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Development and Characterization of Double Liposomes Based Dual Drug Delivery System for H. Pylori Targeting

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Abstract : The objective of the present investigation was to prepare and evaluate a vesicular dual drug delivery system for effective management of mucosal ulcer. Inner encapsulating and Double liposomes were prepared by glass bead and reverse phase evaporation method respectively. The formulation consisted of inner liposomes bearing Ranitidine Bismuth Citrate (RBC) and outer liposomes encapsulating Amoxicillin trihydrate (AMOX). The optimized inner liposomes and double liposomes were extensively characterized for vesicle size, morphology, zeta potential, vesicles count, entrapment efficiency and in vitro drug release. In vitro, the double liposomes demonstrated a sustained release of AMOX and RBC viz 91.4±1.8% and 77.2±2.1% respectively at the end of 72 hr. Furthermore binding specificity and targeting propensity toward H. pylori (SKP-56) was confirmed by agglutination and in situ adherence assay. Reduction of the absolute alcohol induced ulcerogenic index from 3.01 ± 0.25 to 0.31 ± 0.09 and 100% H. pylori clearance rate was observed. These results suggested that double liposomes are potential vector for the development of dual drug delivery for effective treatment of H. pylori-associated peptic ulcer.

Keywords : double liposomes, H. pylori targeting, PE liposomes, glass-beads method, peptic ulcers
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