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PHAR 432.01: Biopharmaceutics and Pharmacokinetics

Todd Cochran

University of Montana - Missoula

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Course Description: Biopharmaceutics and Pharmacokinetics

Biopharmaceutics: Drug absorption, bioavailability, and drug product selection
Pharmacokinetics: The rates of drug Absorption, Distribution, Metabolism, and Excretion

Course Goals: The goals of this course are to provide the student with:
1. An understanding of the fundamental concepts of pharmacokinetics in humans
2. Skills in the application of pharmacokinetics in dosage regimen design and therapeutic drug monitoring
3. Knowledge about the application of biopharmaceutics in drug product use and selection

Course Objective: At the end of this course you will be able to design and adjust a patient's drug dosage regimen to keep the plasma/serum concentration of the drug within a desired therapeutic range. Along the way, you will gain an understanding of the principles of the ADME of a drug, and how these apply to the optimum utilization of a drug in a patient. The course is designed for you to gain the knowledge and skills to apply biopharmaceutics and pharmacokinetics principles in pharmaceutical care.

Required Materials:
1. Course Pacs: Lecture Notes on Pharmacokinetics; Biopharmaceutics
2. A calculator with natural log (ln) and exponent (e) functions
3. Approximately 30 sheets of 2 or 3 cycle semilog graph paper (photocopy OK)
4. Approximately 10 sheets of linear graph paper
5. Straight edge

Course Outline

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Class | CoursePac | Problems
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Creatinine Clearance | Nov 7 | 89, 125
Dosage Adjustment in Renal Disease | Nov 12 | 90-96
Nonlinear Pharmacokinetics | Nov 14 | 97-101
Salt Factor | Nov 14 | 102
Clearance Concepts: Physiologic Models | Nov 19 | 103-107
Exam 4 Fri Dec 6 1:10-3:30 pm; Includes Sawchuk/Zaske | 81-88 | 56-57

Pharmacokinetics of Drug Interactions | Nov 21
P-glycoprotein; Pharmacogenetics | Nov 26
Factors Affecting Drug Absorption | Dec 3, 5
Bioavailability and Bioequivalence | Dec 10
Drug Product Selection; Course Evaluation | Dec 12
Final Exam | Wednesday Dec 18, 10:10-12:00 am | 126-130

Conferences
- Sept 3-5: No Conference
- Sept 10-12: 1. Kinetics
- Sept 17-19: 2. iv bolus admin
- Sept 24-26: 3. iv infusion
- Oct 1-3: 4. Oral admin
- Oct 8-10: 5. Compartment models
- Oct 15-17: 6. CYPs
- Oct 29-31: 8. Rep oral admin
- Nov 5-7: No Conference
- Nov 12-14: 9. Sawchuk-Zaske Method (CrsPac 81-88)
- Nov 19-21: 10. Dosing in renal dysfunction
- Nov 26-28: No Conference
- Dec 3-5: 11. Nonlinear PK
- Dec 10-12: No Conference

Grading:
- Four mid-semester exams @ 50 points | 200 points | 75%
- Final exam (cumulative; 50 pts new, 15 pts prior) | 65 points | 25%
- Total: | 265 points

Bonus points: Each exam will have 5 bonus points from literature articles distributed before each exam.

Approximate grading scale: A = 90%, B = 80%, C = 70%, D = 65%

Course Policies:
Students are expected to take all exams at the scheduled time. If you cannot take an exam at the scheduled time, you must contact Todd Cochran or leave a message with the School secretary Erika Claxton @ 4621 or the Pharmaceutical Sciences secretary Beverly Brooks @ 4765 no later than noon of the day of the exam. Exams normally must be made up within three class days.

If you have questions regarding the grading of your exam, please make an appointment with Todd Cochran to review your exam. Appointments must be scheduled within 10 days following the return of your exam. After that time, adjustment of grades will not be made. You are encouraged to review the posted exam key before your appointment.

Online Materials: Course handouts that are Word documents will be placed on the School's server at: Network Neighborhood, Skaggs-03, PharmSci, P2, 432
These files can be accessed and printed in the School’s Computer Lab.

Help Sessions: 4 Wednesdays at 3:10 pm, SB113: Sept 25, Oct 16, Nov 6, Dec 4
4 Thursdays at 3:10 pm, SB113: Sept 26, Oct 17, Nov 7, Dec 5

Office Hours: M 1-3 pm; Other hours by appointment.