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Resveratrol Incorporated Liposomes Prepared from Pegylated Phospholipids and Cholesterol

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Abstract : Liposomes and pegylated liposomes were widely used as drug delivery system in pharmaceutical field since a long time. However, in the former time, polyethylene glycol (PEG) was connected into phospholipid after the liposomes were already prepared. In this paper, we intend to study the possibility of applying phospholipids which already connected with PEG and then they were used to prepare liposomes. The model drug resveratrol was used because it can be applied against different diseases. Cholesterol was applied to stabilize the membrane of liposomes. The thin film technique in a laboratory scale was a preparation method. The liposomes were then characterized by nanoparticle tracking analysis (NTA), photon correlation spectroscopy (PCS) and light microscopic techniques. The stable liposomes can be produced and the particle sizes after filtration were in nanometers. The 2- and 3-chains-PEG-phospholipid (PL) caused in smaller particle size than the 4-chains-PEG-PL. Liposomes from PL 90G and cholesterol were stable during storage at 8 °C of 56 days because the particle sizes measured by PCS were almost not changed. There was almost no leakage of resveratrol from liposomes PL 90G with cholesterol after diffusion test in dialysis tube for 28 days. All liposomes showed the sustained release during measuring time of 270 min. The maximum release amount of 16-20% was detected with liposomes from 2- and 3-chains-PEG-PL. The other liposomes gave max. release amount of resveratrol only of 10%. The release kinetic can be explained by Korsmeyer-Peppas equation.

Keywords : liposome, NTA, resveratrol, pegylation, cholesterol
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