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Pitavastatin-containing nanoemulsions: Preparation, characterization and *in-vitro* cytotoxicity

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Pitavastatin (PT) as a new member of the HMG-CoA reductase inhibitors has been designed as a drug with a novel cyclopropyl moiety that resulted in several advantages compared to other statins. PT inhibits the cholesterol synthesis and increase lipoprotein lipase expression at lower doses than other statins. In this study, pitavastatin-containing nanoemulsions were prepared in order to increase the intestinal absorption. The effects of the charges of the nanoemulsions and of other physicochemical key properties were studied. The nanoemulsions were produced with a microfluidization method using different homogenization pressures, durations and temperatures. The nanoemulsions were characterized by measuring the droplet size, size distribution, zeta potential and permeability as well as cytotoxicity using Caco-2 cells. Five hundred bar, 15°C and 3 min were needed for producing positively charged nanoemulsions, while 4 min were needed for preparing negatively charged nanoemulsions. The cytotoxicity studies using Caco-2 cells revealed that both types of nanoemulsions, positively and negatively charged, were not cytotoxic. The positively charged nanoemulsions showed the highest permeation through Caco-2 cell lines, compared to the negatively charged nanoemulsions and a drug solution. The increased permeation of the positively charged nanoemulsion can serve as a sign for a possible increased bioavailability and can probably enhance the absorption of the drug.

Biography

Yücel Baspinar received his PhD from Institute of Pharmacy at Free University Berlin in 2009 and worked as Post-doc in the Department of Pharmacology and Toxicology until 2010. From 2011-2013, he worked at the Center for Drug Research and Development and Pharmacokinetic Applications (ARGEFAR) as Head of Product Development and Quality Control Laboratory. Since 2013, he is a full time Assistant Professor of Pharmaceutical Biotechnology at the Ege University, in Izmir-Turkey. He has published more than 10 papers in refereed journals. His research interests include pharmaceutical nanotechnology, pharmaceutical biotechnolgy, drug delivery systems, recombinant DNA technology and drug targeting cancer therapy.

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