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Research Article

Niosomal Delivery of Isoniazid - Development and Characterization

Gyanendra Singh[1], Harinath Dwivedi[1], Shailendra K Saraf[2] and Shubhini A Saraf[1]*

[1]Department of Pharmaceutics, Faculty of Pharmacy, Babu Banarasi Das National Institute of Technology & Management, [2]Faculty of Pharmacy, Northern India Engineering College, Lucknow (Uttar Pradesh), India

Abstract

Purpose: *To develop a niosomal formulation for the delivery of isoniazid to achieve effective treatment of tuberculosis.*
Methods: *Niosomes were prepared by reverse phase evaporation method and given a charge with a charge-inducing agent, dicetyl phosphate. Drug entrapment efficiency in the niosomes was determined spectrophotometrically. The niosomes were further characterized for their particle size, polydispersity index (PI) and zeta potential as well as by scanning electron microscopy and stability studies. Furthermore, in vitro drug release and cellular uptake studies on the niosomes by macrophage J744 A were undertaken.*
Results: *Suitable isoniazid niosomes were obtained. The niosomes demonstrated a potential to remain in the treated site for prolonged periods and were also capable of maintaining steady drug concentrations for up to 30 h. Cellular uptake of the drug-loaded niosomes by macrophage cells was as high as 61.8 %, a level that is capable of achieving effective treatment of tuberculosis.*
Conclusion: *The isoniazid niosomes developed are capable of reducing drug dose and toxicity as well as dosing frequency which should bring about improved patient compliance. More importantly, macrophage targeting should be feasible at sites where tuberculosis bacteria are harbored.*

Keywords: *Niosome, Macrophage targeting, Isoniazid, Tuberculosis, Drug release, Cellular uptake.*

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****Corresponding author**: E-mail:* shubhini.saraf@gmail.com; **Tel:** +91-522-3911132; **Fax:** +91-522-2815187