ADITYA
PHARMACY COLLEGE
Approved by AICTE & PCI – NEW DELHI, Affiliated to JNTU KAKINADA
(Formerly known as Aditya Institute of Pharmaceutical Sciences & Research)
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B. PHARMACY		
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ADITYA PHARMACY COLLEGE

PRINCIPAL

BP 502 T. Industrial PharmacyI (Theory)

45 Hours

Scope: Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product.

Objectives: Upon completion of the course the student shall be able to

1. Know the various pharmaceutical dosage forms and their manufacturing techniques.
2. Know various considerations in development of pharmaceutical dosage forms
3. Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality

Course content:

3 hours/ week

UNIT-I **07 Hours**

Preformulation Studies: Introduction to preformulation, goals and objectives, study of physicochemical characteristics of drug substances.

a. Physical properties: Physical form (crystal & amorphous), particle size, shape, flow properties, solubility profile (pKa, pH, partition coefficient), polymorphism

b. Chemical Properties: Hydrolysis, oxidation, reduction, racemisation, polymerization

BCS classification of drugs & its significant

Application of preformulation considerations in the development of solid, liquid oral and parenteral dosage forms and its impact on stability of dosage forms.

UNIT-II **10 Hours**

Tablets:

a. Introduction, ideal characteristics of tablets, classification of tablets. Excipients, Formulation of tablets, granulation methods, compression and processing problems. Equipments and tablet tooling.

b. Tablet coating: Types of coating, coating materials, formulation of coating composition, methods of coating, equipment employed and defects in coating.

c. Quality control tests: In process and finished product tests

Liquid orals: Formulation and manufacturing consideration of syrups and elixirs suspensions and emulsions; Filling and packaging; evaluation of liquid orals official in pharmacopoeia

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SURAMPALEM-533437

A DISSERTATION ON

"FORMULATION AND EVALUATION OF METRONIDAZOLE FAST DISSOLVING TABLETS"

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the Degree of Bachelor of Pharmacy (2021)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

SUBMITTED BY

A. VENKATESWARA RAO(173G1R0001)

A. VARUN KUMAR (173G1R0002)

B. MERCY JYOTHI (173G1R0003)

B. JENNY JOY (173G1R0004)

B. ROHITH KUMAR (173G1R0005)

UNDER THE GUIDANCE OF

MR. T.UDAY KUMAR, M.Pharm
Associate Professor
Department of Pharmaceutics

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SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE
Surampalem – 533437

2020-2021

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CERTIFICATE BY THE GUIDE

*I hereby declare that this dissertation entitled "**Formulation and Evaluation of Metronidazole Fast Dissolving Tablets**", is a original research work carried out by A. Venkateswararao(173G1R0001), A.Varun kumar (173G1R0002), B.Mercy Jyothi (173G1R0003), B.Jenny Joy(173G1R0004), B.Rohith Kumar (173G1R0005).under my supervision in partial fulfilment of the requirement for the degree of Bachelor of Pharmacy.*

T. Uday Kumar.

T.Uday kumar,M.Pharm

Associate Professor

Department of Pharmaceutics

Aditya Pharmacy College

PRINCIPAL
Aditya College of Pharmacy

Internal Examiner

External Examiner

DECLARATION

*The project embodied in this thesis entitled "**Formulation and Evaluation of Metronidazole Fast Dissolving Tablets** ", was carried out in the Department of Pharmaceutics under the guidance of T.Uday Kumar, M.Pharm, Aditya Pharmacy College, Surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.*

A.VENKATESWARA RAO (173G1R0001) A.Venkateswararao

A.VARUN KUMAR (173G1R0002) A Varun kumar

B. MERCY JYOTHI (173G1R0003) B Mercy Jyothi

B. JENNY JOY (173G1R0004) B. Jenny Joy

B. ROHITH KUMAR (173G1R0005) B. Rohith Kumar

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CONCLUSION

. The ultimate goal of formulation of metronidazole fast dissolving tablets is to get optimal treatment with maximal safety. Compared with sustained release formulation immediate release formulation avoids dose dumping and allows fast onset of action which has advantage of greater convenience and potentially improved compliance. This can be reasonably accomplished by development of tablets using super disintegrant.

. In this present investigation ,an attempt was made to develop the immediate release of Metronidazole tablets a novel antibiotic to treat Giardiasis, Pelvic inflammatory disease as amodel drug.

. Standard graph of Metronidazole in 0.1N HCl buffer was prepared by using UV Spectro-photometer at 273nm .It has good reproducibility and this method was used to find out concentration of metronidazole from formulation.

In vitro drug release studies and disintegration time studies were conducted for tablets .From data it was found the percentage of super disintegrant affect the release profile. As the amount of super disintegrant increases, drug release was enhanced.

. In vitro dissolution test was compared with marketed sample and F2 values werecalculated for optimized batch. Dissolution profile was matched with marketed and F2 values was good.

. Various Kinetic models were assessed for the optimized formulation (F4)andmarketed tablets. It was observed that F4 was following first order and it complieswith marketed. The optimized formulation(F4) shows highest R2.

.Thus ,the objective of this research work was fulfilled by developing fast releasedrug delivery system with less disintegration time of tablets containing metroni-dazole as a model drug and a success of in-vitro drug release studies recommendthe product for further in vivo studies which may improve patient compliance.

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BP701T. INSTRUMENTAL METHODS OF ANALYSIS (Theory)

45 Hours

Scope: This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart a fundamental knowledge on the principles and instrumentation of spectroscopic and chromatographic technique. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.

Objectives: Upon completion of the course the student shall be able to

1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis
2. Understand the chromatographic separation and analysis of drugs.
3. Perform quantitative & qualitative analysis of drugs using various analytical instruments.

Course Content:

UNIT –I **10 Hours**

UV Visible spectroscopy

Electronic transitions, chromophores, auxochromes, spectral shifts, solvent effect on absorption spectra. Beer and Lambert's law, Derivation and deviations.

Instrumentation - Sources of radiation, wavelength selectors, sample cells, detectors- Photo tube, Photomultiplier tube, Photo voltaic cell, Silicon Photodiode.

Applications - Spectrophotometric titrations, Single component and multi component analysis

Fluorimetry

Theory, Concepts of singlet, doublet and triplet electronic states, internal and external conversions, factors affecting fluorescence, quenching, instrumentation and applications

UNIT –II **10 Hours**

IR spectroscopy

Introduction, fundamental modes of vibrations in poly atomic molecules, sample handling, factors affecting vibrations

Instrumentation - Sources of radiation, wavelength selectors, detectors - Golay cell, Bolometer, Thermocouple, Thermister, Pyroelectric detector and applications

Flame Photometry-Principle, interferences, instrumentation and applications

"COLORIMETRIC DETERMINATION OF FLAVONOIDS IN ARGEMONE MEXICANA EXTRACTS BY DERIVATIZATION METHOD"

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the degree of Bachelor of Pharmacy (2021)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

Submitted BY

GANUGULA. SIVAPARVATHI (173G1R00016)

GEDDAM SRI KALPANA (173G1R00017)

GEESALA. RUDRA PUJITHA (173G1R00018)

INDUGULA. SUNEETHA (173G1R00021)

Under the Guidance of

Miss. BALLA.SUJIYA, M. Pharm.

Assistant professor

Aditya Pharmacy College

Surampalem - 533437

2020-2021

ADITYA PHARMACY COLLEGE SURAMPALEM

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SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled "COLORIMETRIC DETERMINATION OF FLAVONOIDS IN ARGEMONE MEXICANA PLANT EXTRACTS BY DERIVATIZATION METHOD" was submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the award of the degree of **Bachelor of Pharmacy** is a record of original research work carried out by G. SIVA PARVATHI (173G1R0016), G.SRI KALPANA (173G1R0017), G. RUDRA PUJITHA (173G1R0018), I. SUNEETHA (173G1R0021).

They have done this research work under the supervision of **Miss. BALLA.SUJIYA,** M. Pharm and it has not been previously submitted to any other university or academic institution for any higher degree.

Dr. D. Sathis Kumar, *M.Pharm, Ph.D*
PRINCIPAL
Principal, Aditya Pharmacy College
SURAMPALEM-533 437
Aditya Pharmacy College,
Surampalem-533437.

Place: Surampalem

Date: 13/07/2021

Internal Examiner

ADITYA PHARMACY COLLEGE SURAMPALEM

External Examiner

PRINCIPAL
Aditya College of Pharmacy
SURAMPALEM-533437

DECLARATION

The project embodied in this thesis entitled "COLORIMETRIC DETERMINATION OF FLAVONOIDS IN ARGEMONE MEXICANA PLANT EXTRACTS BY DERIVATIZATION METHOD" was carried out in the department of Pharmaceutical Analysis under the guidance of, **Miss. BALLA.SUJIYA**, M.Pharm, Aditya Pharmacy College, Surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.

G. Siva Parvathi

GANUGULA.SIVA PARVATHI
(173G1R0016)

G. Sri Kalpana

GEDDAM.SRI KALPANA
(173G1R0017)

G. Rudra Pujitha

GEESALA.RUDRA PUJITHA
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I. Suneetha

INDUGULA.SUNEETHA
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CONCLUSION

The results indicate that the proposed method is simple, precise and accurate They comply the Method Validation in line with ICH guidelines. Moreover colorimeters are readily available and affordable

SUMMARIZED TABLE:

ETHANOL EXTRACT:

Parameter	Results
Wavelength(nm)	415nm
Linearity Range	10-50µg/ml
Regression Equation	0.999
Slope	0.010
Intercept	0.0327
LOD	0.691µg ml
LOQ	1.78µg/ml

TABLE 1.25: Summarized table for ETHANOL EXTRACT

AQUEOUS EXTRACT:

Parameter	Results
Wavelength(nm)	435nm
Linearity Range	10-50µg/ml
Regression Equation	0.998
Slope	0.010
Intercept	0.0229
LOD	0.771µg ml
LOQ	1.55µg/ml

TABLE 1.26: Summarized table for AQUEOUS EXTRACT

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BP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS
(Theory)

45 Hours

Scope: This subject is designed to impart knowledge and skills of Biopharmaceutics and pharmacokinetics and their applications in pharmaceutical development, design of dose and dosage regimen and in solving the problems arised therein.

Objectives: Upon completion of the course student shall be able to:

1. Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance.
2. Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.
3. To understand the concepts of bioavailability and bioequivalence of drug products and their significance.
4. Understand various pharmacokinetic parameters, their significance & applications.

Course Content:

UNIT-I **10 Hours**

Introduction to Biopharmaceutics

Absorption: Mechanisms of drug absorption through GIT, factors influencing drug absorption though GIT, absorption of drug from Non per oral extra-vascular routes. **Distribution** Tissue permeability of drugs, binding of drugs, apparent, volume of drug distribution, plasma and tissue protein binding of drugs, factors affecting protein-drug binding. Kinetics of protein binding, Clinical significance of protein binding of drugs

UNIT- II **10 Hours**

Elimination: Drug metabolism and basic understanding metabolic pathways renal excretion of drugs, factors affecting renal excretion of drugs, renal clearance, Non renal routes of drug excretion of drugs

Bioavailability and Bioequivalence: Definition and Objectives of bioavailability, absolute and relative bioavailability, measurement of bioavailability, *in-vitro* drug dissolution models, *in-vitro-in-vivo* correlations, bioequivalence studies, methods to enhance the dissolution rates and bioavailability of poorly soluble drugs.

UNIT- III **10 Hours**

Pharmacokinetics: Definition and introduction to Pharmacokinetics, Compartment models, Non compartment models, physiological models, One compartment open model, (a). Intravenous Injection (Bolus) (b). Intravenous infusion and (c) Extra vascular administrations, Pharmacokinetics parameters - K_E ,t1/2,Vd,AUC,Ka, Clt and Cl_R- definitions methods of eliminations, understanding of their significance and application -

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"DISSOLUTION ENHANCEMENT BCS CLASS II DRUG USING SOLID DISPERSION TECHNIQUE"

Dissertation submitted to the JNTU-K University in partial fulfilment of the requirements for the degree of Bachelor of Pharmacy.

(2021)

Jawaharlal Nehru Technological University, Kakinada, A.P

BY:

K. BHAVITHA (173G1R0022) **K. GOMANIKANTA (173G1R0025)**

K. RAMYASUGANDHI (173G1R0023) **K. MANIKANTA YADAV(173G1R0026)**

K. CHANDRA SEKHAR (173G1R0024)

Under the guidance of,

Mrs. Gowripattapu Sridevi M.Pharm(Ph.D)

Assoc. Professor

Department of pharmaceutics

Aditya Pharmacy College

Surrampalem-533437

2017-2021

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya College of Pharmacy
SURAMPALEM-533437

CERTIFICATE

This is to certify that the dissertation entitled "DISSOLUTION ENHANCEMENT BCS CLASS II DRUG USING SOLID DISPERSION TECHNIQUE", submitted to the JNTU-K University, Kakinada, in partial fulfilment of the requirements for the award of the degree of Bachelor of Pharmacy is a record of original research work carried out by k. Bhavitha (173G1R0022),k.RamyaSugandhi(173G1R0023),k.Chandrasekhar(173G1R0024), k.Gomanikanta(173G1R0025), k.Manikanta Yadav(173G1R0026) under the supervision of Mrs.Gowripattapu Sridevi and it has been previously not submitted to any other University of Academic Instituition for any higher degree.

Place: Surampalem

Date:

Dr.D.SATHIS KUMAR, M.Pharm,Ph.D

Principal and Professor,

Aditya Pharmacy College

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Internal Examiner

External Examiner

PRINCIPAL
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SURAMPALEM-533437

DECLARATION

The project embodied in this thesis entitled "Dissolution Enhancement Bcs Class II Drug Using Solid Dispersion Technique", was carried out in the Department of Pharmaceutics under the guidance of Mrs.Gowripattapu Sridevi, M.Pharm,(Ph.D), Aditya Pharmacy College, Surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.

K. BHAVITHA (173G1R0022) K. Bhavitha

K. RAMYA SUGANDHI (173G1R0023) K. Ramya Sugandhi

K. CHANDRA SEKHAR (173G1R0024) K. Chandra Sekhar.

K. GOMANIKANTA (173G1R0025) K. Gomanikanta

K. MANIKANTA YADAV (173G1R0026) K. Manikanta

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9. SUMMARY AND CONCLUSION

- Studies were under taken on the preparation and evaluation of solid dispersion of bilastine with a view to develop fast release formulation of bilastine.
- In the preparation of solid dispersion carries such as PEG 4000 and Mannitol were used. In this present study solid dispersions were prepared by solvent evaporation and fusion methods.
- The solid dispersions prepared were interaction to be fine and free flowing powders.
- All the solid dispersions prepared were found to be uniform in drug content.
- The dissolution of bilastine from all dispersions followed first order kinetics.
- Among the carriers used PEG4000 (1:2) gave the fastest dissolution rate and the order of dissolution of bilastine from the various solid dispersions.
- Bilastine solid dispersions in PEG4000 prepared at drug: carrier ratio of 1:2 was formulated and evaluated for dissolution characteristics.
- The dissolution of bilastine solid dispersions were found to be fast and rapid when compared to the pure drug formulation.
- The solid dispersion containing drug: PEG4000 (1:2) considered as a fast release dosage form of bilastine when compared to pure drug and ration of bilastine solid dispersions.

ADITYA PHARMACY COLLEGE SUBAMPALEM

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SUBRAMPALEM, 533437

BP202T. PHARMACEUTICAL ORGANIC CHEMISTRY –I (Theory)

45 Hours

Scope: This subject deals with classification and nomenclature of simple organic compounds, structural isomerism, intermediates forming in reactions, important physical properties, reactions and methods of preparation of these compounds. The syllabus also emphasizes on mechanisms and orientation of reactions.

Objectives: Upon completion of the course the student shall be able to

1. write the structure, name and the type of isomerism of the organic compound
2. write the reaction, name the reaction and orientation of reactions
3. account for reactivity/stability of compounds,
4. identify/confirm the identification of organic compound

Course Content:

General methods of preparation and reactions of compounds superscripted with asterisk (*) to be explained

To emphasize on definition, types, classification, principles/mechanisms, applications, examples and differences

UNIT-I **07 Hours**

- **Classification, nomenclature and isomerism**

  Classification of Organic Compounds

  Common and IUPAC systems of nomenclature of organic compounds

  (up to 10 Carbons open chain and carbocyclic compounds)

Structural isomerisms in organic compounds

UNIT-II10 Hours

- **Alkanes*, Alkenes* and Conjugated dienes***

  SP^3 hybridization in alkanes, Halogenation of alkanes, uses of paraffins.

  Stabilities of alkenes, SP^2 hybridization in alkenes

  E_1 and E_2 reactions – kinetics, order of reactivity of alkyl halides, rearrangement of carbocations, Saytzeffs orientation and evidences. E_1 verses E_2 reactions, Factors affecting E_1 and E_2 reactions. Ozonolysis, electrophilic addition reactions of alkenes, Markownikoff's orientation, free radical addition reactions of alkenes, Anti Markownikoff's orientation.

  Stability of conjugated dienes, Diel-Alder, electrophilic addition, free radical addition reactions of conjugated dienes, allylic rearrangement

UNIT-III10 Hours

- **Alkyl halides***

  SN_1 and SN_2 reactions - kinetics, order of reactivity of alkyl halides, stereochemistry and rearrangement of carbocations.

  SN_1 versus SN_2 reactions, Factors affecting SN_1 and SN_2 reactions

  Structure and uses of ethylchloride, Chloroform, trichloroethylene, tetrachloroethylene, dichloromethane, tetrachloromethane and iodoform.

- **Alcohols***- Qualitative tests, Structure and uses of Ethyl alcohol, Methyl alcohol, chlorobutanol, Cetosteryl alcohol, Benzyl alcohol, Glycerol, Propylene glycol

UNIT-IV10 Hours

- **Carbonyl compounds* (Aldehydes and ketones)**

  Nucleophilic addition, Electromeric effect, aldol condensation, Crossed Aldol condensation, Cannizzaro reaction, Crossed Cannizzaro reaction, Benzoin condensation, Perkin condensation, qualitative tests, Structure and uses of Formaldehyde, Paraldehyde, Acetone, Chloral hydrate, Hexamine, Benzaldehyde, Vanilin, Cinnamaldehyde.

UNIT-V **08 Hours**

- **Carboxylic acids***

  Acidity of carboxylic acids, effect of substituents on acidity, inductive effect and qualitative tests for carboxylic acids ,amide and ester

  Structure and Uses of Acetic acid, Lactic acid, Tartaric acid, Citric acid, Succinic acid. Oxalic acid, Salicylic acid, Benzoic acid, Benzyl benzoate, Dimethyl phthalate, Methyl salicylate and Acetyl salicylic acid

- **Aliphatic amines*** - Basicity, effect of substituent on Basicity. Qualitative test, Structure and uses of Ethanolamine, Ethylenediamine, Amphetamine

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SYNTHESIS AND CHARACTERIZATION OF SUBSTITUTED 2-AMINO-1, 3-OXAZINE DERIVATIVES

DISSERTATION WORK SUBMITTED TO

In partial fulfillment for the award of the degree of

BACHELOR OF PHARMACY (2017 – 2021)

BY

K. Manikantasai	*(173G1R0027)*
L. VIKASH	*(173G1R0028)*
M. V. V. Satyanarayana	*(173G1R0029)*
M. Sri Sai Srija	*(173G1R0030)*
M. Pujitha	*(173G1R0031)*

Under the guidance of

Mr. CH. V. APPARAO, M. Pharmacy

Assistant Professor

Dept. of Pharmaceutical Chemistry

ADITYA PHARMACY COLLEGE

(Affiliated to PCI, AICTE - New Delhi& JNTUK - Kakinada)

SURAMPALEM, E.G. DISTRICT-533437, ANDHRA PRADESH

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CERTIFICATE

This is to certify that the dissertation work entitled a study on "**Synthesis and characterization of substituted 2-amino-1, 3-oxazine derivatives**" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada during the academic year 2017-2021.This is a bonafide work carried out by K. Manikantasai, L. Vikash, M.V. V. Satyanarayana, M. Sri Saisrija and M. Pujitha under the guidance and supervision of Mr. CH. V. Apparao, Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

CH.V.Apparao 26/7/21

INSTITUTION GUIDE

Mr. CH. V. Apparao, M. Pharm

Assistant Professor

Department of Pharmaceutical Chemistry

Aditya Pharmacy College

Surampalem-533437

PRINCIPAL Aditya Pharmacy College SURAMPALEM-533 437

CERTIFIED BY

Dr. D. Satish Kumar, M. Pharm., Ph.D.

Professor & Principal

Department of Pharmacy

Aditya Pharmacy College

Surampalem-533437

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL Aditya Pharmacy College SURAMPALEM 533 437

(Internal Examiner)

(External Examiner)

ABSTRACT

The chalcone and chalcone derivatives were treated with urea in presence of ethanolic NaOH and to get substituted 2-amino-1, 3-oxazine derivatives. So, we synthesized five derivatives of 2- amino oxazines and a melting point of the reaction products were determined by melting point apparatus and was recorded. Purity of the compounds was ascertained by Thin Layer Chromatography on silica gel plates using iodine as visualizing agent.

In this study, we have synthesized five derivatives of substituted 2-amino-1, 3-oxazine derivatives. The test compounds were synthesized in good percentage of yield their physical and analytical determination was done by using melting point apparatus, purification of compounds by TLC, and the structural assignments of new compounds were made on the basis of IR and ^{1}HNMR data. This scheme of reaction went to completion within 3 hr. After completion of reaction and work up the products were identified and characterized by using IR and ^{1}HNMR techniques.

From our present investigation, it can be concluded that we synthesized five derivatives of substituted 2-amino-1, 3-oxazines by treated chalcone derivatives with urea in presence of ethanolic NaOH and the structural assignments of these compounds are made on the basis of IR and HNMR data.

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CONCLUSION AND FUTURE SCOPE

n this study, we have synthes zed two derivatives of substituted 2-amino-1, 3-oxazine derivatives y the scheme depicted in Figure 1. The test compounds were synthesized in good percentage of ield. Their physical and analytical determination was done by using melting points apparatus, urification of compounds by TLC and the structural assignments of new compounds were made n the basis of IR and ^{1}H NMR data. This scheme of reaction went to completion within 3 hr. After completion of reaction and work up the products were identified and characterized by using IR and HNMR techniques and their structures were elucidated as 4,6-diphenyl-6H-1, 3-oxazine- 2-amine, 5-[4-(N, N-dimethylamino) phenyl-4-phenyl-6H-1, 3-oxazine-2-amine. The isolated yield was 78%, 80%.

From our present investigation, it can oe concluded hat we synthesized five derivatives of substituted 2-amino-1, 3-oxazines by treated chalcone derivatives with urea in presence of ethanolic NaOH and the structural assignments of these compounds are made on the basis of IR and ^{1}HNMR data.

Based upon our present findings, the future work would be directed further analysis of structure by Mass spectroscopy is required to interpret the synthesized compounds and more extensive study is needed to confirm the mode of action studies to optimize the effectiveness of these compounds. The structural modification of the parent analogs with the help of modern QSAR tools, which may lead to the development of various biological activities such as anti tubercular, anti bacterial, anti fungal studies, anti coagulant activity, and anti microbial activity, leads with diversified activity profile.

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CONCLUSION AND FUTURE SCOPE

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From our present investigation, it can be concluded that we synthesized five derivatives of substituted 2-amino-1, 3-oxazines by treated chalcone derivatives with urea in presence of ethanolic NaOH and the structural assignments of these compounds are made on the basis of IR and ^{1}HNMR data.

Based upon our present findings, the future work would be directed further analysis of structure by Mass spectroscopy is required to interpret the synthesized compounds and more extensive study is needed to confirm the mode of action studies to optimize the effectiveness of these compounds. The structural modification of the parent analogs with the help of modern QSAR tools, which may lead to the development of various biological activities such as anti tubercular, anti bacterial, anti fungal studies, anti coagulant activity, and anti microbial activity, leads with diversified activity profile.

