Development and characterization of a novel lipid nanocapsule formulation of Sn38 for oral administration

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Résumé en anglais	The purpose of this work was to encapsulate 7-Ethyl-10-hydroxy-camptothecin (Sn38) in lipid nanocapsules (LNCs) using phase inversion-based method in order to deliver Sn38 by oral route. LNCs were prepared by a low-energy emulsification method and were characterized for size, polydispersity index (PDI), surface charge, drug payload, in vitro drug release, and storage stability. Moreover, in view of an oral administration, in vitro stability in gastrointestinal fluid and permeability across Caco-2 cells were tested. Sn38-loaded LNCs with a mean particle size of 38+/-2nm were obtained. The particles displayed a narrow size distribution and a drug payload of 0.40+/-0.07mg/g of LNC dispersion. In vitro stability in simulated gastric and intestinal media was also observed. Finally, Sn38-loaded LNCs improved permeability of Sn38 across Caco-2 cells (5.69+/-0.87x10(6)cms(-1) at 6h vs 0.31+/-0.02x10(6)cms(-1)) and intracellular concentration compared with free Sn38. In conclusion, Sn38 nanocarriers have been developed and display a strong potential for oral administration.
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