
PHARMACEUTICS A

INTRODUCTION

The goal of the laboratory is to provide students with the necessary skills in performing pharmaceutical calculations, also to promote student's learning by performing full experimental work on physical pharmacy topics covered in this course such as partition phenomena, phase equilibria and solubility. This lab will provide the students with practical training in formulation of oral liquid dosage forms such as simple syrup, effervescent solutions, drought, cough syrup, lugol's solution, washes, elixirs, and aromatic waters.

EQUIPMENT AND INSTRUMENTS

- Picnometer
- UV spectrophotometer
- pH meter
- Mortar and Pestle
- Balances
- Separating funnel
- Thermometers

EXPERIMENTS

- Pharmaceutical calculations – density, specific gravity and specific volume of liquids.
- Preparation of pharmaceutical buffered solutions and determination of buffer capacity.
- Preparation of simple syrup, effervescent solutions and drought.
- Preparation of cough syrup, infusion of senna
- Preparation of strong iodine solution (Lugol's solution), washes and aromatic waters.
- Determination of critical solution temperature of phenol/water system.
- Phase diagram of three component mixture system.
- Determination of partition coefficient of iodine between two immiscible phases
- Determination of the effect of temperature and electrolytes on the solubility of benzoic acid.

PHARMACEUTICS B

INTRODUCTION

The goal of the laboratory is to promote student's learning by performing full experimental work on physical pharmacy topics covered in this course such as determination of colligative properties of pharmaceutical solutions, measurement of surface and interfacial tension of disperse systems, use of surfactants in micellar solubilization, determination of rheological properties of pharmaceutical preparations, and determination of optical and electric properties of colloids.

EQUIPMENT AND INSTRUMENTS

- Determination of colligative properties of solutions – Osmotic pressure.
- Effect of adding hypotonic or hypertonic solutions on red blood cells
- Determination of colligative properties of solutions– Freezing point and boiling point.
- Determination of surface tension and interfacial tension between two immiscible phases.
- Determination of critical micelles concentration of surfactants
- Micellar solubilization of water-insoluble drugs
- Adsorption of oxalic acid on charcoal.
- Preparation and characterization of colloids.
- Determination of rheological properties and behavior of different pharmaceutical dosage forms.

EXPERIMENTS

- Fiske Osmometer
- Stalagmometers
- Ostwald viscometers
- Falling sphere viscometer
- Brookfield viscometer
- Microscope
- Thermometers

PHARMACEUTICS 1A

INTRODUCTION

The goal of the laboratory is to provide students with practical training in formulation and preparation of dosage forms such as suspensions, emulsions, microemulsions, gels, ointments and suppositories. Students will be able to interpret, calculate, extemporaneously prepare these dosage forms and apply basic scientific principles to the art and technology of formulation.

EQUIPMENT AND INSTRUMENTS

- Brookfield viscometer
- Dissolution tester
- UV spectrophotometer
- UV lamp
- Centrifuge
- Conductmeter
- Microscope
- Mortar and Pestle.
- Water Bath
- Hot plate
- Suppositories Moulds.

EXPERIMENTS

- Formulation and characterization of Suspensions.
- Physical stability testing of Suspensions.
- Formulation and characterization of Emulsions
- Formulation and characterization of Gels and Creams
- Cosmetics and Medicated Creams.
- Formulation of Ointments.
- Formulation of Suppositories
- Characterization of Suppositories
- Formulation of Pessaries.

PHARMACEUTICS 1B

INTRODUCTION

The goal of the laboratory is to provide students with practical training on how to formulate and characterize different solid dosage forms such as powders, tablets and capsules. The lab is designed to teach the students formulation principles where the physicochemical properties of the drug and excipients may influence the formulation, component compatibility, manufacturing, bioavailability and stability of the final dosage form.

EQUIPMENT AND INSTRUMENTS

- Tablet press machine
- Shakers
- Thermometer
- Magnetic Hot plate
- Weighing scale
- UV-spectrophotometer
- Desiccator
- Disintegration testing apparatus
- Friability testing apparatus
- Thickness and hardness apparatus

EXPERIMENTS

- Angle of Repose and Bulk Density Measurement
- Capsule Filling
- The effect of diluents on drug solubility
- The effect of pH on drug solubility
- The effect of lubricant on drug solubility
- The effect of humidity on capsule
- The effect of increasing lubricant concentration on drug solubility
- Dissolution testing of tablet
- Quality control tests for tablet

PHARMACEUTICS 2A

INTRODUCTION

The goal of the laboratory is to provide students with practical training in performing bioequivalence studies. The lab offers hands on training on how to design, perform, analyze and interpret results and write reports of bioequivalence studies. The lab/tutorial also aims to complement the core course in providing essential knowledge regarding fundamental factors affecting pharmacokinetics parameters of drug by using means of practice problem, computer simulation program and group project work.

EQUIPMENT AND INSTRUMENTS

- HPLC
- Centrifuges
- Vortex
- Centrifuge tubes
- UV spectrophotometer
- USP Dissolution tester
- Freezer
- WinNonlin software
- SPSS software

EXPERIMENTS

- Identify and differentiate the characteristics of zero and first order kinetics
- Determine the rate constant of reaction and initial concentration of reactants
- Application of WinNonlin as a tool to determine pharmacokinetics parameters of a given set of drug plasma concentration over time data
- Comparison of pharmacokinetic parameters of two marketed product of paracetamol (Panadol and Adol) following a 500 mg single dose in healthy adult volunteers under fasted and fed conditions. The bioequivalence study was approved by the ethical committee in the university