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SURAMPALEM 533 437

BP402T. MEDICINAL CHEMISTRY – I (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.

Objectives: Upon completion of the course the student shall be able to

1. understand the chemistry of drugs with respect to their pharmacological activity
2. understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
3. know the Structural Activity Relationship (SAR) of different class of drugs
4. write the chemical synthesis of some drugs

Course Content:

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs superscripted (*)

UNIT- I **10 Hours**

Introduction to Medicinal Chemistry

History and development of medicinal chemistry

Physicochemical properties in relation to biological action

Ionization, Solubility, Partition Coefficient, Hydrogen bonding, Protein binding, Chelation, Bioisosterism, Optical and Geometrical isomerism.

Drug metabolism

Drug metabolism principles- Phase I and Phase II.

Factors affecting drug metabolism including stereo chemical aspects.

UNIT- II **10 Hours**

Drugs acting on Autonomic Nervous System

Adrenergic Neurotransmitters:

Biosynthesis and catabolism of catecholamine.

Adrenergic receptors (Alpha & Beta) and their distribution.

Sympathomimetic agents: SAR of Sympathomimetic agents

Direct acting: Nor-epinephrine, Epinephrine, Phenylephrine*, Dopamine.

Methyldopa, Clonidine, Dobutamine, Isoproterenol, Terbutaline, Salbutamol*, Bitolterol, Naphazoline, Oxymetazoline and Xylometazoline.

- Indirect acting agents: Hydroxyamphetamine, Pseudoephedrine, Propylhexedrine.
- Agents with mixed mechanism: Ephedrine, Metaraminol.

Adrenergic Antagonists:

Alpha adrenergic blockers: Tolazoline*, Phentolamine, Phenoxybenzamine, Prazosin, Dihydroergotamine, Methysergide.

Beta adrenergic blockers: SAR of beta blockers, Propranolol*, Metibranolol, Atenolol, Betazolol, Bisoprolol, Esmolol, Metoprolol, Labetolol, Carvedilol.

UNIT-III **10 Hours**

Cholinergic neurotransmitters:

Biosynthesis and catabolism of acetylcholine.

Cholinergic receptors (Muscarinic & Nicotinic) and their distribution.

Parasympathomimetic agents: SAR of Parasympathomimetic agents

Direct acting agents: Acetylcholine, Carbachol*, Bethanechol, Methacholine, Pilocarpine.

Indirect acting/ Cholinesterase inhibitors (Reversible & Irreversible): Physostigmine, Neostigmine*, Pyridostigmine, Edrophonium chloride, Tacrine hydrochloride, Ambenonium chloride, Isofluorphate, Echothiophate iodide, Parathione, Malathion.

Cholinesterase reactivator: Pralidoxime chloride.

Cholinergic Blocking agents: SAR of cholinolytic agents

Solanaceous alkaloids and analogues: Atropine sulphate, Hyoscyamine sulphate, Scopolamine hydrobromide, Homatropine hydrobromide, Ipratropium bromide*.

Synthetic cholinergic blocking agents: Tropicamide, Cyclopentolate hydrochloride, Clidinium bromide, Dicyclomine hydrochloride*, Glycopyrrolate, Methantheline bromide, Propantheline bromide, Benztropine mesylate, Orphenadrine citrate, Biperidine hydrochloride, Procyclidine hydrochloride*, Tridihexethyl chloride, Isopropamide iodide, Ethopropazine hydrochloride.

UNIT- IV **08 Hours**

Drugs acting on Central Nervous System

Sulphonamides and Sulfones

Historical development, chemistry, classification and SAR of Sulfonamides: Sulphamethizole, Sulfisoxazole, Sulphamethizine, Sulfacetamide*, Sulphapyridine, Sulfamethoxaole*, Sulphadiazine, Mefenide acetate, Sulfasalazine.

Folate reductase inhibitors: Trimethoprim*, Cotrimoxazole.

Sulfones: Dapsone*.

UNIT – V **07 Hours**

Introduction to Drug Design

Various approaches used in drug design.

Physicochemical parameters used in quantitative structure activity relationship (QSAR) such as partition coefficient, Hammet's electronic parameter, Tafts steric parameter and Hansch analysis.

Pharmacophore modeling and docking techniques.

Combinatorial Chemistry: Concept and applications of combinatorial chemistry: solid phase and solution phase synthesis.

DEVELOPMENT AND VALIDATION OF UV SPECTROPHOTOMETRIC METHOD FOR THE DETERMINATION OF METOPROLOL SUCCINATE

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the Degree of Bachelor of Pharmacy (2021)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

Submitted By

MD.KHAMURUNNISA (173G1R0032)

MD.SHEEMA (173G1R0033)

MA. BASHEERUNNISA BEGUM (173G1R0034)

N. SYAMPRASAD (173G1R0035)

N. PRIYANKA (173G1R0036)

Under the Guidance of

P. PUSHPA, M. Pharm.
Assistant Professor,
Department of Pharmaceutical Analysis & Quality Assurance

ADITYA PHARMACY COLLEGE
Surampalem-533437

2020-2021

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE

Aditya Nagar, ADB Road, Surampalem – 533437

CERTIFICATE

This is to certify that the dissertation entitled *"DEVELOPMENT AND VALIDATION OF UV SPECTROPHOTOMETRIC METHOD FOR THE DETERMINATION OF METOPROLOL SUCCINATE"* is submitted to the JAWAHARLALNEHRU TECHNOLOGICAL UNIVERSITY, kakinada, in partial fulfillment of the requirements for the award of the Degree of **Bachelor of Pharmacy** is record of original research work carried out by MD.KHAMURUNNISA(173G1R0032),MD.SHEEMA(173G1R0033), MA.BASHEERUNNISABEGUM(173G1R0034),N.SYAMPRASAD(173G1R00 35), N.PRIYANKA(173G1R0036). They did this research work under the supervision of Ms. P.PUSHPA, M. Pharm., Assistant Professor, and it has been previously not submitted to any other University or academic institution for any higher degree.

Dr. D. SATHIS KUMAR, M.Pharm., Ph.D.

Principal

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Place: Surampalem

Date:

Internal Examiner

ADITYA PHARMACY COLLEGE * SURAMPALEM *

External Examiner

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE

Aditya Nagar, ADB Road, Surampalem – 533437

We hereby declare that this dissertation entitled "*DEVELOPMENT AND VALIDATION OF UV SPECTROPHOTOMETRIC METHOD FOR THE DETERMINATION OF METOPROLOL SUCCINATE*" that is being submitted by us in partial fulfillment for the award of degree of ***Bachelor of Pharmacy*** in Pharmaceutical Analysis to **Jawaharlal Nehru Technological University**. We further declare that the same has not been submitted earlier for the award of any degree or diploma to this or any other university. We also declare that we are solely responsible for the findings in the dissertation.

MD. KHAMURUNNISA (173G1R 0032) Md. khamurunnisa.

MD. S HEEMA (173G1R0033) Md. Sheema

MA. BASHEERUNNISA BEGUM (173G1R0034) MA. Basheerunnisa.

M. SYAM PRASAD (173G1R0035) N. SyamPrasad

N. PRIYANKA (173G1R0036) N. Priyanka

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7.CONCLUSION

All the above factors lead to the conclusion that the proposed method is accurate, precise, simple, robust and cost effective and can be applied successfully for the determination of Metoprolol in pharmaceutical formulation by UV.

BP503.T. PHARMACOLOGY-II (Theory)

45 Hours

Scope: This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body and in addition,emphasis on the basic concepts of bioassay.

Objectives: Upon completion of this course the student should be able to

1. Understand the mechanism of drug action and its relevance in the treatment of different diseases
2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
3. Demonstrate the various receptor actions using isolated tissue preparation
4. Appreciate correlation of pharmacology with related medical sciences

Course Content:

UNIT-I **10hours**

1. Pharmacology of drugs acting on cardio vascular system

a. Introduction to hemodynamic and electrophysiology of heart.
b. Drugs used in congestive heart failure
c. Anti-hypertensive drugs.
d. Anti-anginal drugs.
e. Anti-arrhythmic drugs.
f. Anti-hyperlipidemic drugs.

UNIT-II **10hours**

1. Pharmacology of drugs acting on cardio vascular system

a. Drug used in the therapy of shock.
b. Hematinics, coagulants and anticoagulants.
c. Fibrinolytics and anti-platelet drugs
d. Plasma volume expanders

2. Pharmacology of drugs acting on urinary system

a. Diuretics
b. Anti-diuretics.

UNIT-III **10hours**

3. Autocoids and related drugs

a. Introduction to autacoids and classification
b. Histamine, 5-HT and their antagonists.
c. Prostaglandins, Thromboxanes and Leukotrienes.
d. Angiotensin, Bradykinin and Substance P.
e. Non-steroidal anti-inflammatory agents
f. Anti-gout drugs
g. Antirheumatic drugs

Evaluation of anti-oxidant activity and anti-inflammatory activity of Hydroxychavicol

A Dissertation Submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

In the partial fulfillment of the requirements for the Award of the degree of

BACHELOR OF PHARMACY

in

PHARMACOLOGY

By

Padala.Vasanthi	*(173G1R0037)*
Palepu.Satyaveni	*(173G1R0038)*
Rowthu.Sukanya	*(173G1R0039)*
Shaik.Abdul Ruheena	*(173G1R0040)*
Sheik.Reshma	*(173G1R0041)*

Under the esteemed guidance of

S. Nageswara Rao, M.Pharm.,(Ph.D)

Associate Professor

ADITYA PHARMACY COLLEGE

Approved by AICTE & PCI, Affiliated to JNTUK, Kakinada

Aditya Nagar, ADB Road, Surampalem - 533 437

East Godavari District, Andhra Pradesh

BATCH: 2017-2021

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation work entitled a study on "A STUDY ON EVALUTION OF ANTI-OXIDANT ACTIVITY AND ANTI-INFLAMMATORY ACTIVITY OF HYDROXY CHAVICOL" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2017-2021. This is a bonafide work carried out by P.Vasanthi (173G1R0037), P.Satyaveni (173G1R0038), R.Sukanya (173G1R0039), S.Abdul Ruheena (173G1R0040), S.Reshma(173G1R0041) under the direct guidance and supervision of S.Ngeswara Rao, M.Pharm., (Ph.D.), Associate Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

(Internal Examiner)

(External Examiner)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

DECLARATION

We hereby declare that the dissertation work entitled "A STUDY ON EVALUATION OF ANTI-OXIDANT ACTIVITY AND ANTI-INFLAMMATORY ACTIVITY OF HYDROXY CHAVICOL" in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2017-2021, was carried out by us in the library and laboratories of Aditya Pharmacy College, Surampalem, Andhra Pradesh under the valuable and efficient guidance and supervision of Mr. S.Nageswara Rao, M.Pharm.,(Ph.D.),.Associate Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

Padala..Vasanthi	*(173G1R0037)*	P. Vasanthi
Palepu.Satyaveni	*(173G1R0038)*	P. Satyaveni
Rowthu.Sukanya	*(173G1R0039)*	R. Sukanya
Shaik.Abdul Ruheena	*(173G1R0040)*	S. Ab Ruheena
Sheik.Reshma	*(173G1R0041)*	Sheik Reshma

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8. CONCLUSION

ANTI-OXIDANT ACTIVITY:

From above all *In vitro* anti-oxidant results indicate that our isolated compound Hydroxychavicol has a significant anti-oxidant activity which is compared with Ascorbic Acid (standard). . The isolated compound of Hydroxychavicol posses anti-oxidant activity. This anti-oxident activity of Hydroxychavicol was determined by DPPH and Hydroxy Radical Method.

IN VITRO ANTI-INFLAMMATORY ACTIVITY:

HUMAN RED BLOOD CELL MEMBRANE STABILIZATION METHOD:

All the results were compared with standard indomethacin which showed 71.43% protection. Concentration of 500mcg/ml showed higher anti-inflammatory activity. The results give a justification for the use of hydroxychavicol in anti-inflammatory medicine.

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BP102T. PHARMACEUTICAL ANALYSIS (Theory)

45 Hours

Scope: This course deals with the fundamentals of analytical chemistry and principles of electrochemical analysis of drugs

Objectives: Upon completion of the course student shall be able to

- understand the principles of volumetric and electro chemical analysis
- carryout various volumetric and electrochemical titrations
- develop analytical skills

Course Content:

UNIT-I **10 Hours**

(a) **Pharmaceutical analysis**- Definition and scope

i) Different techniques of analysis

ii) Methods of expressing concentration

iii) Primary and secondary standards.

iv) Preparation and standardization of various molar and normal solutions- Oxalic acid, sodium hydroxide, hydrochloric acid, sodium thiosulphate, sulphuric acid, potassium permanganate and ceric ammonium sulphate

(b)**Errors:** Sources of errors, types of errors, methods of minimizing errors, accuracy, precision and significant figures

(c)Pharmacopoeia, Sources of impurities in medicinal agents,limit tests.

UNIT-II **10 Hours**

- **Acid base titration**: Theories of acid base indicators, classification of acid base titrations and theory involved in titrations of strong, weak, and very weak acids and bases, neutralization curves
- **Non aqueous titration**: Solvents, acidimetry and alkalimetry titration and estimation of Sodium benzoate and Ephedrine HCl

UNIT-III **10 Hours**

- **Precipitation titrations**: Mohr's method, Volhard's, Modified Volhard's, Fajans method, estimation of sodium chloride.
- **Complexometric titration**: Classification, metal ion indicators, masking and demasking reagents, estimation of Magnesium sulphate, and calcium gluconate.
- **Gravimetry**: Principle and steps involved in gravimetric analysis. Purity of the precipitate: co-precipitation and post precipitation, Estimation of barium sulphate.
- Basic Principles,methods and application of diazotisation titration.

UNIT-IV **08 Hours**

Redox titrations

(a) Concepts of oxidation and reduction

(b) Types of redox titrations (Principles and applications)

Cerimetry, Iodimetry, Iodometry, Bromatometry, Dichrometry, Titration with potassium iodate

UNIT-V **07 Hours**

- **Electrochemical methods of analysis**
  - **Conductometry**- Introduction, Conductivity cell, Conductometric titrations, applications.
  - **Potentiometry** - Electrochemical cell, construction and working of reference (Standard hydrogen, silver chloride electrode and calomel electrode) and indicator electrodes (metal electrodes and glass electrode), methods to determine end point of potentiometric titration and applications.
  - **Polarography** - Principle, Ilkovic equation, construction and working of dropping mercury electrode and rotating platinum electrode, applications

ADITYA PHARMACY COLLEGE SURAMPALEM

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SURAMPALEM 533 437

Qualitative evaluation of organic and commercially produced tomatoes at different storage conditions and its comparison

Is a Dissertation Submitted to the

JNT University, Kakinada

In Partial Fulfilment of the Requirements for the
Award of the Degree of

BACHELOR of Pharmacy

By

Simhadri Devi Kalyani (173G1R0042)
Sonali Jain (173G1R0043)
Suggu Vangmayi Swaroopa Reddy(17G1R0044)
Surisetti Ratnaswetha (173G1R0045)
Thibirisetti Veera Venkata Satyanarayana (173G1R0046)

Under The Guidance Of

Dr. D. Sathis Kumar, M.Pharm. Ph.D.,
Professor

Aditya Pharmacy College, Aditya Nagar, Surampalem – 533 437
2017-2021

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

ADITYA
PHARMACY COLLEGE

(Approved by AICTE, PCI and affiliated to JNT University, Kakinada)
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P. Pin: 533437.

Dr. D. SathisKumar M. *Pharm*., Ph. *D.*
Principal& Professor

CERTIFICATE

This is to certify that the dissertation work entitled "Qualitative evaluation of organic and commercially produced tomatoes at different storage conditions and its comparison" on is submitted to the JNT University, Kakinada in partial fulfilment for the award of the degree of Bachelor of Pharmacy. This is a bonafied work Carried out by Simhadri Devi Kalyani(173G1R0042),SonaliJain(173G1R0043),SugguVangmayi SwaroopaReddy(17G1R0044),SurisettiRatnaswetha(173G1R0045).ThibirisettiVeeraVenkataSatyanarayana (173G1R0046)under the supervision of Dr.D.Sathis Kumar, Professor, Aditya Pharmacy College, Surampalem.

Place: Surampalem

Date: 17/11/19

Principal
Aditya Pharmacy College
SURAMPALEM-533 437
(Dr.D.SathisKumar)

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

DECLARATION

We, Simhadri Devi Kalyani (173G1R0042),SonaliJain(173G1R0043), SugguVangmayi swaroopa reddy (17G1R0044),Surisetti Ratnaswetha (173G1R0045),Thibirisetti Veera Venkata Satyanarayana (173G1R0046) , do hereby declare that the dissertation entitled "Estimation of flucloxacillin in bulk drug and tablets by chemical derivatization method and its validation" is a record of genuine research work carried out by us under the supervision of Dr.D.Sathis Kumar, Professor, Aditya Pharmacy College, Surampalem. The work reported herein has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

Place: Surampalem

Simhadri Devi Kalyani	(173G1R0042)	Kalyani
Sonali Jain	(173G1R0043)	Sonali Jain
Suggu Vangmayi Swaroopa Reddy	(17G1R0044)	Vangmayi
Surisetti Ratnaswetha	(173G1R0045)	S. Ratnaswetha
Thibirisetti Veera Venkata Satyanarayana	(173G1R0046)	T. Satyanarayana

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of (food) material that measures a material'sability to conduct an electric current. Electricity conductivity of food material is afunction of product characteristics (composition, sugarand salt content, pH etc.). One possible reason for smaller changes in conductivity at higher TSS could be the higherjuice viscosity limiting the mobility of free ironscarrying electrical charges. Moreover, the drag forionic movement increases when solid content ofjuice increases.

6.CONCLUSION:

While non-organic tomato growers can use synthetic pesticides for pests, organic growers cannot. Organic growers will use spraying alternatives to control pests and ensure healthy soils. From our study, it was revealed that Organic tomatoes are maintaining its nutrients in different storage conditions than nonorganic Tomatoes.

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Recommended Books (Latest Editions)

1. Principles of Biochemistry by Lehninger.
2. Harper's Biochemistry by Robert K. Murry, Daryl K. Granner and Victor W. Rodwell.
3. Biochemistry by Stryer.
4. Biochemistry by D. Satyanarayan and U.Chakrapani
5. Textbook of Biochemistry by Rama Rao.
6. Textbook of Biochemistry by Deb.
7. Outlines of Biochemistry by Conn and Stumpf
8. Practical Biochemistry by R.C. Gupta and S. Bhargavan.
9. Introduction of Practical Biochemistry by David T. Plummer. (3rd Edition)
10. Practical Biochemistry for Medical students by Rajagopal and Ramakrishna.
11. Practical Biochemistry by Harold Varley.

BP 204T.PATHOPHYSIOLOGY (THEORY)

45Hours

Scope: Pathophysiology is the study of causes of diseases and reactions of the body to such disease producing causes.This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms. Hence it will not only help to study the syllabus of pathology, but also to get baseline knowledge required to practice medicine safely, confidently, rationally and effectively.

Objectives: Upon completion of the subject student shall be able to –

1. Describe the etiology and pathogenesis of the selected disease states;
2. Name the signs and symptoms of the diseases; and
3. Mention the complications of the diseases.

Course content:

Unit I **10Hours**

- **Basic principles of Cell injury and Adaptation:**
  Introduction, definitions, Homeostasis, Components and Types of Feedback systems, Causes of cellular injury,Pathogenesis (Cell membrane damage, Mitochondrial damage, Ribosome damage, Nuclear damage),Morphology of cell injury – Adaptive changes (Atrophy, Hypertrophy, hyperplasia, Metaplasia, Dysplasia),Cell swelling, Intra cellular accumulation, Calcification, Enzyme leakage and Cell Death Acidosis &Alkalosis,Electrolyte imbalance

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- **Basic mechanism involved in the process of inflammation and repair:**
  Introduction, Clinical signs of inflammation, Different types of Inflammation,Mechanism of Inflammation – Alteration in vascular permeability and blood flow, migration of WBC's,Mediators of inflammation,Basic principles of wound healing in the skin,Pathophysiology of Atherosclerosis

Unit II **10Hours**

- **Cardiovascular System:**
  Hypertension, congestive heart failure, ischemic heart disease (angina,myocardial infarction, atherosclerosis and arteriosclerosis)
- **Respiratory system:**Asthma, Chronic obstructive airways diseases.
- **Renal system:**Acute and chronic renal failure

Unit II **10Hours**

- **Haematological Diseases:**
  Iron deficiency, megaloblastic anemia (Vit B12 and folic acid), sickle cell anemia, thalasemia, hereditary acquired anemia, hemophilia
- **Endocrine system:** Diabetes, thyroid diseases, disorders of sex hormones
- **Nervous system:** Epilepsy, Parkinson's disease, stroke, psychiatric disorders: depression, schizophrenia and Alzheimer's disease.
- **Gastrointestinal system:** Peptic Ulcer
-

Unit IV **8 Hours**

- Inflammatory bowel diseases, jaundice, hepatitis (A,B,C,D,E,F) alcoholic liver disease.
- **Disease of bones and joints:** Rheumatoid arthritis, osteoporosis and gout
- **Principles of cancer:** classification, etiology and pathogenesis of cancer
- **Diseases of bones and Joints:**Rheumatoid Arthritis, Osteoporosis,Gout

- **Principles of Cancer:** Classification, etiology and pathogenesis of Cancer

Unit V **7 Hours**

- **Infectious diseases:**Meningitis,Typhoid, Leprosy, Tuberculosis

Urinary tract infections

- **Sexually transmitted diseases:**AIDS, Syphilis, Gonorrhea

Recommended Books (Latest Editions)

EVALUATION OF IN-VITRO ANTI OXIDANT AND WOUND HEALING ACTIVITY OF ETHANOLIC LEAF EXTRACT OF MORINGA OLIFERA ON WISTAR ALBINO RATS

A Dissertation submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

In the partial fulfillment of the requirements for the award of the degree

BACHELOR OF PHARMACY

Submitted by

T.Maniteja (173G1R0047)
V.Sindhuja (173G1R0048)
V.Adilakshmi (173G1R0049)
V.Sandeep (173G1R0050)
V.Asitha (173G1R0051)

Under the guidance of

Mrs. Y V V M LAKSHMI PRASANNA, M.Pharm

Asst. Professor,

Department of Pharmacology.

ADITYA PHARMACY COLLEGE

Approved by AICTE, PCI & Affiliated to JNTUK, Kakinada
Aditya Nagar, ADB Road, Surampalem - 533 437
East Godavari District, Andhra Pradesh

2020-21

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled **"EVALUATION OF IN-VITRO ANTI OXIDANT AND WOUND HEALING ACTIVITY OF ETHANOLIC LEAF EXTRACT OF MORINGA OLIFERA ON WISTAR ALBINO RATS"** was submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the award of the degree of **Bachelor of Pharmacy** is a record of original research work carried out by

T. Maniteja (173G1R0047), V. Sinduja (173G1R0048), V. Adilakshmi (173G1R0049), V. Sandeep (173G1R0050) & V. Asitha (173G1R0051)

They have done this research work under the supervision of **Mrs. Y V V M Lakshmi Prasanna**, Asst. Professor and it has not been previously submitted to any other university or academic institution for any higher degree.

Principal
Aditya Pharmacy College
SURAMPALEM-533 437

Dr. D. Sathis Kumar, *M.Pharm, Ph.D.*
Principal,
Aditya Pharmacy College,
Surampalem-533437.

Place : Surampalem
Date :

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

DECLARATION

I hereby declare that the thesis entitled "**EVALUATION OF IN-VITRO ANTI OXIDANT AND WOUND HEALING ACTIVITY OF ETHANOLIC LEAF EXTRACT OF MORINGA OLIFERA ON WISTAR ALBINO RATS**" was carried out by me under the guidance of Mrs. Y V V M LAKSHMI PRASANNA, Assistant Professor in Aditya Pharmacy College. The amount and origin of knowledge derived from the current literature has been recorded through the project work at appropriate places. The work is original and has not been submitted in part or full for any diploma or degree of this or any other university.

