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DESIGN AND EVALUATION OF SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEMS OF MANIDIPINE FOR ENHANCEMENT OF SOLUBILITY

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ABSTRACT

Objective: The present work is aimed at developing liquid self-nanoemulsifying drug delivery system (liquid-SNEDDS) of manidipine.

Methods: The manidipine SNEDDS is formulated with excipients comprising Capmul MCM as oil phase, Transcutol P as surfactant, and Lutrol L 300 as cosurfactant. The prepared fifteen formulations of manidipine SNEDDS were performed for emulsification time, percentage transmittance, particle size, drug release, *in vitro* dissolution and stability studies. Ternary phase diagram plotted using Chemix software.

Results: The optimized manidipine liquid SNEDDS formulation (F14) subjected to drug-excipient compatibility studies by Fourier-transform infrared spectroscopy and characterized for particle size, zeta potential, scanning electron microscopy, and stability studies. The morphology of manidipine SNEDDS indicates spherical shape with uniform particle distribution. The percentage drug release from optimized formulation F14 (98.24±5.14%) was higher than that of pure drug (39.17±2.98%). The stability data indicated no noticeable change in drug content, emulsifying properties, drug release, and appearance.

Conclusion: Hence, a potential SNEDDS formulation of manidipine developed with enhanced solubility, dissolution rate, and bioavailability.

Keywords: Manidipine, Hypertension, Self-nanoemulsifying drug delivery system, Solubility studies, Capmul MCM.

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