DEPARTMENT OF PHARMACEUTICS

Name of the Laboratory: Pharmaceutics (PG)
Academic Year: 2023-24

LIST OF EXPERIMENTS CONDUCTING

M. Pharm I Year I Sem

Modern Pharmaceutics Lab — 6 Hrs./Week

1. To carry out the preformulation studies of solid dosage forms.
2. To study the effect of compressional force on tablet disintegration time.
3. To study the micromeritic properties of powders and granules.
4. To study the effect of particle size on dissolution of capsules.
5. To study the effect of binders on dissolution of tablets.
6. To study enteric coated tablets dissolution in relevant pH.
7. Accelerated stability testing of different tablets
8. Determination of first order, second order rate constants by acid and alkaline hydrolysis.
9. Preparation and evaluation of beta-cyclodextrin complexes of new drugs.
10. Preparation of paracetamol tablets and comparison with marketed products.
11. Design of experiments (DOE) in the optimization of an immediate release tablets.
12. Calculation of shelf life using accelerated stability data.

M. Pharm I Year I Sem

Applied Biopharmaceutics and Pharmacokinetics Lab **6Hrs./Week**

1. Analysis of dissolution by various data-kinetic modelling.
2. Calibration curve of different API's by UV/HPLC/HPTLC.
3. Dissolution of immediate release, sustained release and delayed release.
4. Evaluation of drug-protein binding analysis.
5. Assignment of numerical problems, one compartment and two compartment disposition, method of residuals, AUC and evaluation of pharmacokinetic parameters.
6. Calculation of K_a(absorption rate constant) absorption curve- Wagner nelson method , Loo-Riegel method.
7. Calculation of pharmacokinetics parameters of one compartment oral data and two compartment IV data.
8. Construction of IVIVC from the data.
9. Calculation of Urinary Pharmacokinetics.
10. Calculation of Bioavailability and Bioequivalence Studies.
11. Permeation studies of Franz diffusion cell.
12. Drug Release from semisolids by Agar gel method or Franz diffusion cell.

M. Pharm I Year II Sem

Modern Pharmaceutics – II Lab **6Hrs./Week**

1. Scale up calculations from R&D to pilot plant for the following unit operations
    a) Wet granulations using RMG/PLM
    b) Blending & Lubrications
    c) Film coating.
2. Preparation of Injectables, Ampoules & Vials.
3. Preparation of Ophthalmic products, Eye drops and Eye ointments.
4. Preparation of Dry powder Inhalations.
5. Formulation Development and Demonstration of function of DPI of marketed products.
6. Formulation of Aerosol Demonstration of marketed products.

M. Pharm I Year II Sem

Advanced Drug Delivery Systems Lab **6Hrs./Week**

1. Study on diffusion of drugs through various polymeric membranes (2 experiments).
2. Formulation and Evaluation of sustained release Oral Matrix Tablet (2 experiments).
3. Formulation and Evaluation of sustained release Oral Reservoir System (2 experiments).
4. Formulation and Evaluation of Microspheres / Microencapsules (2 experiments).
5. Study of in-vitro Dissolution of various SR products in market (2 experiments).
6. Formulation and Evaluation of Transdermal Films (2 experiments).
7. Formulation and Evaluation of Mucoadhesive System (2 experiments).
8. Preparation and Evaluation of Enteric Coated Pellets / Tablets (2 experiments).
9. Preparation and Evaluation of Liposomes, Niosomes and Nanoparticles.

PharmD. III Year

Pharmaceutical Formulations Practical 3 Hrs./Week

1. **Manufacture of Tablets**
    a. Ordinary compressed tablet-wet granulation
    b. Tablets prepared by direct compression
    c. Soluble tablet
    d. Chewable tablet.
2. **Formulation and filling of hard gelatin capsules**
3. **Manufacture of parenterals**
    a. Ascorbic acid injection
    b. Calcium gluconate injection
    c. Sodium chloride infusion
    d. Dextrose and Sodium chloride injection/ infusion.
4. **Evaluation of Pharmaceutical formulations (QC tests)**
    a. Tablets
    b. Capsules
    c. Injections.
5. **Formulation of two liquid oral preparations and evaluation by assay**
    a. Solution: Paracetamol Syrup
    b. Antacid suspensions- Aluminum hydroxide gel.
6. **Formulation of semisolids and evaluation by assay**
    a. Salicyclic acid and benzoic acid ointment
    b. Gel formulation Diclofenac gel.
7. **Cosmetic preparations**
    a. Lipsticks
    b. Cold cream and vanishing cream
    c. Clear liquid shampoo
    d. Tooth paste and tooth powders.
8. **Tablet coating (demonstration)**

PharmD. IV Year

Biopharmaceutics and Pharmacokinetics Practical 3 Hrs./Week

1. Improvement of dissolution characteristics of slightly soluble drugs by some methods.
2. Comparison of dissolution studies of two different marketed products of same drug.
3. Influence of polymorphism on solubility and dissolution.
4. Protein binding studies of a highly protein bound drug and poorly protein bound drug.
5. Extent of plasma-protein binding studies on the same drug (i.e. highly and poorly protein bound drug) at different concentrations in respect of constant time.
6. Bioavailability studies of some commonly used drugs on animal/human model.
7. Calculation of Ka, Ke, $t_{1/2}$, Cmax, AUC, AUMC, MRT etc. from blood profile data.
8. Calculation of bioavailability from urinary excretion data for two drugs.
9. Calculation of AUC and bioequivalence from the given data for two drugs.
10. In vitro absorption studies.
11. Bioequivalency studies on the different drugs marketed.(eg) Tetracycline, Sulphamethoxzole, Trimethoprim, Aspirin etc., on animals and human volunteers.
12. Absorption studies in animal inverted intestine using various drugs.
13. Effect on contact time on the plasma protein binding of drugs.
14. Studying metabolic pathways for different drugs based on elimination kinetics data.
15. Calculation of elimination half-life for different drugs by using urinary elimination data and blood level data.
16. Determination of renal clearance.