Acta Scientific Pharmaceutical Sciences (ISSN: 2581-5423)

Volume 5 Issue 6 June 2021

Short Communication

Solubility and Thermodynamic Modeling of Cilostazol in Self Nanoemulsifying Drug Delivery System (SNEDDS)

Swati Talele[1]* and DV Derle[2]

[1]*Department of Pharmaceutics, Sandip Institute of Pharmaceutical Sciences, Nasik, India*

[2]*Department of Pharmaceutics, N. D. M. V. P. College of Pharmacy, Nasik, India*

***Corresponding Author:** Swati Talele, Department of Pharmaceutics, Sandip Institute of Pharmaceutical Sciences, Nasik, India.

Received: March 22, 2021

Published: May 20, 2021

Keywords: Cilostazol; SNEDDS; Thermodynamic Modeling; Solubility Studies

The present study gives prominence on the development of self-nanoemulsifying drug delivery system (SNEDDS) of poorly water-soluble Cilostazol drug using Apelblat model.

For the development of self-nanoemulsifying drug delivery system (SNEDDS) solubility in surfactant, co-surfactant and in oil phase are considered as an important key to avoid phase separation and precipitation after dilution. The solubility of cilostazol was determined by the isothermal mechanical shaking method for its individual components in the temperature range from 305.15 to 330.15K was measured. The experimental mole fraction solubility of Cilostazol was good correlated with calculated data by using modified Apelblat model. Prepared SNEDDS were evaluated in centrifugation, freeze-thaw cycle study, self-nanoemulsification efficiency test. Physicochemical properties of prepared SNEDDS including particle size, zeta potential, viscosity and refractive index were carried out.

The equilibrium saturated and mole fraction solubility of Cilostazol was found to be high in Maisine than SNEDDS, tween 80 and transcutol. Cilostazol equilibrium saturated solubility, as well as mole fraction solubility, was found to be increased with increase in temperature in SNEDDS as well as in its individual components Prepared SNEDDS was found to be highly stable at centrifugation, heating and cooling cycles and freeze-thaw cycles and shows no sign of precipitation after dilution in water. All physicochemical parameters were observed within specification including droplet size observed as 27.99 nm, polydispersity index 0.116, zeta potential-20.36 mv and the refractive index was observed as 1.355 which was nearer to the refractive index of water indicating the isotropic behavior of prepared SNEDDS.

The solubility study could be an effective approach for the development of thermodynamically stable SNEDDS formulation of poorly soluble drugs using Apelblat model.