T. Maniteja (173G1R0047) T.Manit

V. Sinduja (173G1R0048) V Sindhja

V. Adilakshmi (173G1R0049) V. Lakshmi

V. Sandeep (173G1R0050) V Sandeep

V. Asitha (173G1R0051) V. Asitha

Place : Surampalem

Date :

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SURAMPALEM-533 437

7. CONCLUSION

ANTIOXIDANT ACTIVITY:

From above all *In vitro* antioxidant results indicate that our plant extracts has a significant antioxidant activity which is compared with Ascorbic Acid (standard). The Ethanolic extracts of *moringa olifera* leaves possess antioxidant activity.Anti oxidant activity may be due to the presence of Phytochemical constituents such as flavonoids, saponins, tannins, phenols and glycosides

WOUND HEALING ACTIVITY

The Ethanolic leave extract of moringa olifera have efficient properties of wound- healing activities when correlated with placebo and control. The study provides scientific evidence for farther examination of moringa olifera in the topical therapy and controlling of wounds. The results have been obtained in carefully controlled experiments with laboratory animals where psychological factors can presumably be ruled out. Moringa olifera has a positive influence on the collagen content and stability in a wound and therefore a beneficial role in wound healing Therefore The present study demonstrated that moringa olifera leave extract possess efficient wound healing characteristics due to their anti oxidant activities and increasing hydroxyroline concentration by containing the active compounds such as tannins, flavonoids, saponins,carbohydrates. The ethanolicleave extract of moringa olifera have properties of promotingaccelerated wound-healing activity compared with placebo control. The study provides scientific evidence for farther examination o fmoringa olifera in the topical therapy and management of injuries.

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BP 811 ET. ADVANCED INSTRUMENTATION TECHNIQUES

45 Hours

Scope: This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart advanced knowledge on the principles and instrumentation of spectroscopic and chromatographic hyphenated techniques. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.

Objectives: Upon completion of the course the student shall be able to

- understand the advanced instruments used and its applications in drug analysis
- understand the chromatographic separation and analysis of drugs.
- understand the calibration of various analytical instruments
- know analysis of drugs using various analytical instruments.

Course Content:

10 Hours

UNIT-I

Nuclear Magnetic Resonance spectroscopy

Principles of H-NMR and C-NMR, chemical shift, factors affecting chemical shift, coupling constant, Spin - spin coupling, relaxation, instrumentation and applications

Mass Spectrometry- Principles, Fragmentation, Ionization techniques – Electron impact, chemical ionization, MALDI, FAB, Analyzers-Time of flight and Quadrupole, instrumentation, applications

10 Hours

UNIT-II

Thermal Methods of Analysis: Principles, instrumentation and applications of ThermogravimetricAnalysis (TGA), Differential Thermal Analysis (DTA), Differential Scanning Calorimetry (DSC)

X-Ray Diffraction Methods: Origin of X-rays, basic aspects of crystals, X-ray

Crystallography, rotating crystal technique, single crystal diffraction,powder diffraction, structural elucidation and applications.

10 Hours

UNIT-III

Calibration and validation-as per ICH and USFDA guidelines

Calibration of following Instruments

Electronic balance, UV-Visible spectrophotometer, IR spectrophotometer,

Fluorimeter, Flame Photometer, HPLC and GC

UNIT-IV **08 Hours**

Radio immune assay: Importance, various components, Principle, different methods, Limitation and Applications of Radio immuno assay

Extraction techniques: General principle and procedure involved in the solid phase extraction and liquid-liquid extraction

UNIT-V **07 Hours**

Hyphenated techniques-LC-MS/MS, GC-MS/MS, HPTLC-MS.

Recommended Books (Latest Editions)

1. Instrumental Methods of Chemical Analysis by B.K Sharma
2. Organic spectroscopy by Y.R Sharma
3. Text book of Pharmaceutical Analysis by Kenneth A. Connors
4. Vogel's Text book of Quantitative Chemical Analysis by A.I. Vogel
5. Practical Pharmaceutical Chemistry by A.H. Beckett and J.B. Stenlake
6. Organic Chemistry by I. L. Finar
7. Organic spectroscopy by William Kemp
8. Quantitative Analysis of Drugs by D. C. Garrett
9. Quantitative Analysis of Drugs in Pharmaceutical Formulations by P. D. Sethi
10. Spectrophotometric identification of Organic Compounds by Silverstein

"DEVELOPMENT AND VALIDATION OF UV SPECTROPHOTOMETRIC METHOD FOR DETERMINATION OF SITAGLIPTIN PHOSPHATE"

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the Degree of Bachelor of Pharmacy (2021)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA.

SUBMITTED BY

V.B.S. Bhavana (173G1R0052)

V.N.V.D. Swaroopa (173G1R0053)

V.Vijay Lakshmi (173G1R0054)

V. Janani (173G1R0055)

V. Greeshma Meghana(173G1R0056)

UNDER THE GUIDANCE OF

CH.LAKSHMI MADHAVI, PGDHM, M.Pharm,
Assistant Professor
ADITYA PHARMACY COLLEGE
Surampalem – 533437

2017-2021

ADITYA PHARMACY COLLEGE

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SURAMPALEM-533 437

EVALUATION CERTIFICATE

This is to certify that the dissertation entitled **"DEVELOPMENT AND VALIDATION OF UV SPECTROPHOTOMETRIC METHOD FOR DETERMINATION OF SITAGLIPTIN PHOSPHATE"** was submitted to the Jawaharlal Nehru Technological University, Kakinada inpartial fulfilment of the requirements for the award of the Degree of Bachelor of Pharmacy is a record of original research work carried out by V.B.S. Bhavana (173G1R0052), V.N.V.D. Swaroopa (173G1R0053), V. Vijay Lakshmi (173G1R0054), V. Janani (173G1R0055), V. Greeshma Meghana(173G1R0056).They have done this research work under the supervision of **Ch.Lakshmi Madhavi, PGDHM,M.pharm** and it has not been previously submitted to any other university or academic institution for any higher degree.

Aditya Pharmacy College,
Surampalem- 533437.

Principal
Dr.D.Sathish Kumar

Place:
Date:

INTERNAL EXAMINER

EXTERNAL EXAMINER

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

DECLARATION

The project embodied in this thesis entitled **"DEVELOPMENT AND VALIDATION OF UV SPECTROPHOTOMETRIC METHOD FOR DETERMINATION OF SITAGLIPTIN PHOSPHATE"** was carried out in the department of pharmaceutical analysis under the guidance of Ms. CH.LAKSHMI MADHAVI, PGDHM, M.Pharm, Assistant Professor, Aditya Pharmacy College, Surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.

Bhavana.V

V.B.S. BHAVANA (173G1R0052)

V.N.V.D. Swaroopa.

V.N.V.D. SWAROOPA (173G1R0053)

V.Vijaya Lakshmi

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V. Janani

V Greeshma Meghana

V. GREESHMA MEGHANA (173G1R0056)

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CHAPTER- 9
SUMMARY AND CONCLUSION

From the reported literature, there were few methods established for the determination of Sitagliptin phosphate in individual and in combination with other drugs. RP-HPLC, HPTLC, Hypenated techniques, Derivative spectroscopy, Fluorimetric, Voltametric methods were established to determine the above mentioned drug in formulations and in plasma samples.

The present study demonstrated an UV spectrophotometric method for the estimation of SITAGLIPTIN PHOSPHATE available as tablet dosage form. The developed and validated UV spectrophotometric method was found to be economical due to the use of methanol and distilled water as a solvent throughout the experiment. From the above experimental data results and parameters, the developed method has advantages like the time taken for preparation of standard and sample solutions is less and hence suitable for the analysis of Sitagliptin phosphate raw material and its pharmaceutical dosage form.

- The precision and accuracy of the proposed method are expressed in % RSD and % of recovery of the API respectively.
- Low % Relative standard deviation and high percent of recovery indicates that the method is highly precise and accurate.
- The plot is drawn between the concentration and absorbance which is found to be linear in the concentration range of 2-10 µg/ml. with good correlation coefficient greater than r2 = 0.99.
- The LOD and LOD 0.045 and 0.138 µg/ml.

In fact the method developed for Sitagliptin phosphate was found to be simple, precise, accurate and cost effective and it can be effectively applied for routine analysis.

BP 802T SOCIAL AND PREVENTIVE PHARMACY

Hours: 45

Scope:
The purpose of this course is to introduce to students a number of health issues and their challenges. This course also introduced a number of national health programmes. The roles of the pharmacist in these contexts are also discussed.

Objectives:
After the successful completion of this course, the student shall be able to:

- Acquire high consciousness/realization of current issuesrelated to health and pharmaceutical problems within the country and worldwide.
- Have a critical way of thinking based on current healthcare development.
- Evaluate alternative ways of solving problems related tohealth and pharmaceutical issues

Course content:

Unit I: **10 Hours**

Concept of health and disease: Definition, concepts and evaluation of public health. Understanding the concept of prevention and control of disease, social causes of diseases and social problems of the sick.

Social and health education: Food in relation to nutrition and health, Balanced diet, Nutritional deficiencies, Vitamin deficiencies, Malnutrition and its prevention.

Sociology and health: Socio cultural factors related to health and disease, Impact of urbanization on health and disease, Poverty and health

Hygiene and health: personal hygiene and health care; avoidable habits

Unit II: **10 Hours**

Preventive medicine: General principles of prevention and control of diseases such as cholera, SARS, Ebola virus, influenza, acute respiratory infections, malaria, chicken guinea, dengue, lymphatic filariasis, pneumonia, hypertension, diabetes mellitus, cancer, drug addiction-drug substance abuse

Unit III: **10 Hours**

National health programs, its objectives, functioning and outcome of the following: HIV AND AIDS control programme, TB, Integrated disease surveillance program (IDSP), National leprosy control programme, National mental health program, National

programme for prevention and control of deafness, Universal immunization programme, National programme for control of blindness, Pulse polio programme.

Unit IV: **08 Hours**

National health intervention programme for mother and child, National family welfare programme, National tobacco control programme, National Malaria Prevention Program, National programme for the health care for the elderly, Social health programme; role of WHO in Indian national program

Unit V: **07 Hours**

Community services in rural, urban and school health: Functions of PHC, Improvement in rural sanitation, national urban health mission, Health promotion and education in school.

Recommended Books (Latest edition):

1. Short Textbook of Preventive and Social Medicine, Prabhakara GN, 2nd Edition, 2010, ISBN: 9789380704104, JAYPEE Publications
2. Textbook of Preventive and Social Medicine (Mahajan and Gupta), Edited by Roy Rabindra Nath, Saha Indranil, 4th Edition, 2013, ISBN: 9789350901878, JAYPEE Publications
3. Review of Preventive and Social Medicine (Including Biostatistics), Jain Vivek, 6th Edition, 2014, ISBN: 9789351522331, JAYPEE Publications
4. Essentials of Community Medicine—A Practical Approach, Hiremath Lalita D, Hiremath Dhananjaya A, 2nd Edition, 2012, ISBN: 9789350250440, JAYPEE Publications
5. Park Textbook of Preventive and Social Medicine, K Park, 21st Edition, 2011, ISBN-14: 9788190128285, BANARSIDAS BHANOT PUBLISHERS.
6. Community Pharmacy Practice, Ramesh Adepu, BSP publishers, Hyderabad

Recommended Journals:

1. Research in Social and Administrative Pharmacy, Elsevier, Ireland

Evalution of Anti angiogenic activity by Dermacozine Carboxamide its validation

Is a Dissertation Submitted to the

JNT University, Kakinada

In Partial Fulfillment of the Requirements for the Award of the Degree of

BACHELOR OF PHARMACY

BY

Yandamuri Lekhya prasanthi (173G1R0057)
Yaramati surya Vandana (173G1R0058)
Yeleti Ramya Bharathi (173G1R0059)
Karra Sandhya (173G1R0060)
Kolla Lakshmi Sindhu(173G1R0061)

Under The Guidence Of

Dr. P.S.S.Sai Kiran M.Pharm. Ph.D.,

Associate Professor

Aditya Pharmacy College, Aditya Nagar, Surampalem – 533 437,

2017-2021

ADITYA PHARMACY COLLEGE * SURAMPALEM *

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ADITYA
PHARMACY COLLEGE
(Approved by AICTE, PCI and affiliated to JNT University, Kakinada)
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P. Pin: 533437,

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "Evalution of Antiangiogenic activity by dermacozine carboxamide and its validation" is submitted to the JNT University, Kakinada in partial fulfillment for the award of the degree of Bachelor of Pharmacy. This is a bonafied work Carried out by Yandamuri Lekhya Prasanthi(173G1R0057), Yaramati SuryaVandana(173G1R0058), Yeleti Ramya Bharathi (173G1R0059), Kolla Sandhya (173G1R0060) and Kolla Lakshmi Sindhu(173G1R0061) under the supervision of me.

Date:

SIGNATURE OF EVALUATOR 1

Place:

SIGNATURE OF EVALUATOR 2

ADITYA PHARMACY COLLEGE SURAMPALEM

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Aditya Pharmacy College
SURAMPALEM-533 437

1. ABSTRACT

Cancer is the second leading cause of death worldwide with high morbidity and mortality rate. It accounts for 7.4 million deaths globally. There are more than 100 types of cancer and any part of the body can get affected. Current treatment approaches for cancer include surgery, radiation followed by chemotherapy. Phenazines are symmetrical hetero aromatic compounds isolated from blue pigments (pyocyanin, (5-Nmethylphenazine-1-one)), by Fordos on 1859. Phenazine template has been used for the synthesis of over 6000 substituted phenazine (also fused aryl phenazines) derivatives, accounting various pharmacological activities. Phenazine and fused aryl phenazine derivatives such as XR11576, XR5944, NC-190 and NC-182 were under clinical studies for their cytotoxic activity. Dermacozines A-J are a class of reduced phenazine based marine natural products, isolated from *Dermacoccus abyssi*. They are highly pigmented aromatic compounds .These are reported to exhibit biological activities such as radical scavenger, cytotoxicity against resistant cancer cell line K562 (human chronic myelogenous leukemia) to mention few . In the present study the antiangiogenic activity of dermacozine A (DA) was studied.

Key words: Cancer, Angiogenesis, Chorio allantoic membrane, Dermacozines, Phenazine

6. RESULTS

6.1. Antiangiogenic activity of DA

CAM assay was performed to evaluate the anti angiogenic activity of DA. CAM assay proved that DA inhibit the formation of new blood vessel formation, that shows the inhibition of angiogenesis in comparision with that of DMSO controls.

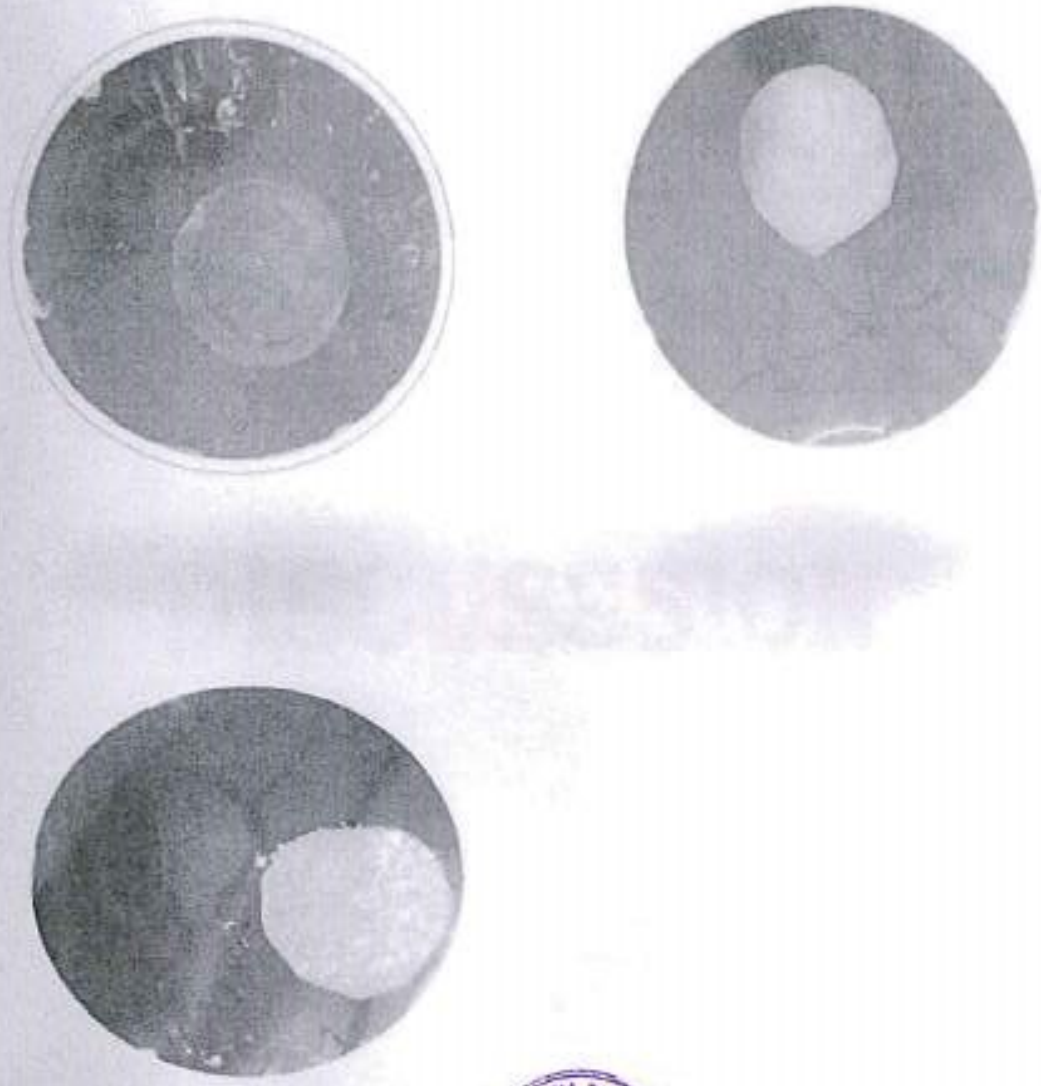

Fig. Chick Chorioallantoic membrane (CAM) assay. (a) DMSO Control, (b) DA loaded on paper disc and placed on extra embryonic membrane on day 8, (c) DA after 48hr of incubation found to damage blood vessel formation, resulting in inhibition of angiogenesis.

7. DISCUSSION

According to WHO estimates, cancer is the second leading cause of death globally and was responsible for an estimated 9.6 million deaths in 2018; moreover, in some way, about 1 in 6 deaths is due to cancer. Despite the availability of advanced diagnostic and treatment methods, the burden of cancer is increasing every year. 1-3 In addition, the increase in the development of drug resistance is one of the main causes of cancer relapse. Therefore, researchers are focused on the identification of novel drugs for the treatment of cancer.

Phenazines are symmetrical heteroaromatic compounds, and the template has been found over 6000 compounds, accounting for various pharmacological activities,5,6 Phenazine and fused aryl phenazine derivatives, such as XR11576, XR5944, NC-190 and NC-182, are under clinical studies for their cytotoxic activity. The dermacozines A-J are a class of reduced phenazine based marine natural products isolated from Dermacoccus abyssi sp. nov., strains MT1.1 and MT1.2, which are highly pigmented aromatic compounds. These compounds have been reported to exhibit various biological activities such as radical scavenging activity, cytotoxicity against the resistant cancer cell line K562 (human chronic myelogenous leukemia). In the present study we have reported the beneficial effects of dermacozine –A (DA) on angiogenesis.

BP 704T: NOVEL DRUG DELIVERY SYSTEMS (Theory)

45 Hours

Scope: This subject is designed to impart basic knowledge on the area of novel drug delivery systems.

Objectives: Upon completion of the course student shall be able

1. To understand various approaches for development of novel drug delivery systems.
2. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation

Course content:

Unit-I **10 Hours**

Controlled drug delivery systems: Introduction, terminology/definitions and rationale, advantages, disadvantages, selection of drug candidates.Approaches to design controlled release formulations based on diffusion, dissolution and ion exchange principles. Physicochemical and biological properties of drugs relevant to controlled release formulations

Polymers: Introduction, classification, properties, advantages and application of polymers in formulation of controlled release drug delivery systems.

Unit-II **10 Hours**

Microencapsulation: Definition, advantages and disadvantages, microspheres /microcapsules, microparticles, methods of microencapsulation, applications

Mucosal Drug Delivery system: Introduction, Principles of bioadhesion / mucoadhesion, concepts, advantages and disadvantages, transmucosal permeability and formulation considerations of buccal delivery systems

Implantable Drug Delivery Systems: Introduction, advantages and disadvantages, concept of implantsand osmotic pump

Unit-III **10 Hours**

Transdermal Drug Delivery Systems: Introduction, Permeation through skin, factors affecting permeation, permeation enhancers, basic components of TDDS, formulation approaches

Gastroretentive drug delivery systems: Introduction, advantages, disadvantages, approaches for GRDDS – Floating, high density systems, inflatable and gastroadhesive systems and their applications

Nasopulmonary drug delivery system: Introduction to Nasal and Pulmonary routes of drug delivery, Formulation of Inhalers (dry powder and metered dose), nasal sprays, nebulizers

Unit-IV **08 Hours**

ADITYA PHARMACY COLLEGE SURAMPALEM

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PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

"FORMULATION AND EVALUATION OF IBUPROFEN GASTRIC FLOATING TABLETS"

Dissertation submitted to the JNTU-K University in partial fulfilment of the requirements for the degree of Bachelor of Pharmacy (2021)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

Submitted by:

K.MANOJ KUMAR (173G1R0062),
N.TEJENDRA SRI AJITH (173G1R0063),
B.TARAKA PRIYA (173G1R0064),
A.AMALESWARI (173G1R0067),
B.DILEEP (173G1R0068)

Under the guidance of,

Dr. J.ANU PRAVALLIKA.,M.Pharm,Ph.D
Associate Professor
Department of pharmaceutics

Aditya Pharmacy College
Surampalem-533437

2020-2021

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled "FORMULATION AND EVALUATION OF IBUPROFEN GASTRIC FLOATING TABLETS", submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the award of the degree of **Bachelor of pharmacy** is a record of original research work carried out by K. MANOJ KUMAR (173G1R0062), N.TEJENDRA SRI AJITH (173G1R0063), B.TARAKA PRIYA (173G1R0064), A.AMALESWARI (173G1R0067), B.DILEEP (173G1R0068). Under my supervision and it has not been previously submitted to any other university or academic institution for any higher degree.

Dr.D.SathisKumar, M.Pharm,Ph D
Principal and Professor
Aditya Pharmacy College,
Surampalem-533437.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Place: Surampalem

Date:

12/7/21

Internal Examiner

External Examiner

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

The project embodied in this thesis entitled "FORMULATION AND EVALUATION OF IBUPROFEN GASTRIC FLOATING TABLETS", was carried out in the department of Pharmaceutical Technology under the guidance of, **Dr.J.ANU PRAVALLIKA.,M.Pharm,Ph.D**, Aditya Pharmacy College, Surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.

K. Manoj kumar

K. MANOJ KUMAR
(173G1R0062)

N. Tejendra Sri Ajith

N. TEJENDRA SRI AJITH
(173G1R0063)

B. Tarakapriya

B. TARAKA PRIYA
(173G1R0064)

A. Amaleswari

A. AMALESWARI
(173G1R0067).

B. Dileep

B. DILEEP
(173G1R0068)

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SURAMPALEM-533 437

SUMMARY AND CONCLUSION

The objective of the present study is to formulate and evaluate gastric tablets of Ibuprofen employing PEG4000 as super disintegrant. Wet granulation was the technique employed for the preparation of gastric tablets of Ibuprofen of four concentrations of super disintegrant. All the gastric tablets prepared were evaluated for drug content, hardness, friability, disintegration time, wetting time, moisture absorbance.

