

Triacetin based self emulsifying formulation of a poorly water soluble drug

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The present study deals with formulation of a Triacetin based Self emulsifying formulation of a poorly water soluble drug. Triacetin (Glyceryl Triacetate) is a water miscible solvent with high capacity for solubilizing lipophilic agents. This property of triacetin makes it an interesting excipient to work with especially in case of self emulsifying formulations as it can serve a dual purpose of co-solvency as well as an emulsification aid.

The present research work describes a Self Emulsifying Formulation (SEF) of furosemide using triacetin as a co-solvent. Furosemide is a high loop diuretic with limited water solubility, which accounts for a low and variable oral bioavailability (20%-60%). Hence, the main objective of study was to formulate SEF of furosemide in order to achieve a better dissolution rate which would further help in enhancing oral bioavailability.

Pseudo-ternary phase diagrams were plotted to check for the micro-emulsification range and also to evaluate the effect of triacetin on the emulsification behavior of the phases. The mixtures consisting of Maisine or Labrafac hydro (HLB value > 4) with surfactant (Tween 80), co-surfactant (PEG 400) and co-solvent (Triacetin) were found to be optimum formulations. Increasing triacetin concentration in the formulation resulted in a wider micro-emulsion existence field as compared to combinations containing no or lower amounts of triacetin. Particle size of the developed formulation was found to be (<100nm) with poly dispersibility index of 0.0876. Freeze thaw cycling and centrifugation studies were carried out to confirm the stability of the formed SEF. The formulation was found to show a significant improvement in terms of the drug release with complete release of drug within 15 minutes. Thus, Self microemulsifying formulation of furosemide was successfully developed.