SEPTEMBER 1991

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FIRST M.Pharm. DEGREE EXAMINATION, SEPTEMBER 1991.

(Special Papers)

Specialisation A — Pharmaceutics

Paper II — BIO-PHARMACEUTIS AND PHARMACOKINETICS

Time : Three hours. Maximum : 100 marks.

Answer any FOUR questions.

All questions carry equal marks.

1. How does drug interactions influence the treatment ? Describe the principles of Gastrointestinal absorption.

2. Differentiate between potency and efficacy of a drug. Explain the advantages of pulmonary administration over other routes of administration.

3. What are different ways of designing equivalence ? Discuss about the evaluation of Bio-equivalence data.

4. Discuss about the biotransformation categories. Explain the time of peak concentration.

5. Describe the different pharmacokinetic models. Explain the principles of Multiple-dose administration.

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[398]

FIRST M. Pharm. DEGREE EXAMINATION, MARCH 1992.

(Special Papers)

Specialisation A — Pharmaceutics

Paper II — BIO-PHARMACEUTICS AND PHARMACOKINETICS

Time : Three hours. Maximum : 100 marks.

Answer any FOUR questions.

All questions carry equal marks.

1. Explain the importance of complexation in bio-availability studies.

How interactions of drugs influence Pharmacokinetics ?

2. Describe the various routes of administration of drugs and their relative importance in bio-availability.

3. Discuss about the role of chemical form and ionisation constant in the formulation of drugs.

4. What are the factors of bio-availability applicable to drug therapy and patient care ?

5. Describe the physiologic pharmacokinetic models and pharmacologic pharmacokinetic models.

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NOVEMBER 1993

M.Pharm. DEGREE EXAMINATION.

First Year

Special Papers

Specialisation A — Pharmaceutics

BIO-PHARMACEUTICS AND PHARMACOKINETICS

Time : Three hours. Maximum : 100 marks.

Answer any FOUR questions.

All questions carry equal marks.

1 With suitable examples, explain how the following affect the gastrointestinal absorption of drugs :

(*a*) polymorphism,

(*b*) stability of the drug in the GI tract,

(*c*) complexation.

2. (*a*) Discuss renal clearance of drugs. How is renal clearance determined ?

(*b*) Calculate renal clearance of a drug eliminated unchanged by first order, if its biological half life is 4 hours and apparent volume of distribution 40 litres.

3. (*a*) Explain the factors that determine drug distribution in the body.

(*b*) How can the absorption rate constant of a drug be calculated under a one compartment open model ?

(*a*) Calculation of the loading dose.

(*b*) Oral sustained release dosage forms and their evaluation.

5. Write short notes on the following :

(*a*) Hepatic first pass.

(*b*) Fick's Law.

(*c*) Clinical pharmacokinetic basis of drug therapy.

6. (*a*) What is Dosage Regimen and explain its clinical significance ? How is it calculated for a drug given orally ?

(*b*) Explain how dosage regimen for a drug is adjusted in renal failure.

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[ND 276]

NOVEMBER 1994

M.Pharm. DEGREE EXAMINATION.

(New Regulations)

First Year

Branch I — Pharmaceutics

BIO-PHARMACEUTICS AND PHARMACOKINETICS

Time : Three hours Maximum : 100 marks

Answer any FOUR questions.

All questions carry equal marks.

1. (a) Discuss the modern concepts about the structure and properties of biological membranes with reference to absorption of drugs.

(b) What do you understand by the terms :

(i) non-ionic diffusion

(ii) ionic diffusion and

(iii) facilitated diffusion.

2. Write detailed notes on :

(a) excretion of drugs

(b) Exocytosis

(c) Polymorphic acetylation.

3. Discuss the following :

(a) determination of renal clearance of a drug

(b) biological half life and its determination and significance in pharmacokinetics

(c) determination of the absorption rate constant under one compartment open model.

