Melike Üner et al., J Nanomater Mol Nanotechnol 2018, Volume 7
DOI: 10.4172/2324-8777-C1-021

Optimization of Solid Lipid Nanoparticles and Nanostructured Lipid Carriers for Treatment of Hypertension

Melike Üner[1] and **Samet Özdemir**[2]
[1]Istanbul University, Faculty of Pharmacy 34116 Istanbul, Turkey.
[2]Yeditepe University, Faculty of Pharmacy 34755 Istanbul, Turkey

Optimization of Solid Lipid Nanoparticles and Nanostructured Lipid Carriers for Treatment of Hypertension: Solid lipid nanoparticles (SLN) and nanostructured lipid carriers (NLC), the second generation of SLN, are sophisticated colloidal drug carrier systems for improving bioavailability of unsoluble/low-soluble drugs. Thesy may present various advantageous over their colloidal counteparts such as polymeric nanoparticles, liposomes e.t.c. In this study, SLN and NLC of eplerenone, an antihypertensive drug with low oral bioavailability, were aimed to optimize for parenteral application using the high-shear homogenization technique followed by ultrasonication. Particle size distribution and thermal behaviours of the formulations were investigated by dynamic light scattering (DLS) and differential scanning calorimetry (DSC) methods. Surface morphology of the formulations were investigated by scanning electron microscopy (SEM). Drug payload and drug release profiles of the formulations were determined. SLN and NLC were obtained in a 95-150 nm size range with homogeneous particle size distribution. SEM micrographs were consistent with DLS data indicating spheric nanoparticles. Drug payload of SLN and NLC was between 75 % and 80 %. The formulations displayed sustained drug release. Physically stable formulations were selected after 3 months of storage at various temperature conditions. Stability studies are being continued. The study is being continued with *in vivo* experiments.

As a result, SLN and NLC formulations were attempted to optimize successfully for parenteral application of eplerenone for treatment of hypertension attacks and bring attacks under control. Thus, increasing bioavailability and reducing systemic side effects of the drug will be able to provide. More effective therapy will be able to introduced.

Biography

MELIKE UNER has completed her MSc and PhD at Istanbul University in 1995 and 2001, respectively. She performed her postdoctoral studies at Istanbul University/Faculty of Pharmacy and Freie Universität Berlin/Institut für Pharmazie. She is a Professor at Istanbul University/ Faculty of Pharmacy, Department of Pharmaceutical Technology. She has published more than 25 papers in reputed journals and book chapters. She has presentations more than 35 in symposiums/ congresses.

melikeuner@yahoo.com

Notes: