# phenytoin first order kinetics

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Individualization is problematic because of interindividual variability in maximum capacity. E is the correct answer. Drugs and Somatic Nervous System  From Wikibooks, open books for an open world. The time course of the decrease of the drug concentration in the plasma can be described by an exponential equation of the form: It may also be used in the prevention of seizures following head trauma, and in ventricular arrhythmias. In nonlinear kinetics, clearance and half-life fluctuate with plasma concentration. Examples include aspirin and the anti-epileptic drug phenytoin. First order kinetics is also observed with drugs that are eliminated unchanged. Many drugs are eliminated by first order kinetics. Poisoning with Drugs  With some drugs there is a limited amount of enzyme available to metabolise the drug, and when that limit is reached, metabolism occurs at a constant rate. Phenytoin follows zero order kinetics when the enzymes in liver are saturated but at anything lesser than that, it follows first order kinetics. By using this site, you agree to the Terms of Use and Privacy Policy. Views Read Latest draft Edit View history. Drugs for Hypertension, Angina and Heart Failure  Drug Distribution, Metabolism, and Elimination  Thus, the enzyme never becomes saturated with drug. As the rate of administration increases, the plasma concentration at steady state increases disproportionately.Phenytoin follows nonlinear (or zero-order) kinetics at therapeutic concentrations, because the rate of metabolism is close to the maximum capacity of the enzymes involved. In nonlinear kinetics, clearance and half-life fluctuate with plasma concentration. As the rate of administration increases, the plasma concentration at. By Katzung et al. Pharmacokinetics: First order kinetics of elimination. In first order elimination, drug clearance is proportional to concentration. In these cases, clearance can be calculated from the area under the time-concentration curve,. Frequently this is not so straightforward. Eg. Phenytoin clearance decreases sharply. Apr 7, - Pharmacokinetics: Phenytoin has dose-dependent kinetics of elimination. Phenytoin is hydroxylated in the liver by an enzyme system that is saturable at high The rate of metabolism is dose-dependent, but at levels usually achieved in the blood, the rate of oxidation follows zero-order kinetics (i.e. is. The best known example of zero order kinetics is alcohol. There are no notable examples of therapeutic drugs that have saturable metabolism and zero order kinetics. However, some therapeutic drugs taken in excess can have saturable kinetics. Examples include aspirin and the anti-epileptic drug phenytoin. In order to determine the optimal single oral loading dose of phenytoin in patients with seizures, a two part study of phenytoin pharmacokinetics was conducted. In the first part, 15 mg/kg of phenytoin was given orally as a single dose to 19 normal medical volunteers with informed consent. Serum concentrations of phenytoin. Aug 28, - Describe First order elimination kinetics. How is this different to zero order kinetics? Basic science in clinical context. Drugs following zero order pharmacokinetics; Mnemonic: 'Peas & WHEATS' (A Pea would look like a zero and denotes the order). Phenytoin, Phenylbutazone; Warfarin; Heparin; Ethanol; Aspirin; Theophylline, Tolbutamide; Salicylates Drugs undergoing complete first pass metabolism when not taken orally: 'FILTHy'. Aug 28, - Basically any compound in concentrations sufficient to saturate its metabolization machinery will show zero-order pharmacokinetics. This reflects the fact that metabolization is taking place at full speed while facing a comparatively enormous amount of substrate (just as @WYSIWYG pointed out). This effect. First-Order Kinetics. Half-Life. First-Order Single-Compartment Kinetics. First-Order Multiple-Compartment Kinetics. Zero-Order Kinetics. Apparent Volume of .. 4 months of age and may be exceeded in children years of age. Inhibited by cigarette smoke, phenobarbital, and phenytoin. CYP2A6. Coumarin, nicotine. This situation is also known as zero-order pharmacokinet- ics. First-order pharmacokinetics is another name for linear pharmacokinetics. For parenteral use, phenytoin is available in two different dosage forms. Phenytoin sodium, the sodium salt of phenytoin, contains 92% phenytoin by weight. Even though it is a salt of.