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Development and evaluation of self microemulsion drug delivery system for Atorvastatin calcium

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Hypercholesterolemia is a condition characterized by very high levels of cholesterol in the blood. People with hypercholesterolemia have a high risk of developing a form of heart disease called coronary artery disease. Atorvastatin is a BCS class 2 classification groups and displays low resolution with high permeability. It has almost 14% bioavailability absolutely. As a consequence of modern drug discovery techniques, there has been a steady increase in the number of new pharmacologically active lipophilic compounds that are poorly water-soluble. There are a few studies which have also been proven to quite limited studies in order to improve solubility of new Atorvastatin's formulations. The aim of this study is to develop a new dosage form, alternative to the classical tablet forms of Atorvastatin. In this study, Atorvastatin calcium was used as the active ingredient, oleic acid was used as the oil phase, Tween 20 and Span 80 were used as the surfactants, and ethanol was used as the co-surfactant. The prepared self microemulsion drug delivery system (SMEDDS) formulations are characterized for size, shape, density, stability and dissolution studies. Permeation studies were also examined with Caco-2 cell culture. According to the obtained results, SMEDDS formulation had a higher dissolution profile and permeability value than the conventional tablet formulation.

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Determination of critical micelle concentration of lipid based systems with Cisplatin

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Surfactant solutions which are prepared by different concentrations could show rapid changes of its osmotic pressure, conductivity, turbidity and surface tension at higher concentrations. McBain associated these rapid changes with the formation of micelles or aggregates. The lipophilic hydrocarbon chains which have hydrophilic groups that interact with water phase move to the inner part of the micelles. The critical micelle concentration (CMC) is defined as the concentration of surfactants above which micelles form and all additional surfactants added to the system go to micelles. The aim of this study is determination of critical micelle concentration of lipid based system with cisplatin by surface tension method. Isopropyl myristate was used as the oil phase, kolliphor were used as the surfactant, and propylene glycol was used as the co-surfactant to produce lipid based system. Surface tension is typically measured in dynes/cm, the force in dynes required to break a film of length 1 cm. There are several methods to measure the surface tension such as Wilhelmy plate, capillary rise method, and drop weight method. In this study, traube stalagmometer is used for drop weight method. Water and HCl buffer with pH 1, 2 and phosphate buffer with pH 6, 8 were used as solvents. $0.24x10^{-3}$, $1.2x10^{-3}$, $2x10^{-3}$, $4x10^{-3}$ and $6x10^{-3}$ g/ml concentrations of SMEDDS with cisplatin are prepared to measure surface tension in these solvents.

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