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Development and evaluation of SEDDS pellet 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 group 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 improvement solubility of new Atorvastatin's formulations. Among the approaches to improve the oral bioavailability of this molecule, the use of self-emulsified drug delivery pellet systems (SEDDS-pellet) has been shown to be reasonably successful in improving the oral bioavailability of poorly water-soluble and lipophilic drugs. The aim of this study was 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, N-methylpyrrolidone was used as the co-surfactant and both Avicel and Aerosol were used as the solid phase. The prepared SEDDS-pellet formulations were characterized for size, shape, density, stability and dissolution studies. Permeation studies were examined with Caco-2 cell culture. According to results, SEDDS-pellet formulation had a higher permeability value than the conventional tablet formulation..