Polyelectrolyte surfactant complexes of Cefditoren Pivoxil for improved dissolution

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Drugs with low aqueous solubility will have low bioavailability on oral administration. Conversion of these drugs to an amorphous form leads to high water solubility but the amorphous form is thermodynamically unstable and therefore shows some tendency to crystallize and reduced oral bioavailability.

Cefditoren pivoxil a cephalosporin antibiotic, which has low solubility in water and thus bioavailability is low on oral administration. The main objective of this work was to investigate the possibility of improving the solubility and dissolution rate of Cefditoren pivoxil by preparing stable polyelectrolyte surfactant complexes.

The present study was planned to prepare polyelectrolyte polymer – surfactant – Cefditoren pivoxil drug dispersions using various polymers such as HPMC, PVP and PEG and sodium lauryl sulfate as surfactant in different solvent systems. The polyelectrolyte surfactant complexes are prepared by solvent evaporation technique. These microparticles were characterized by infrared spectroscopy, X-Ray diffractometry and evaluated for the drug content, release characteristics. Promising results were obtained in the study, which indicates the applicability of polyelectrolyte surfactant complexes as a tool for improving stability, solubility and bioavailability of poorly soluble drugs.

New development in controlled drug delivery: Buoyant systems

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Floating Drug delivery system are mainly designed to prolong the gastric residence time after oral administration, at particular site and controlling the release of drug especially useful for achieving controlled plasma level as well as improving bioavailability. These are the systems which are retained in stomach for longer period of time. Floating drug delivery systems have a bulk density less than gastric fluids and so remain buoyant in the stomach without affecting the gastric emptying rate for a prolonged period of time. While the system is floating on the gastric contents, the drug is released slowly at the desired rate from the system. This results in an increased gastric retention time and a better control of fluctuations in plasma drug concentration after release of drug, the residual system is emptied from the stomach. These form important technological drug delivery systems with gastric retentive behaviour and offer several advantages in drug delivery. Ease of administration and patient compliance is enhanced due to a decrease in the mucosal irritation due to drugs. Many such buoyant systems have been developed based on granules, powders, capsules, tablets, laminated films and hollow microspheres.

Development of a validated HPLC method for the determination of B-complex vitamins in pharmaceuticals

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A simple and sensitive reversed-phase HPLC method was developed and validated for the simultaneous determination of three water-soluble vitamins, viz. Riboflavin, Folic Acid, Cyanocobalamine, in multivitamin pharmaceuticals. RP-HPLC analysis was performed with Waters Separation Module 2695 HPLC system, equipped with Waters 2696 PDA detector. Separation was achieved at ambient temperature on a Zorbax SB-C8 (5um, 4.6 mm X 150 mm) analytical column. Isocratic elution was performed using 50mM Sodium Phosphate buffer pH 2.5 and Methanol (90: 10 %v/v) composition, at a flow rate of 1.0 mL/min. Detection was performed with a photodiode array detector at 245 nm. Spectral comparison was used for peak identification in real samples. Detection limits were in the range of 1.6–3.4 ng per 20-μL injection, while linearity held up to 25 ng/μL. Accuracy, intra-day repeatability (n = 6), and inter-day precision (n = 7) were found to be satisfactory.