Janet Tan Sui Ling, J Pharm Drug Deliv Res 2018, Volume 7
DOI: 10.4172/2325-9604-C2-029

Mucoadhesive chitosan-coated Nanostructured Lipid Carriers (NLC) for oral delivery of Amphotericin B

Janet Tan Sui Ling
University of Nottingham Malaysia Campus, Malaysia

Oral delivery of Amphotericin B (AmpB) remains challenging due to physicochemical properties of AmpB such that it results in meagre bioavailability (0.3%). In an advanced formulation: (1) Nanostructured Lipid Carriers (NLC) were formulated as they can accommodate higher levels of cargoes and restrict drug expulsion and (2) a mucoadhesion feature was incorporated to impart sluggish transit along gastrointestinal tract and hence, maximize uptake and improve bioavailability of AmpB. Chitosan-coated and naked AmpB-loaded NLC formulations were successfully formulated. Physical properties of the formulations; particle size, zeta potential, encapsulation efficiency and mucoadhesion as well as the effect of the variable pH on the integrity of the formulations were investigated. The particle size of freshly prepared AmpB-loaded NLC was 163.1±0.7 nm, with a negative surface charge and remained essentially stable over 120 days. Adsorption of chitosan caused a significant increase in particle size to 348.0±12 nm with the zeta potential reverts towards positivity. The incorporation of chitosan increased the encapsulation efficiency significantly by 5%, to 99.3±0.15% and observed lower expulsion of AmpB after exposure to variable of pH conditions. The mucoadhesiveness of the ChiAmpB NLC formulation was observed in both acidic (pH 5.8) and near-neutral pH (pH 6.8) conditions as opposed to AmpB-loaded NLC formulation. Hence, the incorporation of chitosan into the NLC formulation did not only impart mucoadhesive property but also protected against the expulsion of AmpB which makes it well-primed as a potential oral delivery system for AmpB.

Biography

Janet Tan Sui Ling has completed her Master of Pharmacy in 2015 from University of Bath, UK. She was also awarded Royal Pharmaceutical Society Prize for Best Overall Third Year Student (2014), Pfizer Prize for Best Medicine Design in Third Year (2014), Vectura Prize for Best Advanced Drug Delivery (2015) and AstraZeneca Prize for Best in Cancer (2015). She is pursuing her PhD from the University of Nottingham Malaysia Campus.

khyx5jts@nottingham.edu.my

Notes: