS

March 13-15, 2017 London, UK

Optimization of quercetin Oil-in-Water (O/W) nanoemulsion aerosols 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

Synthesis of Star copolymers of pyridine-hyperbranched polyglycidol (Py-HPG) core with multiarms of poly(ϵ -caprolactone)-block- hyperbranched polyglycidol PCL-HPG for drug delivery system

Alaa Kadhim¹, Lance Twyman¹ and Haishang Wang²

¹Sheffield University, UK

²Institute of Molecular and Cell Biology, Singapore

Ring opening polymerization was employed to prepare a new type of star polymers of hyperbranched polyglycidol (HPG) core with multiarms of PCL-HPG using the core-first method. Micelles formed from Py-HPG- PCL-HPG copolymers were investigated as a novel drug delivery system. The structure of the star copolymer was characterized using ¹HNMR, GPC, DLS and TEM. Number of drug molecules that are different in size and hydrophobicity were encapsulated within the hydrophobic region of the micelle with good extent of loading. The cytotoxicity of the star copolymer was investigated with human breast adenocarcinoma (MCF-7) cell line. Py-HPG-PCL-HPG is non-toxic delivery system that can delivery verity of small and large drug molecules.

akadhim1@sheffield.ac.uk