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Design and Evaluation of Artemether Self-Micro Emulsifying Drug Delivery System for Enhancing Solubility and Dissolution Rate

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ABSTRACT:

In the current investigation, Self-microemulsifying drug delivery formulation was prepared for BCS class II drug (Artemether) for increasing its solubility and bioavailability. Artemether shown maximum solubility in oleic acid (oil), acconon MC8-2 EP/NF (surfactant), lauroglycol 90 (co-surfactant) with which Self-microemulsifying drug delivery formulation was prepared. Ternary phase diagrams constructed to identify the micro emulsion region, maximum micro emulsifying region found at surfactant to co-surfactant ratio of 2:1. The formulations A4 have RHLB 6.6, globule size 180 nm with PDI 0.25 and % drug released 98.72% within 80 min in 0.1N HCl. Globule size & zeta potential studies demonstrate physical stability of the system while DSC and FTIR studies confirmed incorporation of drug in Self-microemulsifying drug delivery components. The in-vitro rate of drug release was significantly enhanced with Self-emulsifying drug delivery formulation with respect to pure drug. Thus we may conclude that improvement in drug solubility, rate of dissolution and thereby oral bioavailability was achieved by preparing Self emulsifying drug delivery system for Artemether.

KEY WORDS: Self emulsifying drug delivery system (SMEDDS), Artemether, Ternary Phase diagram, Saturation Solubility.

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