From the obtained results the following conclusions are drawn.

7.1. Ibuprofen gastric tablets:

1. All the gastric tablets prepared floating within 60 seconds.
2. The buoyancy time all the four concentrations were > 6 hours.
3. All the tablets showed 100 % drug release. However, F4 formulation could extend the drug release over a period of 6 hours. The dissolution rate of Ibuprofen was increased as the concentration of super disintegrant was increased and enhanced by increasing the polymer concentration.
4. All the prepared formulations were fitted to first order kinetics and released the drug in controlled manner.

BP 603 T. HERBAL DRUG TECHNOLOGY (Theory)

45 hours

Scope: This subject gives the student the knowledge of basic understanding of herbal drug industry, the quality of raw material, guidelines for quality of herbal drugs, herbal cosmetics, natural sweeteners, nutraceutical etc. The subject also emphasizes on Good Manufacturing Practices (GMP), patenting and regulatory issues of herbal drugs

Objectives: Upon completion of this course the student should be able to:

1. understand raw material as source of herbal drugs from cultivation to herbal drug product
2. know the WHO and ICH guidelines for evaluation of herbal drugs
3. know the herbal cosmetics, natural sweeteners, nutraceuticals
4. appreciate patenting of herbal drugs, GMP .

Course content:

UNIT-I **11 Hours**

Herbs as raw materials

Definition of herb, herbal medicine, herbal medicinal product, herbal drug preparation
Source of Herbs
Selection, identification and authentication of herbal materials
Processing of herbal raw material

Biodynamic Agriculture

Good agricultural practices in cultivation of medicinal plants including Organic farming.
Pest and Pest management in medicinal plants: Biopesticides/Bioinsecticides.

Indian Systems of Medicine

a) Basic principles involved in Ayurveda, Siddha, Unani and Homeopathy
b) Preparation and standardization of Ayurvedic formulations viz Aristas and Asawas, Ghutika,Churna, Lehya and Bhasma.

UNIT-II **7 Hours**

Nutraceuticals

General aspects, Market, growth, scope and types of products available in the market. Health benefits and role of Nutraceuticals in ailments like Diabetes, CVS diseases, Cancer, Irritable bowel syndrome and various Gastro intestinal diseases.
Study of following herbs as health food: Alfaalfa, Chicory, Ginger, Fenugreek, Garlic, Honey, Amla, Ginseng, Ashwagandha, Spirulina

Herbal-Drug and Herb-Food Interactions: General introduction to interaction and classification. Study of following drugs and their possible side effects and interactions: Hypericum, kava-kava, Ginkobiloba, Ginseng, Garlic, Pepper & Ephedra.

UNIT-III **10 Hours**

Herbal Cosmetics

Sources and description of raw materials of herbal origin used via, fixed oils, waxes, gums colours, perfumes, protective agents, bleaching agents, antioxidants in products such as skin care, hair care and oral hygiene products.

Herbal excipients:
Herbal Excipients – Significance of substances of natural origin as excipients – colorants, sweeteners, binders, diluents, viscosity builders, disintegrants, flavors & perfumes.

Herbal formulations :
Conventional herbal formulations like syrups, mixtures and tablets and Novel dosage forms like phytosomes

UNIT- IV **10 Hours**
Evaluation of Drugs WHO & ICH guidelines for the assessment of herbal drugs
Stability testing of herbal drugs.

Patenting and Regulatory requirements of natural products:
a) Definition of the terms: Patent, IPR, Farmers right, Breeder's right, Bioprospecting and Biopiracy
b) Patenting aspects of Traditional Knowledge and Natural Products. Case study of Curcuma & Neem.

Regulatory Issues - Regulations in India (ASU DTAB, ASU DCC), Regulation of manufacture of ASU drugs - Schedule Z of Drugs & Cosmetics Act for ASU drugs.

UNIT-V **07 Hours**
General Introduction to Herbal Industry
Herbal drugs industry: Present scope and future prospects.
A brief account of plant based industries and institutions involved in work on medicinal and aromatic plants in India.

Schedule T – Good Manufacturing Practice of Indian systems of medicine
Components of GMP (Schedule – T) and its objectives
Infrastructural requirements, working space, storage area, machinery and equipments, standard operating procedures, health and hygiene, documentation and records.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

PREPARATION AND EVALUATION OF PHYTOSOMES LOADED WITH *Nyctanthes arbortristis* METHANOLIC LEAF EXTRACT

Dissertation Submitted to

JNT UNIVERSITY KAKINADA

In partial fulfillment for the award of the degree of BACHELOR OF PHARMACY BY

MAPARTHI VAMSI	(173G1R0087)
SURADA JYOSTNA	(173G1R0088)
RAJKAMAL CHAUDHARY	(173G1R0089)
RAMU KEWAT	(173G1R0090)
SANJIT MOHATO	(173G1R0092)

Under the guidance of

K. PUSHPALATHA, M.Pharm., **Assistant Professor**

Aditya Pharmacy College, Surampalem, Andhra Pradesh, India-533 437

Batch: 2017- 2021

Aditya Pharmacy College
PRINCIPAL
SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE

(Approved by AICTE & PCI, Affiliated to JNTUK).

Surampalem-533437, E.G. District, Andhra Pradesh.

CERTIFICATE

This is to certify that the dissertation work entitled a study on "PREPARATION AND EVALUATION OF PHYTOSOMES LOADED WITH *Nyctanthes arbortristis* METHANOLIC LEAF EXTRACT" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2017-2021. This is a bonafide work carried out by MAPARTHI VAMSI (173G1R0087) , SURADA JYOSTNA (173G1R0088), RAJKAMAL CHAUDHARY (173G1R0089), RAMU KEWAT (173G1R0090) ,SANJIT MOHATO (173G1R0092) , under the direct guidance and supervision of Ms. K.PUSHPALTHA M.Pharm., Assistant Professor, Aditya Pharmacy College, Surampalem, and Andhra Pradesh.

Place: Surampalem

Date:

Principal

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

(Internal Examiner)

(External Examiner)

ADITYA PHARMACY COLLEGE * SURAMPALEM - 533437

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SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE
(Approved by AICTE & PCI, Affiliated to JNTUK).
Surampalem-533437, E.G. District, Andhra Pradesh.

DECLARATION

We hereby declare that the dissertation work entitled "PREPARATION AND EVALUATION OF PHYTOSOMES LOADED WITH *Nyctanthes arbortristis* METHANOLIC LEAF EXTRACT" in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2017-2021, was carried out by us in the library and laboratories of Aditya Pharmacy College, Surampalem, Andhra Pradesh under the valuable and efficient guidance and supervision of Ms.K.PUSHPALATHA M.Pharm., Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

MAPARTHI VAMSI (173G1R0087)
SURADA JYOSTNA (173G1R0088)
RAJKAMAL CHAUDHARY (173G1R0089)
RAMU KEWAT (173G1R0090)
SANJIT MOHATO (173G1R0092)

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CONCLUSION

Phytosomes are recent innovation for delivery of herbal drugs, because the herbal extracts are degrade by the GI fluids when taken orally and they are having large size they do not cross the lipid membrane leads to poor bioavailability. Phytosomes have nanometric dimensions, low drug dose and they are more bioavailable as compared to herbal extract owing to their enhanced capacity to cross the lipid rich bio membrane there by overcome pharmacokinetic variance and F9 formulation gave prolonged release of drug and high drug loading and entrapment efficiency.

SCOPE OF WORK:

Phytosomes as potential carriers for the delivery of herbal drugs. Phytosome complex can be formulated into oral and topical dosage form. However relevant dosage form required for drug release can be selected on the basis on effectiveness and efficiency of phytoconstituents.

These delivery vesicles have the potential to increase the pharmacokinetics and pharmacodynamics of herbal drug molecules, thereby enhancing the therapeutic efficiency of the herbal drugs

BP 404 T. PHARMACOLOGY-I (Theory)

45 Hrs

Scope: The main purpose of the subject is to understand what drugs do to the living organisms and how their effects can be applied to therapeutics. The subject covers the information about the drugs like, mechanism of action, physiological and biochemical effects (pharmacodynamics) as well as absorption, distribution, metabolism and excretion (pharmacokinetics) along with the adverse effects, clinical uses, interactions, doses, contraindications and routes of administration of different classes of drugs.

Objectives: Upon completion of this course the student should be able to

1. Understand the pharmacological actions of different categories of drugs
2. Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.
3. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
4. Observe the effect of drugs on animals by simulated experiments
5. Appreciate correlation of pharmacology with other bio medical sciences

Course Content:

UNIT-I **08 hours**

1. General Pharmacology

a. Introduction to Pharmacology- Definition, historical landmarks and scope of pharmacology, nature and source of drugs, essential drugs concept and routes of drug administration, Agonists, antagonists(competitive and non competitive), spare receptors, addiction, tolerance, dependence, tachyphylaxis, idiosyncrasy, allergy.

b. Pharmacokinetics- Membrane transport, absorption, distribution, metabolism and excretion of drugs .Enzyme induction, enzyme inhibition, kinetics of elimination

UNIT-II **12 Hours**

General Pharmacology

a. Pharmacodynamics- Principles and mechanisms of drug action. Receptor theories and classification of receptors, regulation of receptors, drug receptors interactions signal transduction mechanisms, G-protein–coupled receptors, ion channel receptor, transmembrane enzyme linked receptors, transmembrane JAK-STAT binding receptor and receptors that regulate transcription factors, dose response relationship, therapeutic index, combined effects of drugs and factors modifying drug action.

b. Adverse drug reactions.

c. Drug interactions (pharmacokinetic and pharmacodynamic)

d. Drug discovery and clinical evaluation of new drugs -Drug discovery phase, preclinical evaluation phase, clinical trial phase, phases of clinical trials and pharmacovigilance.

UNIT-III **10 Hours**

2. Pharmacology of drugs acting on peripheral nervous system

a. Organization and function of ANS.

b.Neurohumoral transmission,co-transmission and classification of neurotransmitters.

c. Parasympathomimetics, Parasympatholytics, Sympathomimetics, sympatholytics.

d. Neuromuscular blocking agents and skeletal muscle relaxants (peripheral).

e. Local anesthetic agents.

f. Drugs used in myasthenia gravis and glaucoma

UNIT-IV **08 Hours**

3. Pharmacology of drugs acting on central nervous system

a. Neurohumoral transmission in the C.N.S.special emphasis on importance of various neurotransmitters like with GABA, Glutamate, Glycine, serotonin, dopamine.

b. General anesthetics and pre-anesthetics.

c. Sedatives, hypnotics and centrally acting muscle relaxants.

d. Anti-epileptics

e. Alcohols and disulfiram

UNIT-V **07 Hours**

3. Pharmacology of drugs acting on central nervous system

a. Psychopharmacological agents: Antipsychotics, antidepressants, anti-anxiety agents, anti-manics and hallucinogens.

b. Drugs used in Parkinsons disease and Alzheimer's disease.

c. CNS stimulants and nootropics.

d. Opioid analgesics and antagonists

e. Drug addiction, drug abuse, tolerance and dependence.

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SURAMPALEM-533 437

EVALUATION OF ANTIDEPRESSANT ACTIVITY OF *ARTOCARPUS HETEROPHYLLUS* IN ALBINO WISTAR RATS

Dissertation Submitted to

JNT UNIVERSITY

KAKINADA

In partial fulfillment for the award of the degree of

BACHELOR OF PHARMACY

BY

SANJU MAITY (173G1R0094)

SETTI TEJASWI (173G1R0095)

SOUMIK MAJUMDER (173G1R0096)

SAEED KHALID ADAM (173G1R0097)

SUBHRAJIT SAHOO (173G1R00A0)

Under the guidance of

K. V. NAGALAKSHMI, M.Pharm.,

Assistant Professor

Aditya Pharmacy College, Surampalem, Andhra Pradesh, India-533 437

Batch: 2017- 2021

ADITYA PHARMACY COLLEGE

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ADITYA PHARMACY COLLEGE
(Approved by AICTE & PCI, Affiliated to JNTUK).
Surampalem-533437, E.G.District, Andhra Pradesh.

CERTIFICATE

This is to certify that the dissertation work entitled a study on "Evaluation of Anti-depressant activity of *Artocarpus Heterophyllus* in Albino wistar rats" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2017-2021. This is a bonafide work carried out by SANJU MAITY (173G1R0094), SETTI TEJASWI (173G1R0095), SOUMIK MAJUMDER (173G1R0096), SAEED KHALID ADAM (173G1R0097), SUBHRAJIT SAHOO (173G1R00A0), under the direct guidance and supervision of Ms. K.V. NAGALAKSHMI M.Pharm., Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

13/7/21

(Internal Examiner)

(External Examiner)

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

DECLARATION

We hereby declare that the dissertation work entitled "Evaluation of Anti-depressant activity of *Artocarpus Heterophyllus* in Albino wistar rats" in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2017-2021, was carried out by us in the library and laboratories of Aditya Pharmacy College, Surampalem, Andhra Pradesh under the valuable and efficient guidance and supervision of Ms. K.V. Nagalakshmi, M.Pharm., Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

Sanju Maity — Sanju Maity (173G1R0094)

S. Tejaswi — Setti Tejaswi (173G1R0095)

Soumik Majumder — Soumik Majumder (173G1R0096)

Saeed Khalid Adam (173G1R0097)

Subhrajit Sahoo — Subhrajit Sahoo (173G1R00A0)

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Conclusion:

- In phytochemical screening it was found that EEAH consist of alkaloids, amino acids, carbohydrate, flavonoids, glycosides, proteins, steroids.
- No toxic effects were observed in Primary Observation test (Irwin Test) in dose of 250 mg/kg EEAH.
- In forced swim test, EEAH showed significant effect in reducing the immobility times compared to the Vehicle group.
- In pole climbing test, EEAH showed significant activity when compared to the Vehicle group.

Yet, advance studies are needed to expose the possible mechanism of action.

BP601T. MEDICINAL CHEMISTRY – III (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasis on modern techniques of rational drug design like quantitative structure activity relationship (QSAR), Prodrug concept, combinatorial chemistry and Computer aided drug design (CADD). The subject also emphasizes on the chemistry, mechanism of action, metabolism, adverse effects, Structure Activity Relationships (SAR), therapeutic uses and synthesis of important drugs.

Objectives: Upon completion of the course student shall be able to

1. Understand the importance of drug design and different techniques of drug design.
2. Understand the chemistry of drugs with respect to their biological activity.
3. Know the metabolism, adverse effects and therapeutic value of drugs.
4. Know the importance of SAR of drugs.

Course Content:

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs superscripted by (*)

UNIT – I **10 Hours**

Antibiotics

Historical background, Nomenclature, Stereochemistry, Structure activity relationship, Chemical degradation classification and important products of the following classes.

-Lactam antibiotics: Penicillin, Cepholosporins, - Lactamase inhibitors, Monobactams

Aminoglycosides: Streptomycin, Neomycin, Kanamycin

Tetracyclines: Tetracycline,Oxytetracycline, Chlortetracycline, Minocycline, Doxycycline

UNIT – II **10 Hours**

Antibiotics

Historical background, Nomenclature, Stereochemistry, Structure activity relationship, Chemical degradation classification and important products of the following classes.

Macrolide: Erythromycin Clarithromycin, Azithromycin.

Miscellaneous: Chloramphenicol*, Clindamycin.

Prodrugs: Basic concepts and application of prodrugs design.

Antimalarials: Etiology of malaria.

Quinolines: SAR, Quinine sulphate, Chloroquine*, Amodiaquine, Primaquine phosphate, Pamaquine*, Quinacrine hydrochloride, Mefloquine.

Biguanides and dihydro triazines: Cycloguanil pamoate, Proguanil.

Miscellaneous: Pyrimethamine, Artesunete, Artemether, Atovoquone.

UNIT – III **10 Hours**

Anti-tubercular Agents

Synthetic anti tubercular agents: Isoniozid*, Ethionamide, Ethambutol, Pyrazinamide, Para amino salicylic acid.*

Anti tubercular antibiotics: Rifampicin, Rifabutin, Cycloserine Streptomycine, Capreomycin sulphate.

Urinary tract anti-infective agents

Quinolones: SAR of quinolones, Nalidixic Acid,Norfloxacin, Enoxacin, Ciprofloxacin*, Ofloxacin, Lomefloxacin, Sparfloxacin, Gatifloxacin, Moxifloxacin

Miscellaneous: Furazolidine, Nitrofurantoin*, Methanamine.

Antiviral agents:

Amantadine hydrochloride, Rimantadine hydrochloride, Idoxuridine trifluoride, Acyclovir*, Gancyclovir, Zidovudine, Didanosine, Zalcitabine, Lamivudine, Loviride, Delavirding, Ribavirin, Saquinavir, Indinavir, Ritonavir.

UNIT – IV **08 Hours**

Antifungal agents:

Antifungal antibiotics: Amphotericin-B, Nystatin, Natamycin, Griseofulvin.

Synthetic Antifungal agents: Clotrimazole, Econazole, Butoconazole, Oxiconazole Tioconozole, Miconazole*, Ketoconazole, Terconazole, Itraconazole, Fluconazole, Naftifine hydrochloride, Tolnaftate*.

Anti-protozoal Agents: Metronidazole*, Tinidazole, Ornidazole, Diloxanide, Iodoquinol, Pentamidine Isethionate, Atovaquone, Eflornithine.

Anthelmintics: Diethylcarbamazine citrate*, Thiabendazole, Mebendazole*, Albendazole, Niclosamide, Oxamniquine, Praziquantal, Ivermectin.

SYNTHESIS AND MOLECULAR DOCKING STUDIES ON CAPRYLIC ACID HYDRAZONES

Dissertation Submitted to

JNT UNIVERSITY

KAKINADA

In partial fulfillment for the award of the degree of

BACHELOR OF PHARMACY

BY

SUBODH KUMAR(173G1R00A1)

SUDIP BISWAS(173G1R00A2)

SUDIPTA PANDA(173G1R00A3)

TAPAS MAJUMDER(173G1R00A4)

ANIL KUMAR SAH(173G1R00A6)

RAM ISHWAR SAH(173G1R00A7)

Under the guidance of

L.PARINAYA SRI, M.Pharm.,

Pharmaceutical chemistry

Assistant Professor

Aditya Pharmacy College, Surampalem, Andhra Pradesh, India-533 437

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(Approved by AICTE & PCI, Affiliated to JNTUK).
Surampalem-533437, E.G. District, Andhra Pradesh.

CERTIFICATE

This is to certify that the dissertation work entitled a study on "SYNTHESIS AND MOLECULAR DOCKING STUDIES ON CAPRYLIC ACID HYDRAZONES"submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2017-2021. This is a bonafide work carried out by SUBODH KUMAR(173G1R00A1),SUDIP BISWAS (173G1ROOA2),SUDIPTAPANDA(173G1R00A3),TAPASMAJUMDER(173G1R00A4), ANIL KUMARSAH(173G1R00A6),RAM ISHWAR SAH(173G1R00A7) under the direct guidance and supervision of Ms. L.PARINAYA SRI M.Pharm.,pharmaceurical chemisty, Assistant Professor, Aditya Pharmacy College, Surampalem, and Andhra Pradesh.

Place:Surampalem

Date:

Principal
PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

(Internal Examiner)

(External Examiner)

ADITYA PHARMACY COLLEGE SURAMPALEM

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(Approved by AICTE & PCI, Affiliated to JNTUK).
Surampalem-533437, E.G. District, Andhra Pradesh.

DECLARATION

We hereby declare that the dissertation work entitled "SYNTHESIS AND MOLECULAR DOCKING STUDIES ON CAPRYLIC ACID HYDRAZONES" in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2017-2021, was carried out by us in the library and laboratories of Aditya Pharmacy College, Surampalem, Andhra Pradesh under the valuable and efficient guidance and supervision of Ms.L.PARINAYASRIM.Pharm., Pharmaceutical chemistry, Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

SUBODH KUMAR(173G1R00A1)
SUDIP BISWAS(173G1R00A2)
SUDIPTA PANDA(173G1R00A3)
TAPAS MAJUMDER(173G1R00A4)
ANIL KUMAR SAH(173G1R00A6)
RAM ISHWAR SAH(173G1R00A7)

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BP202T. PHARMACEUTICAL ORGANIC CHEMISTRY –I (Theory)

45 Hours

Scope: This subject deals with classification and nomenclature of simple organic compounds, structural isomerism, intermediates forming in reactions, important physical properties, reactions and methods of preparation of these compounds. The syllabus also emphasizes on mechanisms and orientation of reactions.

Objectives: Upon completion of the course the student shall be able to

1. write the structure, name and the type of isomerism of the organic compound
2. write the reaction, name the reaction and orientation of reactions
3. account for reactivity/stability of compounds,
4. identify/confirm the identification of organic compound

Course Content:

General methods of preparation and reactions of compounds superscripted with asterisk (*) to be explained

To emphasize on definition, types, classification, principles/mechanisms, applications, examples and differences

UNIT-I **07 Hours**

- **Classification, nomenclature and isomerism**

  Classification of Organic Compounds

  Common and IUPAC systems of nomenclature of organic compounds

  (up to 10 Carbons open chain and carbocyclic compounds)

Structural isomerisms in organic compounds

UNIT-II10 Hours

- **Alkanes*, Alkenes* and Conjugated dienes***

  SP^3 hybridization in alkanes, Halogenation of alkanes, uses of paraffins.

  Stabilities of alkenes, SP^2 hybridization in alkenes

  E_1 and E_2 reactions – kinetics, order of reactivity of alkyl halides, rearrangement of carbocations, Saytzeffs orientation and evidences. E_1 verses E_2 reactions, Factors affecting E_1 and E_2 reactions. Ozonolysis, electrophilic addition reactions of alkenes, Markownikoff's orientation, free radical addition reactions of alkenes, Anti Markownikoff's orientation.

  Stability of conjugated dienes, Diel-Alder, electrophilic addition, free radical addition reactions of conjugated dienes, allylic rearrangement

UNIT-III10 Hours

- **Alkyl halides***

  SN_1 and SN_2 reactions - kinetics, order of reactivity of alkyl halides, stereochemistry and rearrangement of carbocations.

  SN_1 versus SN_2 reactions, Factors affecting SN_1 and SN_2 reactions

  Structure and uses of ethylchloride, Chloroform, trichloroethylene, tetrachloroethylene, dichloromethane, tetrachloromethane and iodoform.

- **Alcohols*-** Qualitative tests, Structure and uses of Ethyl alcohol, Methyl alcohol, chlorobutanol, Cetosteryl alcohol, Benzyl alcohol, Glycerol, Propylene glycol

UNIT-IV10 Hours

- **Carbonyl compounds* (Aldehydes and ketones)**

  Nucleophilic addition, Electromeric effect, aldol condensation, Crossed Aldol condensation, Cannizzaro reaction, Crossed Cannizzaro reaction, Benzoin condensation, Perkin condensation, qualitative tests, Structure and uses of Formaldehyde, Paraldehyde, Acetone, Chloral hydrate, Hexamine, Benzaldehyde, Vanilin, Cinnamaldehyde.

