Section A-Research paper
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FORMULATION AND EVALUATION OF SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEMS

Sonali S. Chine
SRES, Sanjivani College of Engineering, Kopargaon, S. P. P. U, Pune, M. S. India
Dr. I. S. Chakrapani
Assistant Professor of Zoology, PRR & VS Govt College, Vidavalur, Nellore
Dr. Sudhir Maddela
Associate Professor, Department of Pharmaceutics, Nirmala College of Pharmacy, Atmakuru, Mangalagiri, Guntur District, Andhra Pradesh.
Parth R Gharat
Central Ayurveda Research Institute, Ministry of Ayush, Kolkata
D. T. Sakhare
Assistant Professor, Department of Chemistry, Shivaji Art's, Comm. & Science College, Kannad Dist. Aurangabad, 431103, Maharashtra, India
Dr Viraj Hanumantrao Mankar
Assistant Professor and Academic Incharge, Raigad College of Pharmacy, Mohopre Raigad, Maharashtra, India, 402301
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Abstract

It has become clear that self-nanoemulsifying drug delivery systems (SNEDDS) are a potential method for improving the solubility and bioavailability of medicines that are not highly water-soluble. Using Capmul MCM, Tween 80, Transcutol P, and olmesartan medoxomil as the oil, surfactant, co-surfactant, and medication, respectively, an optimal SNEDDS formulation was created in this work. The improved formulation's physicochemical characteristics, in vitro drug release profile, pharmacokinetic parameters, and acute and sub chronic toxicity were assessed. The findings revealed that the SNEDDS formulation had a high drug content of 95%, a zeta potential of -20 mV, and a particle size of 50 nm. The medication released consistently throughout a 12-hour period, according to the in vitro drug release profile. The pharmacokinetic analysis demonstrated that, in comparison to the pure medication, the SNEDDS formulation had a larger Cmax, AUC, and longer elimination half-life. According to tests on acute and sub-chronic toxicity, the formulation was well tolerated at low dosages while harmful effects were dose-dependent at higher concentrations. Overall, the findings showed that SNEDDS might be used as a drug delivery system to enhance the solubility, bioavailability, and pharmacokinetic characteristics of medicines that are poorly water-soluble.