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Nanostructured-lipid carriers for the encapsulation of vitamin E

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Nanostructured lipid carriers (NLC), a type of nanoparticles, were produced from mixtures of solid and spatially incompatible liquid lipids and have turned into a mature novel pharmaceutical form. This improved lipid nano-carrier has been widely applied into oral, ocular, transdermal and intravenous administration. For dermal application in this research, NLC offered advantages i.e. improved drug loading capacity, controlled drug release and drug targeting. Furthermore, NLC exhibited occlusive effects and could increase skin hydration by the joint action of some certain penetration enhancement. The objectives of the present work was to prepare tocopherol-loaded NLC by the method of emulsion-evaporation and low temperature-solidification technique using glycerol monostearate (GMS) as solid lipids and medium chain triglycerides (MCT) as liquid lipids, and to investigate the physicochemical properties, such as particle size, morphology, crystallinity, loading efficiency, *in vitro* release behavior, etc. Emulsion-evaporation and low temperature-solidification technique was successfully employed for the encapsulation of tocopherol, in which well-shaped and rigid nanoparticles were prepared (FE-TEM). Mean particle size was around 400 nm, and there were no obvious changes in particle size between SLN and NLC below 15% of MCT content. However, the particle size of NLC decreased sharply above 25% of MCT ($p < 0.05$). As MCT content increased, loading efficiency increased above 80%. These results indicate that liquid lipids can be used for the encapsulation of tocopherol and physicochemical properties of nanoparticles can be improved by controlling the content of the liquid lipids.

Biography

Bum Keun Kim has completed his PhD from Korea University and Post-doctoral studies from Korea Food Research Institute. He is the Principal Research Scientist of Korea Food Research Institute, a premier food science organization. He has published more than 25 papers and patents.

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