4. (a) Discuss briefly the bioavailability aspects of the following drugs :

(i) ampicillin and (ii) iron.

(b) Explain briefly the following :

(i) preabsorptive hydrolysis and metabolism

(ii) gut wall metabolism.

5. (a) Calculate the renal clearance for a drug eliminated unchanged by first order, if its biological half life is 4 hours and apparent volume of distribution is 40 litres.

(b) Discuss the variability of pharmacokinetic parameters between healthy and disease states.

APRIL 1995

[SB 305]

M.Pharm. DEGREE EXAMINATION.

First Year

(New Regulations)

Branch I — Pharmaceutics

BIO-PHARMACEUTICS AND PHARMACOKINETICS

Time : Three hours. Maximum : 100 marks.

Answer any FOUR questions.

All questions carry equal marks.

1. (*a*) Discuss the physiological factors which affect absorption of drugs through the GI tract.

(*b*) Explain the physicochemical factors that affect the GI absorption of (i) aspirin and (ii) griseofulvin.

2. (*a*) Discuss role of protein binding in drug distribution. What component of the plasma proteins is most imporatnt in binding drugs.

(*b*) Write notes on :

(i) Electrochemical and Donnan distribution of drugs.

(ii) Clinical equivalence.

3. (*a*) Explain how concentration-time profile for a drug in plasma is influenced individually by the amount of dose, elimination rate constant and distribution constants.

[SB 305]

(*b*) Discuss briefly the non-linear pharmacokinetic models.

4. (*a*) How do you determine the relative bio-availability of a drug from four different dosage forms ?

(*b*) Write a note on the dissolution models currently in use.

5. Discuss the following : (*a*) Drug metabolism in new forms, (*b*) Polymorphic oxidation, (*c*) Variability of pharmacokinetic parameters depending on sex and (*d*) Therapeutic drug monitoring and dosage prediction of digoxin.

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AK 3061 **APRIL 1996**

M.Pharm. DEGREE EXAMINATION.

(New Regulations)

First Year

Branch I — Pharmaceutics

BIO-PHARMACEUTICS AND PHARMACOKINETICS

Time : Three hours Maximum : 100 marks

Answer any FOUR questions.

All questions carry equal marks.

1. (a) Discuss about Phase I and Phase II metabolism of drugs with examples.

(b) Discuss in detail about absorption of drugs through intestine by using pH partition principle.

2. (a) Detail upon with examples how bioavailability of drugs is influenced by various physical properties of drugs.

(b) Give the various assumptions made to discuss open one compartment model and explain the model mathematically. Discuss about finding absorption rate constant by the method of "back residuals".

3. (a) Give a model and explain mathematically for short term constant rate intravenous infusion.

(b) Explain about invitro method of finding out bioavailability and also explain about invitro–invivo correlation study.

4. (a) Explain how the following pharmacokinetic parametres are found out and how they are useful in Biopharmaceutics study :

(i) Biological half life.

(ii) Apparent volume of distribution.

(iii) Protocol binding.

(b) Design a protocol to find out oral bioavailability of a given drug. How are the data analysed statistically?

5. Discuss on any FOUR of the following :

(a) Individualization of drug therapy of potent drugs.

(b) Area under first moment curve calculation and significance.

(c) Limitation of Multi compartment models.

(d) Bioavailability of Ampicillin.

(e) Phenotypic and Genotypic pharmacokinetic variability of drugs.

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OCTOBER 1996

[PK 202]

M.Pharm. DEGREE EXAMINATION.

(New Regulations)

First Year

Branch I — Pharmaceutics

BIO–PHARMACEUTICS AND PHARMACOKINETICS

Time : Three hours Maximum : 100 marks

Answer any FOUR questions.

All questions carry equal marks.

1. Explain the physical chemical factors and physiological factors that affect the absorption of drugs through the G.I. tract.

2. Derive an expression for concentration time profile for an oral solid dosage form represented by a one compartment model.

3. Explain the following :

   (a) Apparent volume of distribution.

   (b) Area under the first moment curve (AUMC).

   (c) Mean residence time (MRT).

4. Explain the factors which affect the Bio–availability in a dosage form and explain the methods of estimating Bio availability.

5. Write notes on :

   (a) Therapeutic drug monitoring.

   (b) Effect of disease states on drug disposition.

   (c) Renal clearance.

   (d) Polymorphic oxidation.

APRIL 1997

M.Pharm. DEGREE EXAMINATION

MP254 (New Regulations)

First Year

Branch I - PHARMACEUTICS

Paper III - BIO-PHARMACEUTICS AND PHARMACOKINETICS

Time: Three hours Max.marks:100

Answer any FOUR questions

All questions carry equal marks.

1. Discuss in detail the various physicochemical considerations influencing the drug absorption from the G.I.Tract.

2. (a) Explain the theory on which the non compartmental analysis of pharmacokinetic data is based.

   (b) Define Pharmacokinetics. Mention the various parameters that describe a typical plasma level - time curve.

3. (a) Explain the open two compartmental model and its significance.

   (b) Why are drugs that show non linearity in Pharmacokinetics considered as sources of variability in pharmacological response?

4. Describe the different methods that can be used for the enhancement of bioavailability of a drug citing suitable examples.

5. Write briefly on:

   (a) Pro-drug

   (b) Bio-equivalance

   (c) Renal clearance

   (d) Limitations of multicompartmental analysis

6. Explain the importance of therapeutic drug monitoring. List the drugs which are commonly monitored. Explain the various parameters which influence the pharmacokinetic variability.

OCTOBER 1997

MS 238

M.Pharm. DEGREE EXAMINATION

(New Regulations)

First Year

Branch I - PHARMACEUTICS

Paper III - BIO-PHARMACEUTICS AND PHARMACOKINETICS

Time: Three hours Max. marks:100

Answer any FOUR questions

All questions carry equal marks

1. (a) Explain about enzyme induction and enzyme inhibition with examples. Explain how these phenomena influence bioavailability.

   (b) Explain about electrochemical and Donnan distribution in the absorption of drugs.

2. (a) Outline the various biological and physiological factors that influence bioavailability of drugs.

   (b) Differentiate the various assumptions made for open one compartment model and two compartment model. Explain both models mathematically.

3. (a) Give a model and mathematical expressions for repetitive dosing of drugs. Derive an expression for drug concentration at steady state.

   (b) Discuss the importance of in vitro study in ascertaining bioavailability of drugs. Explain how the tests are carried out. Discuss about the advantages and limitations of such a test.

4. (a) List the various pharmaco kinetic parametres of drugs. Explain how each parameter is important in designing rational drug therapy.

   (b) Design a protocol for finding out comparative bioavailability of a drug in two different dosage forms. How are the results analysed statistically?

5. Discuss on any FOUR of the following:

   (a) Hepatic clearance

   (b) Mean Residence Time (MRT)

   (c) Pharmacokinetic variability

   (d) Loading dose and maintenance dose

   (e) Bioavailability of nitro furantoin.

APRIL 1998

[SV 270]

M.Pharm. DEGREE EXAMINATION.

(New Regulations)

First Year

Branch I — Pharmaceutics & Branch VII — Pharmacy Practice

Paper III — BIO-PHARMACEUTICS AND PHARMACOKINETICS

Time : Three hours Maximum : 100 marks

Answer any FOUR questions.

All questions carry equal marks.

1. (a) Enlist the steps involved in the absorption of a drug from orally administered solid dosage form.

(b) Discuss the similarities and differences between passive and facilitated diffusion.

2. Write briefly on :

(a) Drug clearance.

(b) Apparent volume of distribution.

(c) Area under first moment curve.

(d) Loading dose.

3. Define bioavailability. Discuss the various factors which affect bioavailability of a drug. Explain the various methods for determining bioavailability.