UNIT-V **08 Hours**

- **Carboxylic acids***

  Acidity of carboxylic acids, effect of substituents on acidity, inductive effect and qualitative tests for carboxylic acids ,amide and ester

  Structure and Uses of Acetic acid, Lactic acid, Tartaric acid, Citric acid, Succinic acid. Oxalic acid, Salicylic acid, Benzoic acid, Benzyl benzoate, Dimethyl phthalate, Methyl salicylate and Acetyl salicylic acid

- **Aliphatic amines* -** Basicity, effect of substituent on Basicity. Qualitative test, Structure and uses of Ethanolamine, Ethylenediamine, Amphetamine

SYNTHESIS AND CHARACTERIZATION OF SUBSTITUTED 2-AMINO-1, 3-OXAZINE DERIVATIVES

DISSERTATION WORK SUBMITTED TO

In partial fulfillment for the award of the degree of

BACHELOR OF PHARMACY (2017 – 2021)

BY

K. Manikantasai	***(173G1R0027)***
L. VIKASH	***(173G1R0028)***
M. V. V. Satyanarayana	***(173G1R0029)***
M. Sri Sai Srija	***(173G1R0030)***
M. Pujitha	***(173G1R0031)***

Under the guidance of

Mr. CH. V. APPARAO, M. Pharmacy

Assistant Professor

Dept. of Pharmaceutical Chemistry

ADITYA PHARMACY COLLEGE

(Affiliated to PCI, AICTE – New Delhi& JNTUK - Kakinada)

SURAMPALEM, E.G. DISTRICT-533437, ANDHRA PRADESH

CERTIFICATE

This is to certify that the dissertation work entitled a study on "**Synthesis and characterization of substituted 2-amino-1, 3-oxazine derivatives**" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada during the academic year 2017-2021.This is a bonafide work carried out by K. Manikantasai, L. Vikash, M.V. V. Satyanarayana, M. Sri Saisrija and M. Pujitha under the guidance and supervision of Mr. CH. V. Apparao, Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

CH.V.Apparao 12/07/21

INSTITUTION GUIDE

Mr. CH. V. Apparao, M. Pharm

Assistant Professor

Department of Pharmaceutical Chemistry

Aditya Pharmacy College

Surampalem-533437

12/7/21

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SURAMPALEM-533 437

CERTIFIED BY

Dr. D. Satish Kumar, M. Pharm., Ph.D.

Professor & Principal

Department of Pharmacy

Aditya Pharmacy College

Surampalem-533437

(Internal Examiner)

(External Examiner)

ABSTRACT

The chalcone and chalcone derivatives were treated with urea in presence of ethanolic NaOH and to get substituted 2-amino-1, 3-oxazine derivatives. So, we synthesized five derivatives of 2- amino oxazines and a melting point of the reaction products were determined by melting point apparatus and was recorded. Purity of the compounds was ascertained by Thin Layer Chromatography on silica gel plates using iodine as visualizing agent.

In this study, we have synthesized five derivatives of substituted 2-amino-1, 3-oxazine derivatives. The test compounds were synthesized in good percentage of yield their physical and analytical determination was done by using melting point apparatus, purification of compounds by TLC, and the structural assignments of new compounds were made on the basis of IR and ^{1}HNMR data. This scheme of reaction went to completion within 3 hr. After completion of reaction and work up the products were identified and characterized by using IR and ^{1}HNMR techniques.

From our present investigation, it can be concluded that we synthesized five derivatives of substituted 2-amino-1, 3-oxazines by treated chalcone derivatives with urea in presence of ethanolic NaOH and the structural assignments of these compounds are made on the basis of IR and HNMR data.

6. CONCLUSION AND FUTURE SCOPE

In this study, we have synthesized two derivatives of substituted 2-amino-1, 3-oxazine derivatives by the scheme depicted in Figure 1. The test compounds were synthesized in good percentage of yield. Their physical and analytical determination was done by using melting points apparatus, purification of compounds by TLC and the structural assignments of new compounds were made on the basis of IR and ^{1}H NMR data. This scheme of reaction went to completion within 3 hr. After completion of reaction and work up the products were identified and characterized by using IR and ^{1}HNMR techniques and their structures were elucidated as 4,6-diphenyl-6H-1, 3-oxazine- 2-amine, 6-[4-(N, N-dimethylamino) phenyl-4-phenyl-6H-1, 3-oxazine-2-amine. The isolated yield was 78%, 80%.

From our present investigation, it can be concluded that we synthesized five derivatives of substituted 2-amino-1, 3-oxazines by treated chalcone derivatives with urea in presence of ethanolic NaOH and the structural assignments of these compounds are made on the basis of IR and ^{1}HNMR data.

Based upon our present findings, the future work would be directed further analysis of structure by Mass spectroscopy is required to interpret the synthesized compounds and more extensive study is needed to confirm the mode of action studies to optimize the effectiveness of these compounds. The structural modification of the parent analogs with the help of modern QSAR tools, which may lead to the development of various biological activities such as anti tubercular, anti bacterial, anti fungal studies, anti coagulant activity, and anti microbial activity, leads with diversified activity profile.

BP504 T. PHARMACOGNOSY AND PHYTOCHEMISTRY II (Theory)

45Hours

Scope: The main purpose of subject is to impart the students the knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially. Also this subject involves the study of producing the plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine

Objectives: Upon completion of the course, the student shall be able

1. to know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents
2. to understand the preparation and development of herbal formulation.
3. to understand the herbal drug interactions
4. to carryout isolation and identification of phytoconstituents

Course Content:

UNIT-I **7 Hours**

Metabolic pathways in higher plants and their determination

a) Brief study of basic metabolic pathways and formation of different secondary metabolites through these pathways- Shikimic acid pathway, Acetate pathways and Amino acid pathway.
b) Study of utilization of radioactive isotopes in the investigation of Biogenetic studies.

UNIT-II **14 Hours**

General introduction, composition, chemistry & chemical classes, biosources, therapeutic uses and commercial applications of following

secondary metabolites:

Alkaloids: Vinca, Rauwolfia, Belladonna, Opium,
Phenylpropanoids and Flavonoids: Lignans, Tea, Ruta
Steroids, Cardiac Glycosides & Triterpenoids: Liquorice, Dioscorea, Digitalis
Volatile oils: Mentha, Clove, Cinnamon, Fennel, Coriander,
Tannins: Catechu, Pterocarpus
Resins: Benzoin, Guggul, Ginger, Asafoetida, Myrrh, Colophony
Glycosides: Senna, Aloes, Bitter Almond
Iridoids, Other terpenoids & Naphthaquinones: Gentian, Artemisia, taxus, carotenoids

UNIT-III **06 Hours**

Isolation, Identification and Analysis of Phytoconstituents

a) Terpenoids: Menthol, Citral, Artemisin
b) Glycosides: Glycyrhetinic acid & Rutin
c) Alkaloids: Atropine,Quinine,Reserpine,Caffeine
d) Resins: Podophyllotoxin, Curcumin

UNIT-IV **10 Hours**

Industrial production, estimation and utilization of the following phytoconstituents: Forskolin, Sennoside, Artemisinin, Diosgenin, Digoxin, Atropine, Podophyllotoxin, Caffeine, Taxol, Vincristine and Vinblastine

UNIT V **8 Hours**

Basics of Phytochemistry

Modern methods of extraction, application of latest techniques like Spectroscopy, chromatography and electrophoresis in the isolation, purification and identification of crude drugs.

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SURAMPALEM-533 437

"FORMULATION AND COMPARITIVE EVALUATION OF QUININE SULFATE TABLETS WITH MARKETED PRODUCT"

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfilment of the requirements for the degree of Bachelor of Pharmacy (2021)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

Submitted BY

CHALLA. SAI KRISHNA (173G1R0006)
CHAMANDRA.BHAVANI (173G1R0007)
CHERAKANI.VEERA DURGA LAKSHMI (173G1R0008)
CHINTA.LALITHA MANOJ (173G1R0009)
CHITTIMURI JEEVAN (173G1R0010)

Under the Guidance of

Mr. DASARI.NAGASEN, M. Pharm.

Assistant professor

Aditya Pharmacy College

Surampalem - 533437

2020-2021

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled "FORMULATION AND COMPARITIVE EVALUATION OF QUININE SULFATE TABLETS WITH MARKETED PRODUCT" was submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the award of the degree of **Bachelor of pharmacy** is a record of original research work carried out by

CHALLA SAI KRISHNA (173G1R0006), CHAMANDRA BHAVANI (173GR10007), CHERAKANI VEERA DURGA LAKSHMI (173GR10008), CHINTA LALITHA MANJU (173GR10009), CHITTIMURI JEEVAN (173GR10010).

They have done this research work under the supervision of **Mr. DASARI NAGASEN,** M. Pharm and it has not been previously submitted to any other university or academic institution for any higher degree.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Dr. D. Sathis kumar, *M.Pharm, Ph.D*
Principal,
Aditya Pharmacy College,
Surampalem-533437.

Place: Surampalem

Date:

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Internal Examiner **External Examiner**

DECLARATION

The project embodied in this thesis entitled "FORMULATION AND COMPARITIVE EVALUATION OF QUININE SULFATE TABLETS WITH MARKETED PRODUCT" was carried out in the department of Pharmaceutical Technology under the guidance of **Mr. DASARI NAGASEN,** M.pharm, Aditya Pharmacy College, Surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.

Ch. Sai Krishna
CHALLA SAI KRISHNA

(173G1R0006)

CH. Bhavani
CHAMANDRA.BHAVANI

(173GR10007)

Ch.V.D. Lakshmi
CHERAKANI VEERA DURGA LAKSHMI
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Ch. L. Manoj
CHINTA. LALITHA MANOJ
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8.SUMMARY AND CONCLUSION

Studies have been carried out on Quinine Sulfate with an objective of preparing the Quinine Sulfate tablets by using direct compression technique and comparing the optimized formulation with marketed formulation REZ-Q 300 by using similarity factor (f2) value.

Preformulation studies like solubility, melting point, description, Hygroscopicity, flow properties were performed.

Pre compression parameters like Bulk density, Tapped density, Angle of repose. Carr's index & Hausner's ratio were performed and the drug shows good flow behavior, so that it is suitable to formulate in direct compression technique.

Quinine Sulfate tablets were prepared by using direct compression technique and compressed by using CADMACH 16 rotary punch machine. Formulation trials from F1 to F5 were carried out for optimizing the process and formula.

Formulation trial F1-F4 had shown less dissolution when compared with marketed product & similarity of drug release is also less. In formulation optimization we had taken the change in concentration of croscarmellose sodium to meet the dissolution profile with marketed formulation.

The following evaluation tests were carried out on post compression which includes Weight variation, Hardness, Friability, Disintegration and Dissolution parameters.

Formulation trials F1-F4 does not meet the criteria for dissolution when compared with the marketed formulation by using similarity factor (f2).Among all the formulations F5 had shown good dissolution results with REZ-Q 300 and the similarity factor (f2) has shown value 57.

The formulation F5 had shown good results in post compression parameters like Weight variation, Hardness, Friability, Disintegration Drug content and Dissolution parameters. The release profile of the formulation F5 had shown 99.40% and an assay value as 102 %. The release profile of the REZ-Q 300 had shown 98.20% and an assay value as 99 %.

From the study, it is concluded that the invitro release of Quinine Sulfate tablets prepared by using formulation (F5) has shown good results than the marketed formulation (REZ-Q 300).

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BP501T. MEDICINAL CHEMISTRY – II (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.

Objectives: Upon completion of the course the student shall be able to

1. Understand the chemistry of drugs with respect to their pharmacological activity
2. Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
3. Know the Structural Activity Relationship of different class of drugs
4. Study the chemical synthesis of selected drugs

Course Content:

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs superscripted (*)

UNIT- I **10 Hours**

Antihistaminic agents: Histamine, receptors and their distribution in the humanbody

H_1-antagonists: Diphenhydramine hydrochloride*, Dimenhydrinate, Doxylamines cuccinate, Clemastine fumarate, Diphenylphyraline hydrochloride, Tripelenamine hydrochloride, Chlorcyclizine hydrochloride, Meclizine hydrochloride, Buclizine hydrochloride, Chlorpheniramine maleate, Triprolidine hydrochloride*, Phenidamine tartarate, Promethazine hydrochloride*, Trimeprazine tartrate, Cyproheptadine hydrochloride, Azatidine maleate, Astemizole, Loratadine, Cetirizine, Levocetrazine Cromolyn sodium

H_2-antagonists: Cimetidine*, Famotidine, Ranitidin.

Gastric Proton pump inhibitors: Omeprazole, Lansoprazole, Rabeprazole, Pantoprazole

Anti-neoplastic agents:

Alkylating agents: Meclorethamine*, Cyclophosphamide, Melphalan,

Chlorambucil, Busulfan, Thiotepa

Antimetabolites: Mercaptopurine*, Thioguanine, Fluorouracil, Floxuridine, Cytarabine, Methotrexate*, Azathioprine

Antibiotics: Dactinomycin, Daunorubicin, Doxorubicin, Bleomycin

Plant products: Etoposide, Vinblastin sulphate, Vincristin sulphate

Miscellaneous: Cisplatin, Mitotane.

UNIT – II **10 Hours**

Anti-anginal:

Vasodilators: Amyl nitrite, Nitroglycerin*, Pentaerythritol tetranitrate, Isosorbide dinitrite*, Dipyridamole.

Calcium channel blockers: Verapamil, Bepridil hydrochloride, Diltiazem hydrochloride, Nifedipine, Amlodipine, Felodipine, Nicardipine, Nimodipine.

Diuretics:

Carbonic anhydrase inhibitors: Acetazolamide*, Methazolamide, Dichlorphenamide.

Thiazides: Chlorthiazide*, Hydrochlorothiazide, Hydroflumethiazide, Cyclothiazide,

Loop diuretics: Furosemide*, Bumetanide, Ethacrynic acid.

Potassium sparing Diuretics: Spironolactone, Triamterene, Amiloride.

Osmotic Diuretics: Mannitol

Anti-hypertensive Agents: Timolol, Captopril, Lisinopril, Enalapril, Benazepril hydrochloride, Quinapril hydrochloride, Methyldopate hydrochloride,* Clonidine hydrochloride, Guanethidine monosulphate, Guanabenz acetate, Sodium nitroprusside, Diazoxide, Minoxidil, Reserpine, Hydralazine hydrochloride.

UNIT- III **10 Hours**

Anti-arrhythmic Drugs: Quinidine sulphate, Procainamide hydrochloride, Disopyramide phosphate*, Phenytoin sodium, Lidocaine hydrochloride, Tocainide hydrochloride, Mexiletine hydrochloride, Lorcainide hydrochloride, Amiodarone, Sotalol.

Anti-hyperlipidemic agents: Clofibrate, Lovastatin, Cholesteramine and Cholestipol

Coagulant & Anticoagulants: Menadione, Acetomenadione, Warfarin*, Anisindione, clopidogrel

Drugs used in Congestive Heart Failure: Digoxin, Digitoxin, Nesiritide, Bosentan, Tezosentan,

"FORMULATION AND EVALUATION OF LIQUID SOLID COMPACT TABLETS OF LOVASTATIN"

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfilment of the requirements for the degree of Bachelor of Pharmacy (2021)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

SUBMITTED BY

A. MANIKANTA REDDY (173G1R0011) D. SRI SARANYA (173G1R0012)

D. RASHMITHA (173G1R0013) D. THARAKRISHNA (173G1R0014)

G. SWARUPARANI (173G1R0015)

UNDER THE GUIDANCE OF

Mr. S.P.N. Kumar, *M. Pharm.*

Assistant professor

ADITYA PHARMACY COLLEGE

SURAMPALEM - 533437

2020-2021

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CERTIFICATE

This is to certify that the dissertation entitled "FORMULATION AND EVALUATION OF LIQUID SOLID COMPACT TABLETS OF LOVASTATIN" was submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the award of the degree of **Bachelor of pharmacy** is a record of original research work carried out by A.MANIKANTA (173G1R0011), D. SRI SARANYA (173G1R0012), D. RASHMITHA (173G1R0013), D. THARA KRISHNA(173G1R0014), G. SWARUPA RANI (173G1R0015) They have done this research work under the supervision of Mr. S.P.N. Kumar, M. Pharm and it has not been previously submitted to any other university or academic institution for any higher degree.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Dr. Sathis Kumar Dinakaran, *M.Pharm, Ph.D*

Principal,

Aditya Pharmacy College,

Surampalem- 533437.

Place: Surampalem

Date: 13.07.221

Internal Examiner

External Examiner

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

The project embodied in this thesis entitled "FORMULATION AND EVALUATION OF LIQUID SOLID COMPACT TABLETS OF LOVASTATIN" was carried out in the department of Pharmaceutical Technology under the guidance of Mr. S.P.N. Kumar, M. Pharm, Aditya Pharmacy College . Surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.

A. Mani Kanta Reddy
A. MANIKANTA REDDY (173G1R0011)

D. Sri Saranya
D. SRI SARANYA (173G1R0012)

D. Rashmitha.
D. RASHMITHA (173G1R0013)

D. Thara krishna
D. THARAKRISHNA (173G1R0014)

G. SwaroopaRani
G. SWARUPARANI (173G1R0015)

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

7. CONCLUSION

- In the present study, the potential of liquisolid systems to improve the dissolution properties of water-insoluble drug was investigated using Lovastatin as the model drug.
- The liquisolid technique can be effective way for dissolution rate improvement of water insoluble drugs such as Lovastatin.
- Polysorbate 80 was used as a liquid vehicle for enhancing dissolution rate and among the sevetal disintegrants used Cross carmellose sodium showed better drug disintegration properties.
- This in turn may indicates increase in oral bioavailability due to increased wetting and surface area available for dissolution. The compacts produced using this technique were found to be satisfactory.
- Thus this technique can be used to improve the release rate of poorly water soluble drugs that will make the dosage form will be cost effective.
- This novel approach to the formulation may be helpful in improving oral bioavailability.

BP406P. MEDICINAL CHEMISTRY – I (Practical)

4 Hours/Week

I	**Preparation of drugs/ intermediates**
1	1,3-pyrazole
2	1,3-oxazole
3	Benzimidazole
4	Benztriazole
5	2,3- diphenyl quinoxaline
6	Benzocaine
7	Phenytoin
8	Phenothiazine
9	Barbiturate
II	**Assay of drugs**
1	Chlorpromazine
2	Phenobarbitone
3	Atropine
4	Ibuprofen
5	Aspirin
6	Furosemide
III	**Determination of Partition coefficient for any two drugs**

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SYNTHESIS AND ANTIBACTERIAL ACTIVITY OF SOME NOVEL 1-[SUBSTITUTED (BENZOTRIAZOLE- 1-YL-3-(PHENYL)} PROPENONE

A dissertation submitted to Jawaharlal Nehru Technology University, Kakinada in partial fulfilment for the award of the degree of

BACHELOR OF PHARMACY

(2017-2021)

Submitted by

B.HYMA SAI TEJA (173G1R0069)

DULLA DRAKSHAYANI(173G1R0070)

EZE OLUCHUKWU VICTORIA (173G1R0072)

HAIMO KANTI SARKAR (173G1ROO73)

KOVVURI NAVYA (173G1R0074)

Under the guidance of

SHAIK.RAFI M.Pharm

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ADITYA PHARMACY COLLEGE

SURAMPALEM - 533437

CERTIFICATE

This is to certify that the dissertation entitled **"SYNTHESIS AND ANTIBACTERIAL ACTIVITY OF SOME NOVEL 1-[SUBSTITUTED]BENZOTRIAZOLE-1-YL-3-(PHENYL)]-PROPENONE"** was submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the award of the degree of Bachelor of Pharmacy is a record of original research work carried out by BORRA.HYMA SAI TEJA(173G1R0069), DULLA DRAKSHAYANI(173G1R0070), EZE OLUCHUKWU VICTORIA (173G1R0072), HAIMO KANTI SARKAR(173G1R0073), KOVVURI NAVYA(173G1R0074).They have done this research work under the supervision of Mr.SHAIK.RAFI,M.Pharm and it has not been submitted to any other universiy or academic institution for any higher degree.

Place: Surampalem

Date:

Internal examiner **External examiner**

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

DECLARATION

The project embodied in this thesis "**SYNTHESIS AND ANTIBACTERIAL ACTIVITY OF SOME NOVEL 1-[SUBSTITUTED(BENZOTRIAZOLE-1YL-3-(PHENYL)]-PROPENONE**" was carried out in the department of Pharmaceutical Organic Chemistry under the guidance of Mr.Shaik.Rafi M.Pharm, Aditya Pharmacy College, Surampalem. The extent and source of information derived from existence literature have been indicated throughout thesis of the project work at appropriate places.

BORRA.HYMA SAI TEJA (173G1R0069) B.Hyma.

DULLA DRAKSHAYANI(173G1R0070) D. Drakshayani

EZE OLUCHUKWU VICTORIA (173G1R0072) Eze.

HAIMO KANTI SARKAR (173G1R0073)

KOVVURI NAVYA (173G1R0074) K. navya

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SUMMARY AND CONCLUSION

Synthesis and antibacterial activity of some novel 1-[substituted (benzotriazol-1-yl- 3-(phenyl)-propenone

SUMMARY AND CONCLUSION

- The title compounds were prepared by taking equal moles of compound-2 and suitable aldehyde in a clean mortar and triturate with 40% alcoholic NaOH by adding drop by drop the solid product comes around 15 to 20 min.
- All the compounds synthesized were characterized by physical (R_f values, melting point, molecular weight, molecular formula).
- The title compounds were screened for antibacterial activity. The tested compounds do not have antibacterial activity at 250 µml concentration.

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BP602 T. PHARMACOLOGY-III (Theory)

45 Hours

Scope: This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on respiratory and gastrointestinal system, infectious diseases, immuno-pharmacology and in addition,emphasis on the principles of toxicology and chronopharmacology.

Objectives: Upon completion of this course the student should be able to:

1. understand the mechanism of drug action and its relevance in the treatment of different infectious diseases
2. comprehend the principles of toxicology and treatment of various poisoningsand
3. appreciate correlation of pharmacology with related medical sciences.

Course Content:

UNIT-I **10hours**

1. Pharmacology of drugs acting on Respiratory system

a. Anti -asthmatic drugs
b. Drugs used in the management of COPD
c. Expectorants and antitussives
d. Nasal decongestants
e. Respiratory stimulants

2. Pharmacology of drugs acting on the Gastrointestinal Tract

a. Antiulcer agents.
b. Drugs for constipation and diarrhoea.
c. Appetite stimulants and suppressants.
d. Digestants and carminatives.
e. Emetics and anti-emetics.

UNIT-II **10hours**

3. Chemotherapy

a. General principles of chemotherapy.
b. Sulfonamides and cotrimoxazole.
c. Antibiotics- Penicillins, cephalosporins, chloramphenicol, macrolides, quinolones and fluoroquinolins, tetracycline and aminoglycosides

UNIT-III **10hours**

3. Chemotherapy

a. Antitubercular agents
b. Antileprotic agents

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c. Antifungal agents

d. Antiviral drugs

e.Anthelmintics

f. Antimalarial drugs

g. Antiamoebic agents

UNIT-IV **08hours**

3. Chemotherapy

l. Urinary tract infections and sexually transmitted diseases.

m. Chemotherapy of malignancy.

4. Immunopharmacology

a. Immunostimulants

b. Immunosuppressant

Protein drugs, monoclonal antibodies, target drugs to antigen, biosimilars

UNIT-V **07hours**

5. Principles of toxicology

a. Definition and basic knowledge of acute, subacute and chronic toxicity.

b. Definition and basic knowledge of genotoxicity, carcinogenicity, teratogenicity and mutagenicity

c. General principles of treatment of poisoning

d. Clinical symptoms and management of barbiturates, morphine, organophosphosphorus compound and lead, mercury and arsenic poisoning.

6. Chronopharmacology

a. Definition of rhythm and cycles.

b. Biological clock and their significance leading to chronotherapy.

