

**Exam questions sub-questions for students of the Bachelor of Pharmacy program
in the Basics of Pharmacokinetics**

- 1 Introduction of Pharmacokinetics. It's role in development and usage of new drugs. Goals and tasks of Pharmacokinetics.
- 2 Pharmacokinetics role in pharmacotherapy and beside other medical disciplines. History of Pharmacokinetics in Georgia.
- 3 Methods of Pharmacokinetic studies, it's organization and study levels.
- 4 Physico-chemical and biological methods of analysis in Pharmacokinetics.
- 5 Description of Pharmacokinetic processes, modelling and pharmacokinetic parameters.
- 6 Biological active ingredients absorption from different drug forms.
- 7 Drug metabolism, bio-transformation, main routes of drug metabolism.
Pharmacologically active and toxic metabolites. Induction and inhibition of enzymes
involved in biotransformation process. Genetic polymorphism.
- 8
- 9 Drug distribution in organs and tissues.
- 10 Drug penetration into inflamed and tumor tissues, into blood-brain and blood-placental barriers.
- 11 Drug excretion and elimination
- 12 Drugs pharmacokinetic interaction – interference during absorption, metabolism, distribution and elimination.
- 13 Drug bioequivalence.
- 14 Affect of various factors on pharmacokinetics.

- 15 Pharmacokinetic study organization. Choose of stuff, patients and volunteers. Affect of exogenic and endogenic factors on pharmacokinetics. Taking of biological sample, it's storage conditions. Preparing the protocol on pharmacokinetic study.
- 16 Pharmacokinetic study methods. Selection of analytical methods for drug and its metabolites(Chromatographic and/or Spectral)
Absorption of active substances from different drug forms. Affect of food on the process of absorption.
- 17 Selection of Isolation method of drug and its metabolites from plasma *in vitro* model.
Qualitative-quantitative analysis.
- 18 Drug metabolism in body. Metabolism phases. Metabolism test-objects.
Building pharmacokinetic curve based on *in vitro* plasma model data.
- 19 Distribution of biologically active ingredients in tissues and organs.
Determination of volume of distribution based on *in vitro* pharmacokinetic curve data.
Modeling of pharmacokinetic processes. One compartmental pharmacokinetic models.
- 20 Determination of imagining concentration maximum and half-life based on *in vitro* pharmacokinetic curvedata.
- 21 Excretion and elimination of drug and its metabolites. Multi-compartmental pharmacokinetic models. Selection of optimal conditions for drug and its metabolites isolation from *in vitro* leaver model.
Factors affecting process of metabolism. Induction and inhibition of enzymes involved in biotransformation process.
- 22 Qualitative-Quantitative analysis of metabolites in liver with Chromatographic and Spectrophotometricmethods.
- 23 Pharmacokinetics in case of different pathological conditions.
Evaluation of metabolism process based on results from liver model.
Study of drug pharmacokinetics during multiple per-oral taking. Building
- 24 pharmacokinetic curve andselection of dosage regimen.
Selection of optimal conditions for isolation of drug metabolites from urine *in vitro* model.
- 25 Variability of drug effective concentration and making histograms.
- 26 Qualitative-Quantitative analysis of metabolites in urine with Chromatographic and Spectrophotometricmethods.
- 27 Pharmacokinetics in pregnant women and during lactation.
- 28 Selection of optimal conditions for drug and its metabolites isolation from *in vitro* kidney model.Quantitative analysis.
- 29 Development of drug pharmacokinetic model based on data from *in vitro* biological samples.
- 30 Affect of age and gender on pharmacokinetics