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EFFECT OF CONCENTRATION OF LIPID AND TEMPERATURE ON THE FORMATION OF NARINGENIN LOADED SOLID LIPID NANOPARTICLES

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Abstract

Naringenin is a natural flavonoid which is commonly found in large amounts of natural plants including citrus fruits, tomatoes, cherries, cocoa and grapefruit. Naringenin has a molecular weight of 272.26 and is described as poorly soluble in water. Due to its poor solubility, it will lead to low bioavailability. The aim of this study is to determine the efficiency of using solid lipid nanoparticles (SLN) method in improving solubility of Naringenin. Other than that, concentration of lipid and temperature were studied as well to determine the optimum formation of NRG-SLNs. Solubility of Naringenin is enhance by method of solid lipid nanoparticles. Materials that were used is Naringenin as active ingredient, stearic acid as lipid phase, Tween 80 as non-ionic surfactant and olive oil. As for the oil selection test, the naringenin was determined in several types of oils such as

sunflower oil, eucalyptus oil, coconut oil and olive oil. The Naringenin-Solid Lipid Nanoparticles (NRG-SLNs) were prepared by separately two beakers with label of lipid phase and aqueous phase. These different beakers will be mix through some process and will be sonicate and temperature must be maintained at 85°C. On the other hand, the concentration of lipid and temperature are highlighted as the parameter in this study. Evaluation of the prepared SLNs inclusive of drug content uniformity, solubility studies, in vitro dissolution, transmission electron microscopy (TEM) and short-term stability studies. Based on the particle characterization, the particle size of NRG-SLNs ranging from 144 – 648 nm. The polydispersity index (PDI) showed values of 0.609 – 0.721. PDI is indicator if size distribution homogeneity. Zeta potential result was -0.112 mV which is nearly neutral. Other than that, the encapsulation efficiency of Naringenin encapsulated by SLNs method ranging from 77% - 82%. The solid lipid nanoparticles method was proven to significantly improve solubility and enhance stability profile of naringenin compared to the pure naringenin. © 2022 Deuton-X Ltd. All rights reserved.

Author keywords

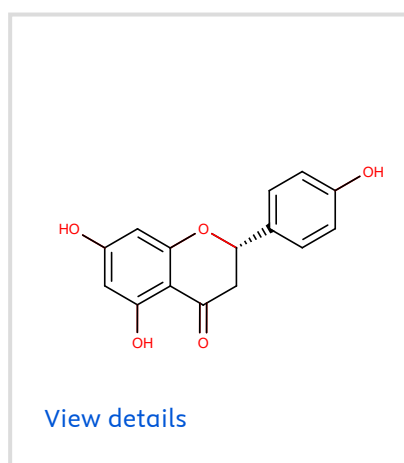
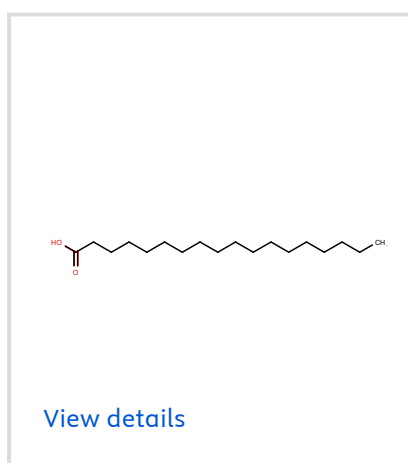
concentration of lipid; Naringenin; solid lipid nanoparticles; temperature

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