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COMPARATIVE STUDY OF IN VIVO EFFECTS OF GLIPIZIDEAND METFORMIN HYDROCHLORIDE ON PLASMA CONCENTRATION OF THEOPHYLLINE IN HEALTHY RATS

Dissertation submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY,KAKINADA

In the partial fulfillment of the requirements for theAward of the degree of

BACHELOR OF PHARMACY

BY

K.SRI VIDYA(173G1R0075)

KAUSTAV MAITI(173G1R0076)

KISHAN KUMAR SAH(173G1R0077)

KUCHARLAPATI PAVANI(173G1R0078)

M.NAGALAKSHMI (173G1R0079)

Under the guidance of

K.PYDIRAJU, M.Pharm.(Ph.D)

Assistant Professor

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533437

Aditya Pharmacy college, surampalem, Andhra Pradesh,India-533437

Batch: 2017-2021

ADITYA PHARMACY COLLEGE

(Affiliated to PCI,AICTE& JNTUK)

Surampalem533437E.G.District,Andhra Pradesh

CERTIFICATE

This is to certify that the dissertation work entitled a study on "COMPARATIVE STUDY OF IN VIVO EFFECTS OF GLIPIZIDE AND METFORMIN HYDROCHLORIDE ON PLASMA CONCENTRATION OF THEOPHYLLINE IN HEALTHY RATS"submitted in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2017-2021.This is a bonafide work carried out byK.SriVidya(173G1R0075),KaustavMaiti(173G1R0076),Kishan Kumar Sah(173G1R0077), KucharlapatiPavani(173G1R0078) ,M.Nagalakshmi(173G1R0079), under the direct guidance and supervision of K.PYDIRAJU M.Pharm.(Ph.D) Assistant ProfessorAditya pharmacy college, surampalem,Andhra Pradesh.

(Internal examiner)

(External examiner)

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

We hereby declare that the dissertation work entitled"COMPARATIVE STUDY OF IN VIVO EFFECTS OF GLIPIZIDE AND METFORMIN HYDRO CHLORIDE ON PLASMA CONCENTRATION OF THEOPHYLLINE IN HEALTHY RATS" in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2017-2021, was carried out by us in library and laborartories of Aditya Pharmacy College, surampalem, Andhra Pradesh under the valuable and efficient guidance and supervision of Mr. K. Pydiraju, M.Pharm.(Ph.D) Adityapharmacy college, surampalem, Andhra Pradesh.we also declare that the matter embodied in it is a genuine WORK.

K.SRI VIDYA (173G1R0075) K. Sri Vidya

KAUSTAV MAITI (173G1R0076) Kaustav Maiti

KISHAN KUMAR SAH (173G1R0077) Kishan Kumar Sah

KUCHARLAPATI PAVANI (173G1R0078) K. Pavani

M.NAGALAKSHMI (173G1R0079) M. Nagalakshmi

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SURAMPALEM

7.CONCLUSION

This study it was concluded that glipizide and Metformin HCL oral Antidiabetic,potentiates the Theophyllineaction in Asthma treatment.

Combination therapy is a useful and common practice in modern medical science. Where two or more drugs are administered concurrently. The results in this study have shown that Theophylline Action can enhanced by both glipizide and Metformin Which can be identified by plasma concentration in rats. The data obtained would help us to suggest that glipizide as well as Metformin HCL may result into compatible combination therapies with Theophylline which is useful in the treatment of diabetic patients. However trials in higher animals and humans are necessary.

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BP103T. PHARMACEUTICS- I (Theory)

45 Hours

Scope: This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.

Objectives: Upon completion of this course the student should be able to:

- Know the history of profession of pharmacy
- Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
- Understand the professional way of handling the prescription
- Preparation of various conventional dosage forms

Course Content:

UNIT – I **10 Hours**

- **Historical background and development of profession of pharmacy**: History of profession of Pharmacy in India in relation to pharmacy education, industry and organization, Pharmacy as a career, Pharmacopoeias: Introduction to IP, BP, USP and Extra Pharmacopoeia.
- **Dosage forms:** Introduction to dosage forms, classification and definitions
- **Prescription:** Definition, Parts of prescription, handling of Prescription and Errors in prescription.
- **Posology:** Definition, Factors affecting posology. Pediatric dose calculations based on age, body weight and body surface area.

UNIT – II **10 Hours**

- **Pharmaceutical calculations**: Weights and measures – Imperial & Metric system, Calculations involving percentage solutions, alligation, proof spirit and isotonic solutions based on freezing point and molecular weight.

- **Powders:** Definition, classification, advantages and disadvantages,Simple & compound powders – official preparations, dusting powders, effervescent, efflorescent and hygroscopic powders, eutectic mixtures. Geometric dilutions.

- **Liquid dosage forms:** Advantages and disadvantages of liquid dosage forms. Excipients used in formulation of liquid dosage forms. Solubility enhancement techniques

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UNIT – III **08 Hours**

- **Monophasic liquids:** Definitions and preparations of Gargles, Mouthwashes, Throat Paint, Eardrops, Nasal drops, Enemas, Syrups, Elixirs, Liniments and Lotions.
- **Biphasic liquids:**
- **Suspensions:** Definition, advantages and disadvantages, classifications, Preparation of suspensions; Flocculated and Deflocculated suspension & stability problems and methods to overcome.
- **Emulsions:** Definition, classification, emulsifying agent, test for the identification of type ofEmulsion, Methods of preparation & stability problems and methods to overcome.

UNIT – IV **08 Hours**

- **Suppositories**: Definition, types, advantages and disadvantages, types of bases, methods of preparations. Displacement value & its calculations, evaluation of suppositories.
- **Pharmaceutical incompatibilities**: Definition, classification, physical, chemical and therapeutic incompatibilities with examples.

UNIV – V **07 Hours**

- **Semisolid dosage forms:** Definitions, classification, mechanisms and factors influencing dermal penetration of drugs. Preparation of ointments, pastes, creams and gels. Excipients used in semi solid dosage forms. Evaluation of semi solid dosages forms

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

PREPARATION AND EVALUATION OF POLYHERBAL COUGH SYRUP

Dissertation submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

In the partial fulfillment of the requirements for the Award of the degree of

BACHELOR OF PHARMACY

BY

MANISH KUMAR (173G1R0081)

M.THULASI (173G1R0082)

N.SRI BHAVYA (173G1R0084)

NISHIKANTA BERA (173G1R0085)

P.SRI CHANDANA (173G1R0086)

Under the guidance of

A. VENKATESWARA RAO, M.Pharm.

Assistant Professor

PRINCIPAL
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SURAMPALEM 533 437

Aditya Pharmacy college,

surampalem, Andhra Pradesh, India-533437

Batch: 2017-2021

ADITYA PHARMACY COLLEGE

(Affiliated to PCI, AICTE & JNTUK)

Surampalem 533437E.G.District,Andhra Pradesh

CERTIFICATE

This is to certify that the dissertation work entitled a study on "PREPARATION AND EVALUATION OF POLYHERBAL COUGH SYRUP"submitted in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2017-2021.This is a bonafide work carried out by MANISH KUMAR(173G1R0081),M.THULASI(173G1R0082),N.SRI BHAVYA(173G1R0084), NISHIKANTA BERA(173G1R0085) ,P.SRI CHANDANA(173G1R0086), under the direct guidance and supervision of A.VENKATESWARA RAO M.Pharm. Assistant Professor Aditya pharmacy college, surampalem,Andhra Pradesh.

A.Venkat 13/7/21

(Internal examiner)

(External examiner)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE SURAMPALEM

DECLARATION

We hereby declare that the dissertation work entitled "PREPARATION AND EVALUATION OF POLYHERBAL COUGH SYRUP" in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2017-2021, was carried out by us in library and laborartories of Aditya Pharmacy College, surampalem, Andhra Pradesh under the valuable and efficient guidance and supervision of Mr. A. Venkateswara Rao, M.Pharm. Aditya pharmacy college, surampalem, Andhra Pradesh.we also declare that the matter embodied in it is a genuine WORK.

MANISH KUMAR (173G1R0081) Manish Kumar

M.THULASI (173G1R0082) M. Thulasi

N.SRI BHAVYA (173G1R0084) N. Sri Bhavya

NISHIKANTA BERA (173G1R0085) Nishikanta Bera.

P.SRI CHANDANA(173G1R0086) P. Sri Chandana.

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CONCLUSION

The present study concluded that by giving a comprehensive view of preparation and evaluation of poly herbal cough syrup for the treatment of cough as crude drug as well as poly herbal formulations is good alternatives of synthetic cough syrups which are having a lot of side effects like drowsiness. In the present research poly herbal cough syrup containing medicinal plants like, *Psidium guajava, Ocimum sanctum,* and *Trachyspermum ammi* and honey and sugar (as base), were formulated & evaluated successfully. According to present study it was concluded that the prepared polyhedral cough syrup F4 and F5 shows good physical characteristics, stable in accelerated stability studies. F1, F2 and F3 show small change in physical characteristic after 3 months of accelerated stability test but all the parameters are within the standard limit. The poly herbal syrup containg potential herbs like *Psidium guajava, Ocimum santum,* and *Trachyspermum ammi* having remarkable cough suppressing properties, and traditionally used in sore throat, hoarseness of voice and condition like chronic bronchitis asthmatic bronchitis, and acute upper respiratory tract infection in patients of all ages, The results of stability studies proved that our formula F4 and F5 are stable. Thus it can be concluded that the prepared poly herbal syrup may be used as stable liquid dosage form industries to make the similar formulations on large scale. A stable dosage form will gain good patient compliance.

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SURAMPALEM

BP606TPHARMACEUTICAL QUALITY ASSURANCE (Theory)

45 Hours

Scope: This course deals with the various aspects of quality control and quality assurance aspects of pharmaceutical industries. It deals with the important aspects like cGMP, QC tests, documentation, quality certifications and regulatory affairs.

Objectives: Upon completion of the course student shall be able to:

- understand the cGMP aspects in a pharmaceutical industry
- appreciate the importance of documentation
- understand the scope of quality certifications applicable to pharmaceutical industries
- understand the responsibilities of QA & QC departments

Course content:

UNIT – I **10 Hours**

Quality Assurance and Quality Management concepts: Definition and concept of Quality control, Quality assurance and GMP

Total Quality Management (TQM): Definition, elements, philosophies

ICH Guidelines: purpose, participants, process of harmonization, Brief overview of QSEM, with special emphasis on Q-series guidelines, ICH stability testing guidelines

Quality by design (QbD): Definition, overview, elements of QbD program, tools

ISO 9000 & ISO14000: Overview, Benefits, Elements, steps for registration

NABL accreditation : Principles and procedures

UNIT - II **10 Hours**

Organization and personnel: Personnel responsibilities, training, hygiene and personal records.

Premises: Design, construction and plant layout, maintenance, sanitation, environmental control, utilities and maintenance of sterile areas, control of contamination.

Equipments and raw materials: Equipment selection, purchase specifications, maintenance, purchase specifications and maintenance of stores for raw materials.

UNIT – III **10 Hours**

Quality Control: Quality control test for containers, rubber closures and secondary packing

materials.

Good Laboratory Practices: General Provisions, Organization and Personnel, Facilities, Equipment, Testing Facilities Operation, Test and Control Articles, Protocol for Conduct of a Nonclinical Laboratory Study, Records and Reports, Disqualification of Testing Facilities

UNIT – IV **08 Hours**

Complaints: Complaints and evaluation of complaints, Handling of return good, recalling and waste disposal.

Document maintenance in pharmaceutical industry: Batch Formula Record, Master Formula Record, SOP, Quality audit, Quality Review and Quality documentation, Reports and documents, distribution records.

UNIT – V **07 Hours**

Calibration and Validation: Introduction, definition and general principles of calibration, qualification and validation, importance and scope of validation, types of validation, validation master plan. Calibration of pH meter, Qualification of UV-Visible spectrophotometer, General principles of Analytical method Validation.

Warehousing: Good warehousing practice, materials management

Recommended Books: (Latest Edition)

1. Quality Assurance Guide by organization of Pharmaceutical Products of India.
2. Good Laboratory Practice Regulations, 2nd Edition, Sandy Weinberg Vol. 69.
3. Quality Assurance of Pharmaceuticals- A compendium of Guide lines and Related materials Vol I WHO Publications.
4. A guide to Total Quality Management- Kushik Maitra and Sedhan K Ghosh
5. How to Practice GMP's – P P Sharma.
6. ISO 9000 and Total Quality Management – Sadhank G Ghosh
7. The International Pharmacopoeia – Vol I, II, III, IV- General Methods of Analysis and Quality specification for Pharmaceutical Substances, Excipients and Dosage forms
8. Good laboratory Practices – Marcel Deckker Series
9. ICH guidelines, ISO 9000 and 14000 guidelines

TherDose

12th January, 2021

TO WHOM SOEVER IT MAY CONCERN

This is to certify that **Mr. A. Manikanta Reddy – 173G1R0011** Student of Bachelor of Pharmacy at **ADITYA Pharmacy College , Kakinada** has undergone Industrial Training for a period of a month from 04th January 2021 to 12th January 2021.

Mr.A. Manikanta Reddy was trained in the areas of Injectable, Tablets, Capsules, Quality Control, Ware House and R&D departments. During the tenure, we found him to be sincere and hard working.

Her conduct and behaviour is satisfactory during her stay in our organization. We wish her every success in her future endeavours.

For TherDose Pharma Pvt. Ltd.,

TherDose Pharma Pvt. Ltd. Hyderabad

Authorized Signature

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

TherDose Pharma Private Limited (100% EOU)
Plot No. 118, 119 & 120, Sy. No. 342, Road No. 6, ALEAP Industrial Estate, Opp. JNTU Lane, Pragathi Nagar, Gajularamaram (V), Quthbullapur (M), Medchal - Malkajgiri District-500 090, Hyderabad, Telangana State, India.
CIN: U24239AP2003PTC42272 | Tel : +91 72070 61624 | E-mail: info@therdose.com | www.therdose.com

BP 303 T. PHARMACEUTICAL MICROBIOLOGY (Theory)

45Hours

Scope:

- Study of all categories of microorganisims especially for the production of alchol antibiotics, vaccines, vitamins enzymes etc..

Objectives: Upon completion of the subject student shall be able to;

1. Understand methods of identification, cultivation and preservation of various microorganisms
2. To understand the importance and implementation of sterlization in pharmaceutical processing and industry
3. Learn sterility testing of pharmaceutical products.
4. Carried out microbiological standardization of Pharmaceuticals.
5. Understand the cell culture technology and its applications in pharmaceutical industries.

Course content:

Unit I **10 Hours**

Introduction, history of microbiology, its branches, scope and its importance.
Introduction to Prokaryotes and Eukaryotes
Study of ultra-structure and morphological classification of bacteria, nutritional requirements, raw materials used for culture media and physical parameters for growth, growth curve, isolation and preservation methods for pure cultures, cultivation of anaerobes, quantitative measurement of bacterial growth (total & viable count).
Study of different types of phase constrast microscopy, dark field microscopy and electron microscopy.

Unit II **10 Hours**

Identification of bacteria using staining techniques (simple, Gram's &Acid fast staining) and biochemical tests (IMViC).

Study of principle, procedure, merits, demerits and applications of physical, chemical gaseous,radiation and mechanical method of sterilization.

Evaluation of the efficiency of sterilization methods.

Equipments employed in large scale sterilization.

Sterility indicators.

Unit III **10 Hours**

Study of morphology, classification, reproduction/replication and cultivation of Fungi and Viruses.

Classification and mode of action of disinfectants

Factors influencing disinfection, antiseptics and their evaluation. For bacteriostatic and bactericidal actions

Evaluation of bactericidal & Bacteriostatic.

Sterility testing of products (solids, liquids, ophthalmic and other sterile products) according to IP, BP and USP.

Unit IV **08 Hours**

Designing of aseptic area, laminar flow equipments; study of different sources of contamination in an aseptic area and methods of prevention, clean area classification.
Principles and methods of different microbiological assay. Methods for standardization of antibiotics, vitamins and amino acids.
Assessment of a new antibiotic.

Unit V **07Hours**

Types of spoilage, factors affecting the microbial spoilage of pharmaceutical products, sources and types of microbial contaminants, assessment of microbial contamination and spoilage.

Preservation of pharmaceutical products using antimicrobial agents, evaluation of microbial stability of formulations.

Growth of animal cells in culture, general procedure for cell culture, Primary, established and transformed cell cultures.

Application of cell cultures in pharmaceutical industry and research.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

VERAS®
Pharmaceuticals Pvt. Ltd.,

12.07.2021

Ref: 18/21-22

To
The Principal,
Aditya Pharmacy College,
Aditya Nagar, ADB Road,
Surampalem, E.G.Dist.

Dear Sir,

We like to inform you that Mr. Kondi Gomanikanta, S/o Mr. K. Satyanarayana, B. Pharma student from your college has undergone industrial training in our manufacturing unit from 13th Jun 2021 to 12th Jul 2021.

During the training much exposure has been imparted to him in manufacturing of tablets and analysis of various formulations. He shown keen interest in learning and his observation level is excellent.

We wish him all success in the future.

For Veras Pharmaceuticals Pvt Ltd,

(V.V.RAO)
Production Manager.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Survey No. 56/11 to 14, Chelavuru, Vizianagaram - 535 005 A.P.
e-mail : verasphamaceuticals@gmail.com

BP 307P.PHARMACEUTICAL MICROBIOLOGY (Practical)

4 Hrs/week

1. Introduction and study of different equipments and processing, e.g., B.O.D. incubator, laminar flow, aseptic hood, autoclave, hot air sterilizer, deep freezer, refrigerator, microscopes used in experimental microbiology.
2. Sterilization of glassware, preparation and sterilization of media.
3. Sub culturing of bacteria and fungus. Nutrient stabs and slants preparations.
4. Staining methods- Simple, Grams staining and acid fast staining (Demonstration with practical).
5. Isolation of pure culture of micro-organisms by multiple streak plate technique and other techniques.
6. Microbiological assay of antibiotics by cup plate method and other methods
7. Motility determination by Hanging drop method.
8. Sterility testing of pharmaceuticals.
9. Bacteriological analysis of water
10. Biochemical test.

Recommended Books (Latest edition)

1. W.B. Hugo and A.D. Russel: Pharmaceutical Microbiology, Blackwell Scientific publications, Oxford London.
2. Prescott and Dunn., Industrial Microbiology, 4th edition, CBS Publishers & Distributors, Delhi.
3. Pelczar, Chan Kreig, Microbiology, Tata McGraw Hill edn.
4. Malcolm Harris, Balliere Tindall and Cox: Pharmaceutical Microbiology.
5. Rose: Industrial Microbiology.
6. Probisher, Hinsdill et al: Fundamentals of Microbiology, 9th ed. Japan
7. Cooper and Gunn's: Tutorial Pharmacy, CBS Publisher and Distribution.
8. Peppler: Microbial Technology.
9. I.P., B.P., U.S.P.- latest editions.
10. Ananthnarayan : Text Book of Microbiology, Orient-Longman, Chennai
11. Edward: Fundamentals of Microbiology.
12. N.K.Jain: Pharmaceutical Microbiology, Vallabh Prakashan, Delhi
13. Bergeys manual of systematic bacteriology, Williams and Wilkins- A Waverly company

BRIDGE PHARMACEUTICALS PVT. LTD.

AUGUST 17, 2020

TO WHOMSOEVER IT MAY CONCERN

*****

This is to certify that Ms. BANDELA . MERCY JYOTHI, D/O B.DURGA RAO, student of ADITYA PHARMACY COLLEGE, Surampalem bearing Roll No (173G1R0003) has undergone Industrial Training to part fulfillment of her B.pharmacy in our organization from 1st July 2020 to 16th August 2020.

During this period, her conduct is satisfactory and we wish her all the best for her future endeavors.

With Best Wishes,

For Bridge Pharmaceuticals Pvt Ltd

DIRECTOR

(M.SAMBASIVA RAO)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

BP 405 T.PHARMACOGNOSY AND PHYTOCHEMISTRY I (Theory)

45 Hours

Scope: The subject involves the fundamentals of Pharmacognosy like scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them and their medicinal properties.

Objectives: Upon completion of the course, the student shall be able

1. to know the techniques in the cultivation and production of crude drugs
2. to know the crude drugs, their uses and chemical nature
3. know the evaluation techniques for the herbal drugs
4. to carry out the microscopic and morphological evaluation of crude drugs

Course Content:

UNIT-I **10 Hours**

Introduction to Pharmacognosy:

(a) Definition, history, scope and development of Pharmacognosy

(b) Sources of Drugs – Plants, Animals, Marine & Tissue culture

(c) Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilages, oleoresins and oleo- gum -resins).

Classification of drugs:

Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and sero taxonomical classification of drugs

Quality control of Drugs of Natural Origin:

Adulteration of drugs of natural origin. Evaluation by organoleptic, microscopic, physical, chemical and biological methods and properties.

Quantitative microscopy of crude drugs including lycopodium spore method, leafconstants, camera lucida and diagrams of microscopic objects to scale with camera lucida.

UNIT-II **10 Hours**

Cultivation, Collection, Processing and storage of drugs of natural origin:

Cultivation and Collection of drugs of natural origin

Factors influencing cultivation of medicinal plants.

Plant hormones and their applications.

Polyploidy, mutation and hybridization with reference to medicinal plants

Conservation of medicinal plants

UNIT-III **07 Hours**

Plant tissue culture:

Historical development of plant tissue culture, types of cultures, Nutritional requirements, growth and their maintenance.

Applications of plant tissue culture in pharmacognosy.

Edible vaccines

UNIT IV **10 Hours**

Pharmacognosy in various systems of medicine:

Role of Pharmacognosy in allopathy and traditional systems of medicine namely, Ayurveda, Unani, Siddha, Homeopathy and Chinese systems of medicine.

Introduction to secondary metabolites:

Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins

UNIT V **08 Hours**

Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs

Plant Products:

Fibers - Cotton, Jute, Hemp

Hallucinogens, Teratogens, Natural allergens

Primary metabolites:

General introduction, detailed study with respect to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as Pharmaceutical Aids and/or Medicines for the following Primary metabolites:

Carbohydrates: Acacia, Agar, Tragacanth, Honey

Proteins and Enzymes : Gelatin, casein, proteolytic enzymes (Papain, bromelain, serratiopeptidase, urokinase, streptokinase, pepsin).

Lipids(Waxes, fats, fixed oils) : Castor oil, Chaulmoogra oil, Wool Fat, Bees Wax

Marine Drugs:

Novel medicinal agents from marine sources

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

SELDOM PHARMA PVT. LIMITED

To
The Principal
Aditya College of Pharmacy,
Surampalem,
Andhra Pradesh 533437

DT: 15.08.2020.

TRAINING CERTIFICATE

This is to certify that Miss. Padala .Vasanthi, D/o Ramachandra reddy Garu B.Pharmacy student of **Aditya College of Pharmacy, Surampalem**, has done her Industrial Training in **SELDOM Pharma PVT LTD**, YANAM during the period from 05.07.2020 to 05.08.2020.Trained in the pharmaceutical formulations and quality control activities in our organization for a period of one month days.

Her performance and conduct during the Project & Training period is found satisfactory.

FOR SELDOM PHARMA PVT LTD

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Off. : 0884-2368839. Email ID : seldompharma@gmail.com. Fax : 0884-6691619

Corp. Off. : Plot No. 229, 230/A, S K Residency Nizampet, Hyderabad - 500 090
Regd. Off. : 28-4-26, Market Street, KAKINADA - 533 001, Andhra Pradesh
Factory : TS No F/3/3/2. R S. No. 67/2. C.S No 120/2/1/2 Pts. YANAM, UT of Puducherry

BP 506 P. Industrial PharmacyI (Practical)

4 Hours/week

1. Preformulation studies on paracetamol/asparin/or any other drug
2. Preparation and evaluation of Paracetamol tablets
3. Preparation and evaluation of Aspirin tablets
4. Coating of tablets- film coating of tables/granules
5. Preparation and evaluation of Tetracycline capsules
6. Preparation of Calcium Gluconate injection
7. Preparation of Ascorbic Acid injection
8. Qulaity control test of (as per IP) marketed tablets and capsules
9. Preparation of Eye drops/ and Eye ointments
10. Preparation of Creams (cold / vanishing cream)
11. Evaluation of Glass containers (as per IP)

Recommended Books: (Latest Editions)

1. Pharmaceutical dosage forms - Tablets, volume 1 -3 by H.A. Liberman, Leon Lachman &J.B.Schwartz
2. Pharmaceutical dosage form - Parenteral medication vol- 1&2 by Liberman & Lachman
3. Pharmaceutical dosage form disperse system VOL-1 by Liberman & Lachman
4. Modern Pharmaceutics by Gilbert S. Banker & C.T. Rhodes, 3rd Edition
5. Remington: The Science and Practice of Pharmacy, 20th edition Pharmaceutical Science (RPS)
6. Theory and Practice of Industrial Pharmacy by Liberman & Lachman
7. Pharmaceutics- The science of dosage form design by M.E.Aulton, Churchill livingstone, Latest edition
8. Introduction to Pharmaceutical Dosage Forms by H. C.Ansel, Lea &Febiger, Philadelphia, 5th edition, 2005
9. Drug stability - Principles and practice by Cartensen & C.J. Rhodes, 3rd Edition, Marcel Dekker Series, Vol 107.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

LORD VENKY PHARMA PVT. LTD.,

MANUFACTURS OF GENERIC DRUGS & PATENT FORMULATIONS

ADM.OFFICE:
D.No.28-7-25,Chittoory Street,
KAKINADA-533 001.A.P.
Tel:0884-2377242,2362620

FACTORY & REGD.OFFICE:
Mettakur,Yanam-533 464.
Tel:0884-231166,2321020

Date:.....
12.01.2021

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. GeesalaRudra Pujitha D/o Geesala Veera Pandu ,with Red no:173G1R0018 . Has done her Project& Industrial Training in LORD VENKY PHARMA PVT LTD,YANAM,from 11.06.2020 to 29.07.2020. Trained in Tablets Manufacturing activities in Our Organization . During this period her conduct found to be satisfactory.

