

However, oral drug delivery systems also have some disadvantages as variability, the rate and extent of drug absorption from conventional dosage forms are affected by many factors, including fluctuating pH in the stomach and small intestine, the presence or absence of food, esophageal transit and gastric emptying rates, posture, diurnal rhythms, drug interactions and gastrointestinal or other pathology. In addition, a number of patient variables (gender, race, age, and disease state) can also drastically alter the absorption of orally administered drugs. As so many variables influence the availability of the drug at the target site, there is great potential amongst orally administered drugs for bioinequivalence. The other disadvantages are the adverse reactions; the locally irritating or sensitizing drugs must be used with caution in this route. For example, some drugs are gastro-toxic, causing damage to the mucosal lining of the stomach (Jain, 2008). The adverse environmental effects, the nature of the gastrointestinal environment also limits the types of drugs that may be administered via this route. Adverse environmental effects include the high metabolic activity creates a formidable biochemical barrier to the delivery of enzymatically labile drugs. In particular, the oral bioavailability of therapeutic peptides and proteins is very low (typically <1%). Metabolic activity within the GIT is further compounded by first-pass metabolism in the liver, extreme of pH some drugs are acid-labile and are degraded by the highly acidic conditions of the stomach. Delays in gastric emptying rates can prolong the residence time of drugs in the stomach, increasing the potential for acid-mediated degradation. Base-labile drugs are susceptible in the lower GIT, intestinal motility can severely constrain the contact time of a drug moiety with the absorbing surface. The physical barrier of the mucus layer and the binding of drugs to mucus may limit drug diffusion. P-glycoprotein efflux pump, this pump