

LECTURES' OUTLINE:PHT 414 (Biopharmaceutics) 2+1

Week	Lecture number	Topic
1	1	Introduction to biopharmaceutics
	2	Gastrointestinal absorption: - Biologic consideration - Membrane physiology
2	3	Mechanisms of drug absorption after oral administration
	4	Physiological factors affecting drug absorption from the GIT. - Surface area of the gastrointestinal absorption site. - PH of the GIT. - Gastric emptying rate. - Intestinal motility. - Hepatic metabolism. - Effect of food. - Drug absorption interactions.
3	5	Physicochemical factors affecting drug absorption from the GIT. - PH partition theory. - Dissociation constant and GIT pH. - Lipid solubility. - Deviation from the pH partition theory - Effect of dissolution rate. - Noyes-Whitney equation. - Effect of particle size. - Solid dispersion and solid solution - Crystal form. - Solubility in the diffusion layer. - Complexation and adsorption. - Chemical stability of drugs in the gastrointestinal fluids
	6	
4	7	Dosage form factors influencing drug absorption from the GIT. - Effects of excipients. -Effects of dosage form type.
	8	
5	9	Bioavailability and Bioequivalence.
	10	
6	11	Biopharmaceutics of non-oral medications. - Skin. - Buccal and sublingual - Rectal administration. - Parenteral administration. - Inhalational administration.
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	20	Biopharmaceutics of sustained release products. <ul style="list-style-type: none"> - Drug absorption and duration of action. - Frequency of dosing and therapeutic index. - Steady state concentrations and release rate.
11	21	
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12	23	<ul style="list-style-type: none"> - Kinetics of drug release. - Limitations of prolonged-release medications
	24	
13	25	New drug delivery systems. <ul style="list-style-type: none"> - Parenteral and ocular drug delivery systems. - Intrauterine devices. - Transdermal drug delivery systems (TDDS).
	26	
14	27	
	28	Exam

LABORATORY PROJECTS' OUTLINE

Week	Topic	Description
1	Introduction	Introduction
2	pH partition theory	Determination of partition coefficient
3	Cont.	Effect of pH on the partition coefficient of acidic and basic drugs
4	Drug dissolution	Effect of pH
5	Cont.	Effect of particle size
6	Cont.	Effect of viscosity
7	Cont.	Effect of formulation factor
8	Evaluation of gastrointestinal absorption	Workshop on the in vitro, in situ and in vivo methods including selection of animal models
9	Cont.	Workshop on the in vitro, in situ and in vivo methods including selection of animal models (Continue)
10	Bioavailability and bioequivalence	Workshop on bioavailability, bioequivalence and biowaiver
11	Evaluation of non-oral drug delivery	Evaluation of transdermal delivery
12	Cont.	Evaluation of parenteral and ocular delivery
13	Cont.	Evaluation of inhalation and rectal delivery
14	Exam	

COURSE EVALUATION:

First medterm exam.	15
Second medterm exam.	15
Quizzes	5
Performance (lab.)	5
Final lab exam.	20
Total	60
<u>Final examination:</u>	40
Total marks	100