We wish her all the best in her future endeavors.

For Lord Venky Pharma Pvt Ltd,

Plant Manager
(S.V.Ravi Shankar)

S.V. RAVI SHANKAR
Plant Manager
Lord Venky Pharma Pvt. Ltd
YANAM

LORD VENKY PHARMA PVT.LTD. YANAM

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Cor.off:13,III rd Floor,Varjivan Mansion, 52/62, Princess Street, Mumbai-400 002.
Tel:C/o.22383932,Fax:22004516

BP 609 P. HERBAL DRUG TECHNOLOGY (Practical)

4 hours/ week

1. To perform preliminary phytochemical screening of crude drugs.
2. Determination of the alcohol content of Asava and Arista
3. Evaluation of excipients of natural origin
4. Incorporation of prepared and standardized extract in cosmetic formulations like creams, lotions and shampoos and their evaluation.
5. Incorporation of prepared and standardized extract in formulations like syrups, mixtures and tablets and their evaluation as per Pharmacopoeial requirements.
6. Monograph analysis of herbal drugs from recent Pharmacopoeias
7. Determination of Aldehyde content
8. Determination of Phenol content
9. Determination of total alkaloids

Recommended Books: (Latest Editions)

1. Textbook of Pharmacognosy by Trease & Evans.
2. Textbook of Pharmacognosy by Tyler, Brady & Robber.
3. Pharmacognosy by Kokate, Purohit and Gokhale
4. Essential of Pharmacognosy by Dr.S.H.Ansari
5. Pharmacognosy & Phytochemistry by V.D.Rangari
6. Pharmacopoeal standards for Ayurvedic Formulation (Council of Research in Indian Medicine & Homeopathy)
7. Mukherjee, P.W. Quality Control of Herbal Drugs: An Approach to Evaluation of Botanicals. Business Horizons Publishers, New Delhi, India, 2002.

PRINCIPAL
Aditya Pharmacy College

LORD VENKY PHARMA PVT. LTD.,

MANUFACTURS OF GENERIC DRUGS & PATENT FORMULATIONS

ADM.OFFICE:
D.No.28-7-25,Chittoory Street,
KAKINADA-533 001,A.P.
Tel:0884-2377242,2362620

FACTORY & REGD.OFFICE:
Mettakur,Yanam-533 464.
Tel.0884-231100,2321020

Date: 12.01.2021

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. Geddam Sri Kalpana D/o Geddam Sekhar , with Red no:173G1R0017 . Has done her Project& Industrial Training in LORD VENKY PHARMA PVT LTD,YANAM, from 11.06.2020 to 29.07.2020. Trained in Tablets Manufacturing activities in Our Organization . During this period her conduct found to be satisfactory.

We wish her all the best in her future endeavors.

For Lord Venky Pharma Pvt Ltd,

Plant Manager

(SURAVI SHANKAR
Plant Manager
Lord Venky Pharma Pvt. Ltd.
YANAM

LORD VENKY PHARMA PVT.LTD. YANAM

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Cor.off:13,III rd Floor,Varjivan Mansion, 52/62, Princess Street, Mumbai-400 002.
Tel:C/o.22363932,Fax:22004516

BP 206 T. ENVIRONMENTAL SCIENCES (Theory)

30 hours

Scope: Environmental Sciences is the scientific study of the environmental system and the status of its inherent or induced changes on organisms. It includes not only the study of physical and biological characters of the environment but also the social and cultural factors and the impact of man on environment.

Objectives: Upon completion of the course the student shall be able to:

1. Create the awareness about environmental problems among learners.
2. Impart basic knowledge about the environment and its allied problems.
3. Develop an attitude of concern for the environment.
4. Motivate learner to participate in environment protection and environment improvement.
5. Acquire skills to help the concerned individuals in identifying and solving environmental problems.
6. Strive to attain harmony with Nature.

Course content:

Unit-I **10hours**

The Multidisciplinary nature of environmental studies

Natural Resources

Renewable and non-renewable resources:

Natural resources and associated problems

a) Forest resources; b) Water resources; c) Mineral resources; d) Food resources; e) Energy resources; f) Land resources: Role of an individual in conservation of natural resources.

Unit-II **10hours**

Ecosystems

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Introduction, types, characteristic features, structure and function of the ecosystems: Forest ecosystem; Grassland ecosystem; Desert ecosystem; Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit- III **10hours**

Environmental Pollution: Air pollution; Water pollution; Soil pollution

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Sri Vyjayanthi Labs Pvt. Ltd.

To WHOM SO EVER IT MAY CONCERN

Date: 10-01-2021.

This is to certify Ms.KUCHARLAPATI PAVANI, D/oKUCHARLAPATI YESURAJ (Roll No.173G1R0078) is a student of ADITYA PHARMACY COLLEGE, Aditya Nagar, ADB road, Surampalem, Andhra Pradesh-533437.Has undergone Industrial Training in our organization from 10-Dec-2020 to 10-Jan-2021 as a part of fulfillment of her B. Pharmacy course.

During the period she had interacted with Regulatory Affairs, Production, Environmental Health& Safety, Maintenance, Warehouse, Quality Control, Assurance, Research and Development and Acquired relevant basic knowledge in these areas. During aforesaid period, we found her hardworking, sincere and learning attitude.

ADITYA PHARMACY COLLEGE SURAMPALEM

For Sri Vyjayanthi Labs Pvt. Ltd.

Authorised Signatory

SRI VYJAYANTHI LABS PVT. LTD. VSP

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

BP109P. PHARMACEUTICSI (Practical)

3 Hours / week

1 . Syrups

a) Syrup IP'66

b) Compound syrup of Ferrous Phosphate BPC'68

2. Elixirs a) Piperazine citrate elixir

b) Paracetamol pediatric elixir

3.Linctus a) Terpin Hydrate Linctus IP'66

b) Iodine Throat Paint (Mandles Paint)

4. Solutions

a) Strong solution of ammonium acetate

b) Cresol with soap solution

c) Lugol's solution

5. Suspensions

a) Calamine lotion

b) Magnesium Hydroxide mixture

c) Aluminimum Hydroxide gel

6. Emulsions a) Turpentine Liniment

b) Liquid paraffin emulsion

7. Powders and Granules

a) ORS powder (WHO)

b) Effervescent granules

c)Dusting powder

d)Divded powders

8. Suppositories

a) Glycero gelatin suppository

b) Coca butter suppository

c) Zinc Oxide suppository

8. Semisolids

a) Sulphur ointment

b) Non staining-iodine ointment with methyl salicylate

c) Carbopal gel

9. Gargles and Mouthwashes

a) Iodine gargle

b) Chlorhexidine mouthwash

Recommended Books: (Latest Editions)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM

Granules India Limite
8-2-293/A/A/2, Road No.2, Banjara Hills, Hyderabad-500 033. I
Phone : 91-40-2355 3266 Fax : 91-4023547
www.granulesindia.com E-mail : mail@granulesindia.

DATE : 27-12-2020

HYDERABAD

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **MISS.ARASAVALLI AMALESWARI D/O KUMARA SWAMY** a student of B Pharmacy Roll No 173G1R0067, **ADIYTA PHARAMCY COLLEGE, SURAMPALEM** , Has undergone one month industrial Training in Granules India Limited, **Hyderabad in Production/Quality Control Departments** for the period 26 Nov 2020, to 27 Dec 2020

During the tenure of traing we found That She is Very sincere.

We wish her all success in her future endeavors.

For GRANULES INDIA LIMITED

GRANULES INDIA LTD. HYD-55 27/12/2020

S. MAHESWARA REDDY

Dy.Manager P&Q.C

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

BP 605 T. PHARMACEUTICAL BIOTECHNOLOGY (Theory)

45 Hours

Scope:

- Biotechnology has a long promise to revolutionize the biological sciences and technology.
- Scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology makes the subject interesting.
- Biotechnology is leading to new biological revolutions in diagnosis, prevention and cure of diseases, new and cheaper pharmaceutical drugs.
- Biotechnology has already produced transgenic crops and animals and the future promises lot more.
- It is basically a research-based subject.

Objectives: Upon completion of the subject student shall be able to;

1. Understanding the importance of Immobilized enzymes in Pharmaceutical Industries
2. Genetic engineering applications in relation to production of pharmaceuticals
3. Importance of Monoclonal antibodies in Industries
4. Appreciate the use of microorganisms in fermentation technology

Unit I **10 Hours**

a) Brief introduction to Biotechnology with reference to Pharmaceutical Sciences.

b) Enzyme Biotechnology- Methods of enzyme immobilization and applications.

c) Biosensors- Working and applications of biosensors in Pharmaceutical Industries.

d) Brief introduction to Protein Engineering.

e) Use of microbes in industry. Production of Enzymes- General consideration - Amylase, Catalase, Peroxidase, Lipase, Protease, Penicillinase.

f) Basic principles of genetic engineering.

Unit II **10 Hours**

a) Study of cloning vectors, restriction endonucleases and DNA ligase.

b) Recombinant DNA technology. Application of genetic engineering in medicine.

c) Application of r DNA technology and genetic engineering in the production of:

i) Interferon ii) Vaccines- hepatitis- B iii) Hormones-Insulin.

d) Brief introduction to PCR

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Unit III **10 Hours**

Types of immunity- humoral immunity, cellular immunity

a) Structure of Immunoglobulins

b) Structure and Function of MHC

c) Hypersensitivity reactions, Immune stimulation and Immune suppressions.

d) General method of the preparation of bacterial vaccines, toxoids, viral vaccine, antitoxins, serum-immune blood derivatives and other products relative to immunity.

e) Storage conditions and stability of official vaccines

f) Hybridoma technology- Production, Purification and Applications

g) Blood products and Plasma Substituties.

Unit IV **08Hours**

a) Immuno blotting techniques- ELISA, Western blotting, Southern blotting.

b) Genetic organization of Eukaryotes and Prokaryotes

c) Microbial genetics including transformation, transduction, conjugation, plasmids and transposons.

d) Introduction to Microbial biotransformation and applications.

e) Mutation: Types of mutation/mutants.

Unit V **07 Hours**

a) Fermentation methods and general requirements, study of media, equipments, sterilization methods, aeration process, stirring.

b) Large scale production fermenter design and its various controls.

c) Study of the production of - penicillins, citric acid, Vitamin B12, Glutamic acid, Griseofulvin,

d) Blood Products: Collection, Processing and Storage of whole human blood, dried human plasma, plasma Substituties.

Recommended Books (Latest edition):

1. B.R. Glick and J.J. Pasternak: Molecular Biotechnology: Principles and Applications of RecombinantDNA: ASM Press Washington D.C.
2. RA Goldshy et. al., : Kuby Immunology.
3. J.W. Goding: Monoclonal Antibodies.
4. J.M. Walker and E.B. Gingold: Molecular Biology and Biotechnology by Royal

Granules India Limited
8-2-293/A/A/2, Road No.2, Banjara Hills, Hyderabad-500 033. INDIA
Phone : 91-40-2355 3266 Fax : 91-4023547894
www.granulesindia.com E-mail : mail@granulesindia.com

DATE : 27-12-2020

HYDERABAD

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **MISS .MARNI PRAMEELA VANI SRI TULASI DEVI D/O VEERA BHADRA RAO** a student of B Pharmacy Roll No 173G1R0082, **ADIYTA PHARAMCY COLLEGE, SURAMPALEM** , Has undergone one month industrial Training in Granules India Limited, **Hyderabad in Production/Quality Control Departments** for the period 26 Nov 2020, to 27 Dec 2020

During the tenure of traing we found That She is Very sincere.

We wish her all success in her future endeavors.

For GRANULES INDIA LIMITED

GRANULES INDIA LTD. HYD-55 27/12/20

S. MAHESWARA REDDY

Dy.Manager P&Q.C

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 4

BP705P. INSTRUMENTAL METHODS OF ANALYSIS (Practical)

4 Hours/Week

1. Determination of absorption maxima and effect of solvents on absorption maxima of organic compounds
2. Estimation of dextrose by colorimetry
3. Estimation of sulfanilamide by colorimetry
4. Simultaneous estimation of ibuprofen and paracetamol by UV spectroscopy
5. Assay of paracetamol by UV- Spectrophotometry
6. Estimation of quinine sulfate by fluorimetry
7. Study of quenching of fluorescence
8. Determination of sodium by flame photometry
9. Determination of potassium by flame photometry
10. Determination of chlorides and sulphates by nephelo turbidometry
11. Separation of amino acids by paper chromatography
12. Separation of sugars by thin layer chromatography
13. Separation of plant pigments by column chromatography
14. Demonstration experiment on HPLC
15. Demonstration experiment on Gas Chromatography

Recommended Books (Latest Editions)

1. Instrumental Methods of Chemical Analysis by B.K Sharma
2. Organic spectroscopy by Y.R Sharma
3. Text book of Pharmaceutical Analysis by Kenneth A. Connors
4. Vogel's Text book of Quantitative Chemical Analysis by A.I. Vogel
5. Practical Pharmaceutical Chemistry by A.H. Beckett and J.B. Stenlake
6. Organic Chemistry by I. L. Finar
7. Organic spectroscopy by William Kemp
8. Quantitative Analysis of Drugs by D. C. Garrett
9. Quantitative Analysis of Drugs in Pharmaceutical Formulations by P. D. Sethi
10. Spectrophotometric identification of Organic Compounds by Silverstein

VERAS ®
Pharmaceuticals Pvt. Ltd.,

12.07.2021

Ref: 16/21-22

To
The Principal,
Aditya Pharmacy College,
Aditya Nagar, ADB Road,
Surampalem, E.G.Dist.

Dear Sir,

We like to inform you that Mr Kattunga Sri Sai Chandra Sekhar, S/o Mr K. Raju, B. Pharma student from your college has undergone industrial training in our manufacturing unit from 13th Jun 2021 to 12st Jul 2021.

During the training much exposure has been imparted to him in manufacturing of tablets and analysis of various formulations. He shown keen interest in learning and his observation level is excellent.

We wish him all success in the future.

For Veras Pharmaceuticals Pvt Ltd,

(V.V.RAO)
Production Manager.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College.
SURAMPALEM 533 437

Survey No. 56/11 to 14, Chelavuru, Vizianagaram - 535 005 A.P.
e-mail : verasphamaceuticals@gmail.com

BP801T. BIOSTATISITCS AND RESEARCH METHODOLOGY (Theory)

45 Hours

Scope: To understand the applications of Biostatics in Pharmacy. This subject deals with descriptive statistics, Graphics, Correlation, Regression, logistic regression Probability theory, Sampling technique, Parametric tests, Non Parametric tests, ANOVA, Introduction to Design of Experiments, Phases of Clinical trials and Observational and Experimental studies, SPSS, R and MINITAB statistical software's, analyzing the statistical data using Excel.

Objectives: Upon completion of the course the student shall be able to

- Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)
- Know the various statistical techniques to solve statistical problems
- Appreciate statistical techniques in solving the problems.

Course content:

Unit-I **10 Hours**

Introduction: Statistics, Biostatistics, Frequency distribution

Measures of central tendency: Mean, Median, Mode- Pharmaceutical examples

Measures of dispersion: Dispersion, Range, standard deviation, Pharmaceutical problems

Correlation: Definition, Karl Pearson's coefficient of correlation, Multiple correlation - Pharmaceuticals examples

Unit-II **10 Hours**

Regression: Curve fitting by the method of least squares, fitting the lines y= a + bx and x = a + by, Multiple regression, standard error of regression– Pharmaceutical Examples

Probability: Definition of probability, Binomial distribution, Normal distribution, Poisson's distribution, properties - problems

Sample, Population, large sample, small sample, Null hypothesis, alternative hypothesis, sampling, essence of sampling, types of sampling, Error-I type, Error-II type, Standard error of mean (SEM) - Pharmaceutical examples

Parametric test: t-test(Sample, Pooled or Unpaired and Paired) , ANOVA, (One way and Two way), Least Significance difference

Unit-III **10 Hours**

Non Parametric tests: Wilcoxon Rank Sum Test, Mann-Whitney U test, Kruskal-Wallis test, Friedman Test

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Introduction to Research: Need for research, Need for design of Experiments, Experiential Design Technique, plagiarism

Graphs: Histogram, Pie Chart, Cubic Graph, response surface plot, Counter Plot graph

Designing the methodology: Sample size determination and Power of a study, Report writing and presentation of data, Protocol, Cohorts studies, Observational studies, Experimental studies, Designing clinical trial, various phases.

Unit-IV **8 Hours**

Blocking and confounding system for Two-level factorials

Regression modeling: Hypothesis testing in Simple and Multiple regressionmodels

Introduction to Practical components of Industrial and Clinical Trials Problems: Statistical Analysis Using Excel, SPSS, MINITAB®, DESIGN OF EXPERIMENTS, R - Online Statistical Software's to Industrial and Clinical trial approach

Unit-V **7Hours**

Design and Analysis of experiments:

Factorial Design: Definition, 2^2, 2^3design. Advantage of factorial design

Response Surface methodology: Central composite design, Historical design, Optimization Techniques

Recommended Books (Latest edition):

1. Pharmaceutical statistics- Practical and clinical applications, Sanford Bolton, publisher Marcel Dekker Inc. NewYork.
2. Fundamental of Statistics – Himalaya Publishing House- S.C.Guptha
3. Design and Analysis of Experiments –PHI Learning Private Limited, R. Pannerselvam,
4. Design and Analysis of Experiments – Wiley Students Edition, Douglas and C. Montgomery

Sri Vyjayanthi Labs Pvt. Ltd.

JULY 03, 2020

TO WHOMSOEVER IT MAY CONGEHN

This is to certify that Ms. YANDAMURI LEKYA PRASANTHI, D/o Y.GANESWAR RAO, student of ADITYA PHARMACY COLLEGE, Surampalem bearing Roll No (173G1R0057) has undergone Industrial Training to part fulfillment of her B.pharmacy in our organization from 2nd June 2020 to 2nd July 2020.

During this period, we found her to be hardworking and committed and we wish her all the best her future endeavors.

ADITYA PHARMACY COLLEGE * M.S. (A.P.) *

With Best Wishes,

For Sri Vyjayanthi Labs Pvt. Ltd.

Authorised Signatory

SRI VYJAYANTHI LABS PVT.LTD. * VSP *

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BP 703T. PHARMACY PRACTICE (Theory)

45 Hours

Scope: In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug information, and therapeutic drug monitoring for improved patient care. In community pharmacy, students will be learning various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counselling for improved patient care in the community set up.

Objectives: Upon completion of the course, the student shall be able to

1. know various drug distribution methods in a hospital
2. appreciate the pharmacy stores management and inventory control
3. monitor drug therapy of patient through medication chart review and clinical review
4. obtain medication history interview and counsel the patients
5. identify drug related problems
6. detect and assess adverse drug reactions
7. interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states
8. know pharmaceutical care services
9. do patient counseling in community pharmacy;
10. appreciate the concept of Rational drug therapy.

Unit I: **10 Hours**

a) Hospital and it's organization

Definition, Classification of hospital- Primary, Secondary and Tertiary hospitals, Classification based on clinical and non- clinical basis, Organization Structure of a Hospital, and Medical staffs involved in the hospital and their functions.

b) Hospital pharmacy and its organization

Definition, functions of hospital pharmacy, Organization structure, Location, Layout and staff requirements, and Responsibilities and functions of hospital pharmacists.

c) Adverse drug reaction

Classifications - Excessive pharmacological effects, secondary pharmacological effects, idiosyncrasy, allergic drug reactions, genetically determined toxicity, toxicity following sudden withdrawal of drugs, Drug interaction- beneficial interactions, adverse interactions, and pharmacokinetic drug interactions, Methods for detecting

drug interactions, spontaneous case reports and record linkage studies, and Adverse drug reaction reporting and management.

d) Community Pharmacy

Organization and structure of retail and wholesale drug store, types and design, Legal requirements for establishment and maintenance of a drug store, Dispensing of proprietary products, maintenance of records of retail and wholesale drug store.

Unit II: **10 Hours**

a) Drug distribution system in a hospital

Dispensing of drugs to inpatients, types of drug distribution systems, charging policy and labelling, Dispensing of drugs to ambulatory patients, and Dispensing of controlled drugs.

b) Hospital formulary

Definition, contents of hospital formulary, Differentiation of hospital formulary and Drug list, preparation and revision, and addition and deletion of drug from hospital formulary.

c) Therapeutic drug monitoring

Need for Therapeutic Drug Monitoring, Factors to be considered during the Therapeutic Drug Monitoring, and Indian scenario for Therapeutic Drug Monitoring.

d) Medication adherence

Causes of medication non-adherence, pharmacist role in the medication adherence, and monitoring of patient medication adherence.

e) Patient medication history interview

Need for the patient medication history interview, medication interview forms.

f) Community pharmacy management

Financial, materials, staff, and infrastructure requirements.

Unit III: **10 Hours**

a) Pharmacy and therapeutic committee

Organization, functions, Policies of the pharmacy and therapeutic committee in including drugs into formulary, inpatient and outpatient prescription, automatic stop order, and emergency drug list preparation.

b) Drug information services

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Drug and Poison information centre, Sources of drug information, Computerised services, and storage and retrieval of information.

c) Patient counseling

Definition of patient counseling; steps involved in patient counseling, and Special cases that require the pharmacist

d) Education and training program in the hospital

Role of pharmacist in the education and training program, Internal and external training program, Services to the nursing homes/clinics, Code of ethics for community pharmacy, and Role of pharmacist in the interdepartmental communication and community health education.

e) Prescribed medication order and communication skills

Prescribed medication order- interpretation and legal requirements, and Communication skills- communication with prescribers and patients.

Unit IV 8 Hours

a) Budget preparation and implementation

Budget preparation and implementation

b) Clinical Pharmacy

Introduction to Clinical Pharmacy, Concept of clinical pharmacy, functions and responsibilities of clinical pharmacist, Drug therapy monitoring - medication chart review, clinical review, pharmacist intervention, Ward round participation, Medication history and Pharmaceutical care.

Dosing pattern and drug therapy based on Pharmacokinetic & disease pattern.

c) Over the counter (OTC) sales

Introduction and sale of over the counter, and Rational use of common over the counter medications.

