allied academies

International Conference on
NANOSCIENCE & TECHNOLOGY
May 21-22, 2018 | New York, USA

Hydrocortisone acetate and sodium succinate liposomal preparations for ophthalmic application using microfluidics

M M Yaya
University of Bradford, UK

Liposomes are used in ophthalmic preparations to increase the corneal contact time and uptake of hydrophilic and hydrophobic APIs of ocular preparations. Microfluidic chips could be used as a continuous manufacturing process to produce nanoparticles. The aim of this experiment was to investigate the critical process and formulation factors in the liposomal preparation of hydrocortisone through microfluidic device. Three factors were investigated in this study: flow rate ratio (FRR), drug concentration (DC) and total lipid concentration (TLC). Liposomes particles size (PS), polydispersity (PDI) and drug entrapment efficiency (EE %) were selected as responses. Minitab software was used to construct a central composite design (CCD) to analyse the importance of these parameters. A microfluidic device (Y-type, 2 inlets) was used to produce a liposomal formulation for ophthalmic application. Hydrocortisone Acetate (HCA) and sodium succinate (HSS) were used as a model drug to investigate the effect of drug hydrophilicity on liposomes size and encapsulation efficiency. Lecithin and cholesterol were used as lipid. The obtained results show the FRR of water/ alcohol was the significant factor for both drugs in term of PS, PDI and (EE %). TLC and DC have an effect in case of HCA but not in case of HSS. The Highest drug EE% is 65 % for HSS and 29% for HCA. The design space for the physical characteristics (CQA) of liposomes was determined successfully with respect to the intended use.

e: moussa.mahamatyaya@hotmail.fr

Notes: