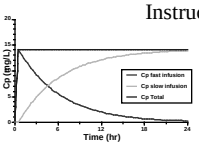
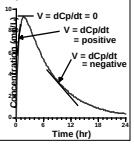
PHAR 7632
Biopharmaceutics - Pharmacokinetics

University of Oklahoma
College of Pharmacy
Instructor: David Bourne, Ph.D.





I. Introduction to Course

- Staff
- Grading
- Course Outline
- Textbook
- Other References, Journals
- Software

A. Staff

- Lecturer: David Bourne, Ph.D.
  Office: CPB 303
  email: david-bourne@ouhsc.edu
- Course WebSite
  http://www.boomer.org/course/PK_BIO/
- Lectures: 11:10 a.m. - 12:00 p.m.
  Tuesday and Thursday (CPB 103)

B. Grading

- Mid Semester Exam 30 %
  Homework 20 %
  Final Exam 50 %
  TOTAL 100 %
- Exam - preview, review, one week
- Calculators/Computers Rules/Guidelines
- Homework - on time, practice

C. Coursework

- Introduction
- Mathematical Material
- Pharmaceutical Analysis
- Pharmacokinetic Intro
- One Compartment I.V. Bolus, Plasma
- Analysis of Urine Data
- Intravenous Infusion

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Exponents and logarithms
Graphing Data (linear and semi-log)
Use of Spreadsheet Software
Calculus (differential and integration)
Laplace transforms as an Integration method

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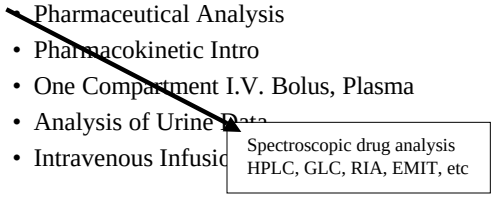

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Plasma Data

kel, V, AUC, $t_{1/2}$

Modeling, general method, Laplace transform, numerical integration

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Plot types, Cl, metabolism, renal function
Weighting schemes, output evaluation
Identifiability

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C. Coursework (contd.)

- Routes of Drug Administration
- Pharmacokinetic of Oral Administration
- Bioavailability Calculations, F
- Bioavailability Studies

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- Routes of Drug Administration
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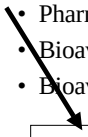

Method of residuals, W-N method

Fitting simultaneous data sets, Optimal sampling

C. Coursework (contd.)

- Routes of Drug Administration
- Pharmacokinetic of Oral Administration
- Bioavailability Calculations, F
- Bioavailability Studies

C. Coursework (contd.)

- Factors affecting Oral Absorption
  - Physiological
  - Physico-chemical
  - Formulation
- Multiple Dose I.V. Bolus
- Multiple Oral Dose
- Routes of Excretion

C. Coursework (contd.)

- Metabolism
- Drug Distribution
- Multicompartment PK Models, Selection
- Non-linear PK Models
- More complex PK Models
- PBPK Models, PD Models
- Clinical Application of PK

D. Textbook and Resources

- Bourne, **Mathematical Modeling of Pharmacokinetic Data**
- PHAR 4634 Course Syllabus
  http://gaps.cpb.ouhsc.edu/
- Boomer Manual http://www.boomer.org/
- Other online resources, e-mail list, forum and chat areas (password)
  - http://www.boomer.org/pkin/

E.-F. Other References

- Books, Journals
- Instructor
  During class - ask questions
  After class, Office (CPB 303)
  eMail (david-bourne@uokhsc.edu)
  WWW resources
  http://www.boomer.org/course/PK_BIO/

G. Software

- Boomer http://www.boomer.org/
- Other software
  http://www.boomer.org/pkin/soft.html
- SAAM II
- WinNONLIN Pro
- ADAPT II
- NONMEM