4. Explain in detail the Dissolution test as prescribed in the pharmacopoeia. Justify the superiority of the dissolution test over the disintegration test. Explain how the present test can be modified.

5. Explain the factors affecting the protein–drug binding. Explain the kinetics and significance.

6. Explain the following :

(a) Drug metabolism in the new born.

(b) Hypothesis of individualisation of drug dosage.

(c) Effect of disease state in drug disposition.

(d) Genetic factors influencing drug metabolism.

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[KA 270] OCTOBER 1999

M.Pharm. DEGREE EXAMINATION.

(New Regulations)

First Year

Branch I — Pharmaceutics

Branch VII — Pharmacy Practice

Paper III — BIO–PHARMACEUTICS AND PHARMACOKINETICS

Time : Three hours Maximum : 100 marks

Answer any FOUR questions.

All questions carry equal marks.

1. Discuss the importance of the parameters like, solubility, hydrophobicity, gastric emptying binding in the absorption of drugs.

2. Write notes on :

(a) Half life and biological half life of drugs.

(b) Compartment models.

(c) Hepatic and total clearance.

(d) Multiple dose administration.

3. Explain the terms, chemical equivalence, clinical equivalence, therapeutic equivalence. Illustrate your answer, with at least three examples each.

4. Discuss the importance of dissolution rate on the prediction of bio–availability. Explain the correlation between the two. How are insoluble drugs absorbed?

5. Give an account on Drug disposition distribution, bio–transformation and excretion of drugs in the body.

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[KB 270] APRIL 2000

M.Pharm. DEGREE EXAMINATION.

(New Regulations)

First Year

Common to Branch I — Pharmaceutics and

Branch VII — Pharmacy Practice

Paper III — BIO-PHARMACEUTICS AND PHARMACO KINETICS

Time : Three hours Maximum : 100 marks

Answer any FOUR questions.

All questions carry equal marks.

1. Explain the experimental design and protocols for Bio availability studies.

2. Explain with example about role of dosage forms in gastrointestinal absorption.

3. (a) Discuss about Bio-availability and Bio-equivalence.

(b) Explain the methods of determining Bio-availability.

4. Explain about

(a) Open one compartment model in pharmacokinetics.

(b) Non compartmental pharmacokinetics.

5. Explain

(a) Hepatic clearance

(b) Gut Wall clearance.

(c) Renal clearance

(d) Lung clearance.

6. Write short notes on :

(a) pH partition theory

(b) Active metabolites

(c) Non-linear kinetics

(d) Phase II reactions.

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OCTOBER 2000

[KC 270]

M.Pharm. DEGREE EXAMINATION.

(New Regulations)

First Year

Branch I — Pharmaceutics

Branch VII — Pharmacy Practice

Paper III — BIO-PHARMACEUTICS AND PHARMACO KINETICS

Time : Three hours Maximum : 100 marks

Answer any FOUR questions.

All questions carry equal marks.

1. (a) Write the structure of a biological membrane and describe the differences between active transport and passive diffusion of drugs.

(b) Describe the influence of pH–partition theory on drug absorption.

2. Discuss the influence of the following factors on drug action and elimination :

(a) Plasma protein binding.

(b) Volume of distribution.

3. Explain the significance on the following pharmaco kinetic parameters :

(a) Biological half–life

(b) Absorption half–life

(c) MRT

(d) Excretion rate.

4. Define bioavailability. Explain about AUC, C_{max}, t_{max}, MEC and MTC. Write the different methods used for determining AUC of the blood level–time curve of a drug.

5. (a) Explain drug dissolution testing and its "in vitro" and "in vivo" correlation.

(b) What are the genetic factors affecting drug action?

6. Write short notes on :

(a) Blood–brain barrier

(b) Therapeutic drug monitoring

(c) Drug metabolism by conjugative reactions

(d) Influence of food on drug absorption.

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