Preparation and characterization of self-Nanoemulsifying drug delivery system (SNEDDS) for oral delivery of curcumin

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Abstract

Introduction: Curcumin is a compound possessing different pharmacological effects which is poorly soluble. Also, bioavailability of curcumin is low. In this study we aimed to improve solubility and bioavailability of curcumin by developing a self-nanoemulsifying drug Delivery system (SNEDDS) for oral delivery of curcumin.

Methods and Results: Box –behnken was used to design optimum run. Several factors such as concentration of solvent, surfactant, and co-solvent were independent while dependent factors include droplet size, PDI (poly dispersity index), and zeta potential. Although, release test and study EE % (Entrapment efficiency) were done and images were taken using a TEM microscope.
Droplet size of optimized formulation SNEDDS was 245.22 nm. PDI and zeta potential were 0 .38 and -1.28 mv, respectively. TEM images showed that the particles were spherical with no sign of aggregation. Also, our results revealed slow release profile.

Conclusions: The obtained results indicated that SNEDDS could be considered as a good candidate for oral delivery of curcumin to improve its solubility and bioavailability as an active ingredient.

Key words: Curcumin, SNEDDS, Solubility, Bioavailability