Unit V 7 Hours

a) Drug store management and inventory control

Organisation of drug store, types of materials stocked and storage conditions, Purchase and inventory control: principles, purchase procedure, purchase order, procurement and stocking, Economic order quantity, Reorder quantity level, and Methods used for the analysis of the drug expenditure

b) Investigational use of drugs

Description, principles involved, classification, control, identification, role of hospital pharmacist, advisory committee.

c) Interpretation of Clinical Laboratory Tests

Blood chemistry, hematology, and urinalysis

Recommended Books (Latest Edition):

1. Merchant S.H. and Dr. J.S.Quadry. *A textbook of hospital pharmacy*, 4th ed. Ahmadabad: B.S. Shah Prakakshan; 2001.
2. Parthasarathi G, Karin Nyfort-Hansen, Milap C Nahata. *A textbook of Clinical Pharmacy Practice- essential concepts and skills,* 1st ed. Chennai: Orient Longman Private Limited; 2004.
3. William E. Hassan. *Hospital pharmacy*, 5th ed. Philadelphia: Lea & Febiger; 1986.
4. Tipnis Bajaj. *Hospital Pharmacy*, 1st ed. Maharashtra: Career Publications; 2008.
5. Scott LT. *Basic skills in interpreting laboratory data*, 4thed. American Society of Health System Pharmacists Inc; 2009.
6. Parmar N.S. *Health Education and Community Pharmacy,* 18th ed. India: CBS Publishers & Distributers; 2008.

Journals:

1. Therapeutic drug monitoring. ISSN: 0163-4356
2. Journal of pharmacy practice. ISSN : 0974-8326
3. American journal of health system pharmacy. ISSN: 1535-2900 (online)
4. Pharmacy times (Monthly magazine)

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SURAMPALEM

BIOFACT
RESEARCH PVT. LTD.
We Care For Quality

DATE: 31/03/2021

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Mr. CHALLA SAIKRISHNA** has under gone Industrial Training in our Organization from 01/03/2021 to 31/03/2021.During this period his conduct has been found to be good.

We wish all the successes in his future endeavors.

BIOFACT RESEARCH Pvt. Ltd.,

Authorized signature

Research Pvt. Ltd. VSKP

31/03/2021

ADITYA PHARMACY COLLEGE SURAMPALEM

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BP110P. PHARMACEUTICAL INORGANIC CHEMISTRY (Practical)

4 Hours / Week

I **Limit tests for following ions**
- Limit test for Chlorides and Sulphates
- Modified limit test for Chlorides and Sulphates
- Limit test for Iron
- Limit test for Heavy metals
- Limit test for Lead
- Limit test for Arsenic

II **Identification test**
- Magnesium hydroxide
- Ferrous sulphate
- Sodium bicarbonate
- Calcium gluconate
- Copper sulphate

III **Test for purity**
- Swelling power of Bentonite
- Neutralizing capacity of aluminum hydroxide gel
- Determination of potassium iodate and iodine in potassium Iodide

IV **Preparation of inorganic pharmaceuticals**
- Boric acid
- Potash alum
- Ferrous sulphate

Recommended Books (Latest Editions)

1. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, Stahlone Press of University of London, 4th edition.
2. A.I. Vogel, Text Book of Quantitative Inorganic analysis
3. P. Gundu Rao, Inorganic Pharmaceutical Chemistry, 3rd Edition
4. M.L Schroff, Inorganic Pharmaceutical Chemistry
5. Bentley and Driver's Textbook of Pharmaceutical Chemistry
6. Anand & Chatwal, Inorganic Pharmaceutical Chemistry
7. Indian Pharmacopoeia

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05

VERAS ®
Pharmaceuticals Pvt. Ltd.,

12.07.2021

Ref: 20/21-22

To
The Principal,
Aditya Pharmacy College,
Aditya Nagar, ADB Road,
Surampalem, E.G.Dist.

Dear Sir,

We like to inform you that Mr. Bevara Rohit Kumar, S/o Mr. B. Pentanna, B. Pharma student from your college has undergone industrial training in our manufacturing unit from 13th Jun 2021 to 12st Jul 2021.

During the training much exposure has been imparted to him in manufacturing of tablets and analysis of various formulations. He shown keen interest in learning and his observation level is excellent.

We wish him all success in the future.

For Veras Pharmaceuticals Pvt Ltd,

(V.V.RAO)
Production Manager.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

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Aditya Pharmacy College
SURAMPALEM 533 437

Survey No. 56/11 to 14, Chelavuru, Vizianagaram - 535 005 A.P.
e-mail : verasphamaceuticals@gmail.com

BP 505 T. PHARMACEUTICAL JURISPRUDENCE (Theory)

45 Hours

Scope: This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India.

Objectives: Upon completion of the course, the student shall be able to understand:

1. The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
2. Various Indian pharmaceutical Acts and Laws
3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
4. The code of ethics during the pharmaceutical practice

Course Content:

UNIT-I **10 Hours**

Drugs and Cosmetics Act, 1940 and its rules 1945:

Objectives, Definitions, Legal definitions of schedules to the Act and Rules

Import of drugs – Classes of drugs and cosmetics prohibited from import, Import under license or permit. Offences and penalties.

Manufacture of drugs – Prohibition of manufacture and sale of certain drugs,

Conditions for grant of license and conditions of license for manufacture of drugs, Manufacture of drugs for test, examination and analysis, manufacture of new drug, loan license and repacking license.

UNIT-II **10 Hours**

Drugs and Cosmetics Act, 1940 and its rules 1945.

Detailed study of Schedule G, H, M, N, P,T,U, V, X, Y, Part XII B, Sch F & DMR (OA)

Sale of Drugs – Wholesale, Retail sale and Restricted license. Offences and penalties

Labeling & Packing of drugs- General labeling requirements and specimen labels for drugs and cosmetics, List of permitted colors. Offences and penalties.

Administration of the Act and Rules – Drugs Technical Advisory Board, Central drugs Laboratory, Drugs Consultative Committee, Government drug analysts, Licensing authorities, controlling authorities, Drugs Inspectors

UNIT-III **10 Hours**

- **Pharmacy Act –1948**: Objectives, Definitions, Pharmacy Council of India; its constitution and functions, Education Regulations, State and Joint state pharmacy councils; constitution and functions, Registration of Pharmacists, Offences and

Penalties

- **Medicinal and Toilet Preparation Act –1955**: Objectives, Definitions, Licensing, Manufacture In bond and Outside bond, Export of alcoholic preparations, Manufacture of Ayurvedic, Homeopathic, Patent & Proprietary Preparations. Offences and Penalties.
- **Narcotic Drugs and Psychotropic substances Act-1985 and Rules**: Objectives, Definitions, Authorities and Officers, Constitution and Functions of narcotic & Psychotropic Consultative Committee, National Fund for Controlling the Drug Abuse, Prohibition, Control and Regulation, opium poppy cultivation and production of poppy straw, manufacture, sale and export of opium, Offences and Penalties

UNIT-IV **08 Hours**

- **Study of Salient Features of Drugs and Magic Remedies Act and its rules:** Objectives, Definitions, Prohibition of certain advertisements, Classes of Exempted advertisements, Offences and Penalties
- **Prevention of Cruelty to animals Act-1960:** Objectives, Definitions, Institutional Animal Ethics Committee, CPCSEA guidelines for Breeding and Stocking of Animals, Performance of Experiments, Transfer and acquisition of animals for experiment, Records, Power to suspend or revoke registration, Offences and Penalties
- **National Pharmaceutical Pricing Authority:** Drugs Price Control Order (DPCO)-2013. Objectives, Definitions, Sale prices of bulk drugs, Retail price of formulations, Retail price and ceiling price of scheduled formulations, National List of Essential Medicines (NLEM)

UNIT-V **07 Hours**

- **Pharmaceutical Legislations** – A brief review, Introduction, Study of drugs enquiry committee, Health survey and development committee, Hathi committee and Mudaliar committee
- **Code of Pharmaceutical ethics** D efinition, Pharmacist in relation to his job, trade, medical profession and his profession, Pharmacist's oath
- **Medical Termination of Pregnancy Act**
- **Right to Information Act**
- **Introduction to Intellectual Property Rights (IPR)**

Recommended books: (Latest Edition)

1. Forensic Pharmacy by B. Suresh

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Sri Vyjayanthi Labs Pvt. Ltd.

To WHOM SO EVER IT MAY CONCERN

Date:10-01-2021.

This is to certify Mr.MANISH KUMAR, S/o PRAVIN KUMAR PATHAK (Roll No.173G1R0081) is a student of ADITYA PHARMACY COLLEGE, Aditya Nagar, ADB road, Surampalem, Andhra Pradesh-533437.Has undergoneIndustrialTraining in our organization from **10-Dec-2020 to 10-Jan-2021**as a part of fulfillment of her B. Pharmacy course.

During the period she had interacted with Regulatory Affairs, Production, Environmental Health& Safety, Maintenance, Warehouse,Quality Control,Assurance, Research and Development and Acquired relevant basic knowledge in these areas. During aforesaid period, we found her hardworking, sincere and learning attitude.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

For Sri Vyjayanthi Labs Pvt. Ltd.

Authorised Signatory

SRI VYJAYANTHI LABS PVT.LTD. * VSP *

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SURAMPALEM 533 437

8. Introduction to Organic Laboratory techniques by Pavia, Lampman and Kriz.

BP302T. PHYSICAL PHARMACEUTICS-I (Theory)

45Hours

Scope: The course deals with the various physica and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.

Objectives: Upon the completion of the course student shall be able to

1. Understand various physicochemical properties of drug molecules in the designing the dosage forms
2. Know the principles of chemical kinetics & to use them for stability testing nad determination of expiry date of formulations
3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

Course Content:

UNIT-I **10 Hours**

Solubility of drugs: Solubility expressions, mechanisms of solute solvent interactions, ideal solubility parameters, solvation & association, quantitative approach to the factors influencing solubility of drugs, diffusion principles in biological systems. Solubility of gas in liquids, solubility of liquids in liquids, (Binary solutions, ideal solutions) Raoult's law, real solutions. Partially miscible liquids, Critical solution temperature and applications. Distribution law, its limitations and applications

UNIT-II **10Hours**

States of Matter and properties of matter: State of matter, changes in the state of matter, latent heats, vapour pressure, sublimation critical point, eutectic mixtures, gases, aerosols – inhalers, relative humidity, liquid complexes, liquid crystals, glassy states, solid-crystalline, amorphous & polymorphism.

Physicochemical properties of drug molecules: Refractive index, optical rotation, dielectric constant, dipole moment, dissociation constant, determinations and applications

UNIT-III **08 Hours**

Surface and interfacial phenomenon: Liquid interface, surface & interfacial tensions,

surface free energy, measurement of surface & interfacial tensions, spreading coefficient, adsorption at liquid interfaces, surface active agents, HLB Scale, solubilisation, detergency, adsorption at solid interface.

UNIT-IV **08Hours**

Complexation and protein binding: Introduction, Classification of Complexation, Applications, methods of analysis, protein binding, Complexation and drug action, crystalline structures of complexes and thermodynamic treatment of stability constants.

UNIT-V **07 Hours**

pH, buffers and Isotonic solutions: Sorensen's pH scale, pH determination (electrometric and calorimetric), applications of buffers, buffer equation, buffer capacity, buffers in pharmaceutical and biological systems, buffered isotonic solutions.

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SURAMPALEM 533 437

VERAS®
Pharmaceuticals Pvt. Ltd.,

12.07.2021

Ref: 25/21-22

To
The Principal,
Aditya Pharmacy College,
Aditya Nagar, ADB Road,
Surampalem, E.G.Dist.

Dear Sir,

We like to inform you that Miss. Indugula Suneetha, D/o Mr. I.Rama Krishna, B. Pharma student from your college has undergone industrial training in our manufacturing unit from 13th Jun 2021 to 12th Jul 2021.

During the training much exposure has been imparted to her in manufacturing of tablets and analysis of various formulations. She shown keen interest in learning and her observation level is excellent.

We wish him her success in the future.

For Veras Pharmaceuticals Pvt Ltd,

V.V.Rao
(V.V.RAO)
Production Manager.

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PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Survey No. 56/11 to 14, Chelavuru, Vizianagaram - 535 005 A.P.
e-mail : verospharmaceuticals@gmail.com

BP 403 T. PHYSICAL PHARMACEUTICS-II (Theory)

45Hours

Scope: The course deals with the various physica and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.

Objectives: Upon the completion of the course student shall be able to

1. Understand various physicochemical properties of drug molecules in the designing the dosage forms
2. Know the principles of chemical kinetics & to use them for stability testing nad determination of expiry date of formulations
3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

Course Content:

UNIT-I **07 Hours**

Colloidal dispersions: Classification of dispersed systems & their general characteristics, size & shapes of colloidal particles, classification of colloids & comparative account of their general properties. Optical, kinetic & electrical properties. Effect of electrolytes, coacervation, peptization& protective action.

UNIT-II **10 Hours**

Rheology: Newtonian systems, law of flow, kinematic viscosity, effect of temperature, non-Newtonian systems, pseudoplastic, dilatant, plastic, thixotropy, thixotropy in formulation, determination of viscosity, capillary, falling Sphere, rotational viscometers

Deformation of solids: Plastic and elastic deformation, Heckel equation, Stress, Strain, Elastic Modulus

UNIT-III **10 Hours**

Coarse dispersion: Suspension, interfacial properties of suspended particles, settling in suspensions, formulation of flocculated and deflocculated suspensions. Emulsions and theories of emulsification, microemulsion and multiple emulsions; Stability of emulsions, preservation of emulsions, rheological properties of emulsions and emulsion formulation by HLB method.

UNIT-IV **10Hours**

Micromeretics: Particle size and distribution, mean particle size, number and weight distribution, particle number, methods for determining particle size by different methods, counting and separation method, particle shape, specific surface, methods for determining surface area, permeability, adsorption, derived properties of powders, porosity, packing arrangement, densities, bulkiness & flow properties.

UNIT-V **10 Hours**

Drug stability: Reaction kinetics: zero, pseudo-zero, first & second order, units of basic rate constants, determination of reaction order. Physical and chemical factors influencing the chemical degradation of pharmaceutical product: temperature, solvent, ionic strength, dielectric constant, specific & general acid base catalysis, Simple numerical problems. Stabilization of medicinal agents against common reactions like hydrolysis & oxidation. Accelerated stability testing in expiration dating of pharmaceutical dosage forms. Photolytic degradation and its prevention

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VERAS ®
Pharmaceuticals Pvt. Ltd.,

12.07.2021

Ref: 26/21-22

To
The Principal,
Aditya Pharmacy College,
Aditya Nagar, ADB Road,
Surampalem, E.G.Dist.

Dear Sir,

We like to inform you that Mr. Koppisetti Manoj Kumar, S/o Mr. K.Subhas Chandra Bose, B. Pharma student from your college has undergone industrial training in our manufacturing unit from 13th Jun 2021 to 12th Jul 2021.

During the training much exposure has been imparted to him in manufacturing of tablets and analysis of various formulations. He shown keen interest in learning and her observation level is excellent.

We wish him all success in the future.

For Veras Pharmaceuticals Pvt Ltd,

V.V.Rao

(V.V.RAO)
Production Manager.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Survey No. 56/11 to 14, Chelavuru, Vizianagaram - 535 005 A.P.
e-mail : verospharmaceuticals@gmail.com

BP108P. PHARMACEUTICAL ANALYSIS (Practical)

4 Hours / Week

I **Limit Test of the following**
- (1) Chloride
- (2) Sulphate
- (3) Iron
- (4) Arsenic

II **Preparation and standardization of**
- (1) Sodium hydroxide
- (2) Sulphuric acid
- (3) Sodium thiosulfate
- (4) Potassium permanganate
- (5) Ceric ammonium sulphate

III **Assay of the following compounds along with Standardization of Titrant**
- (1) Ammonium chloride by acid base titration
- (2) Ferrous sulphate by Cerimetry
- (3) Copper sulphate by Iodometry
- (4) Calcium gluconate by complexometry
- (5) Hydrogen peroxide by Permanganometry
- (6) Sodium benzoate by non-aqueous titration
- (7) Sodium Chloride by precipitation titration

IV **Determination of Normality by electro-analytical methods**
- (1) Conductometric titration of strong acid against strong base
- (2) Conductometric titration of strong acid and weak acid against strong base
- (3) Potentiometric titration of strong acid against strong base

Recommended Books: (Latest Editions)

1. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, Stahlone Press of University of London
2. A.I. Vogel, Text Book of Quantitative Inorganic analysis
3. P. Gundu Rao, Inorganic Pharmaceutical Chemistry
4. Bentley and Driver's Textbook of Pharmaceutical Chemistry
5. John H. Kennedy, Analytical chemistry principles
6. Indian Pharmacopoeia.

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VERAS ®
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12.07.2021

Ref: 24/21-22

To
The Principal,
Aditya Pharmacy College,
Aditya Nagar, ADB Road,
Surampalem, E.G.Dist.

Dear Sir,

We like to inform you that Mr. Nalluri Tejendra Sri Ajith, S/o Mr. N. Krishna Mohan, B. Pharma student from your college has undergone industrial training in our manufacturing unit from 13th Jun 2021 to 12st Jul 2021.

During the training much exposure has been imparted to him in manufacturing of tablets and analysis of various formulations. He shown keen interest in learning and his observation level is excellent.

We wish him all success in the future.

For Veras Pharmaceuticals Pvt Ltd,

(V.V.RAO)
Production Manager.

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Survey No. 56/11 to 14, Chelavuru, Vizianagaram - 535 005 A.P.
e-mail : veraspharmaceuticals@gmail.com

BP208P. PHARMACEUTICAL ORGANIC CHEMISTRY -I (Practical)

4 Hours / week

1. Systematic qualitative analysis of unknown organic compounds like
    1. Preliminary test: Color, odour, aliphatic/aromatic compounds, saturation and unsaturation, etc.
    2. Detection of elements like Nitrogen, Sulphur and Halogen by Lassaigne's test
    3. Solubility test
    4. Functional group test like Phenols, Amides/ Urea, Carbohydrates, Amines, Carboxylic acids, Aldehydes and Ketones, Alcohols, Esters, Aromatic and Halogenated Hydrocarbons, Nitro compounds and Anilides.
    5. Melting point/Boiling point of organic compounds
    6. Identification of the unknown compound from the literature using melting point/ boiling point.
    7. Preparation of the derivatives and confirmation of the unknown compound by melting point/ boiling point.
    8. Minimum 5 unknown organic compounds to be analysed systematically.
2. Preparation of suitable solid derivatives from organic compounds
3. Construction of molecular models

Recommended Books (Latest Editions)

1. Organic Chemistry by Morrison and Boyd
2. Organic Chemistry by I.L. Finar , Volume-I
3. Textbook of Organic Chemistry by B.S. Bahl & Arun Bahl.
4. Organic Chemistry by P.L.Soni
5. Practical Organic Chemistry by Mann and Saunders.
6. Vogel's text book of Practical Organic Chemistry
7. Advanced Practical organic chemistry by N.K.Vishnoi.
8. Introduction to Organic Laboratory techniques by Pavia, Lampman and Kriz.
9. Reaction and reaction mechanism by Ahluwaliah/Chatwal.

VERAS ®
Pharmaceuticals Pvt. Ltd.,

12.07.2021

Ref: 19/21-22

To
The Principal,
Aditya Pharmacy College,
Aditya Nagar, ADB Road,
Surampalem, E.G.Dist.

Dear Sir,

We like to inform you that Mr. Kothagalla Manikanta Yadav, S/o Mr. K. Srinivasa Rao, B. Pharma student from your college has undergone industrial training in our manufacturing unit from 13th Jun 2021 to 12st Jul 2021.

During the training much exposure has been imparted to him in manufacturing of tablets and analysis of various formulations. He shown keen interest in learning and his observation level is excellent.

We wish him all success in the future.

For Veras Pharmaceuticals Pvt Ltd,

(V.V.RAO)
Production Manager.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Survey No. 56/11 to 14, Chelavuru, Vizianagaram - 535 005 A.P.
e-mail : veraspharmaceuticals@gmail.com

UNIT V **07 Hours**

- **Enzymes**

  Introduction, properties, nomenclature and IUB classification of enzymes

  Enzyme kinetics (Michaelis plot, Line Weaver Burke plot)

  Enzyme inhibitors with examples

  Regulation of enzymes: enzyme induction and repression, allosteric enzymes regulation

  Therapeutic and diagnostic applications of enzymes and isoenzymes

  Coenzymes –Structure and biochemical functions

BP 209 P. BIOCHEMISTRY (Practical)

4 Hours / Week

1. Qualitative analysis of carbohydrates (Glucose, Fructose, Lactose, Maltose, Sucrose and starch)
2. Identification tests for Proteins (albumin and Casein)
3. Quantitative analysis of reducing sugars (DNSA method) and Proteins (Biuret method)
4. Qualitative analysis of urine for abnormal constituents
5. Determination of blood creatinine
6. Determination of blood sugar
7. Determination of serum total cholesterol
8. Preparation of buffer solution and measurement of pH
9. Study of enzymatic hydrolysis of starch
10. Determination of Salivary amylase activity
11. Study the effect of Temperature on Salivary amylase activity.
12. Study the effect of substrate concentration on salivary amylase activity.

PRINCIPAL
Aditya Pharmacy College

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Pharmaceuticals Pvt. Ltd.,

12.07.2021

Ref: 21/21-22

To
The Principal,
Aditya Pharmacy College,
Aditya Nagar, ADB Road,
Surampalem, E.G.Dist.

Dear Sir,

We like to inform you that Mr. Lanka Vikash, S/o Mr. L. Surya Prakash, B. Pharma student from your college has undergone industrial training in our manufacturing unit from 13th Jun 2021 to 12st Jul 2021.

During the training much exposure has been imparted to him in manufacturing of tablets and analysis of various formulations. He shown keen interest in learning and his observation level is excellent.

We wish him all success in the future.

For Veras Pharmaceuticals Pvt Ltd,

(V.V.RAO)
Production Manager.

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Aditya Pharmacy College
SURAMPALEM 533 437

Survey No. 56/11 to 14, Chelavuru, Vizianagaram - 535 005 A.P.
e-mail : verapharmaceuticals@gmail.com

BP308P - PHARMACEUTICAL ENGINEERING (Practical)

4 Hours/week

I. Determination of radiation constant of brass, iron, unpainted and painted glass.
II. Steam distillation – To calculate the efficiency of steam distillation.
III. To determine the overall heat transfer coefficient by heat exchanger.
IV. Construction of drying curves (for calcium carbonate and starch).
V. Determination of moisture content and loss on drying.
VI. Determination of humidity of air – i) From wet and dry bulb temperatures –use of Dew point method.
VII. Description of Construction working and application of Pharmaceutical Machinery such as rotary tablet machine, fluidized bed coater, fluid energy mill, de humidifier.
VIII. Size analysis by sieving – To evaluate size distribution of tablet granulations – Construction of various size frequency curves including arithmetic andlogarithmic probability plots.
IX. Size reduction: To verify the laws of size reduction using ball mill and determining Kicks, Rittinger's, Bond's coefficients, power requirement and critical speed of Ball Mill.
X. Demonstration of colloid mill, planetary mixer, fluidized bed dryer, freeze dryer and such othermajor equipment.
XI. Factors affecting Rate of Filtration and Evaporation (Surface area, Concentration and Thickness/ viscosity
XII. To study the effect of time on the Rate of Crystallization.
XIII. To calculate the uniformity Index for given sample by using Double Cone Blender.

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14.08.2020

Ref: 20/20-21

To
The Principal,
Aditya Pharmacy College,
Surampalem.

Dear Sir,

We like to inform you that Miss Mellimi Pujitha, D/O Mr M.Davidraju, B. Pharma student from your college has undergone industrial training in our manufacturing unit from 15th July 2020 to 14th Aug 2020.

During the training much exposure has been imparted to her in manufacturing of tablets and analysis of various formulations. She shown keen interest in learning and her observation level is excellent.

We wish her all success in the future.

For Veras Pharmaceuticals Pvt Ltd,

V. [illegible]
(V.V.RAO)
Production Manager.

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SURAMPALEM 533 437

Survey No. 56/11 to 14, Chelavuru, Vizianagaram - 535 005 A.P.
e-mail : verospharmaceuticals@gmail.com

BP408 P. PHARMACOGNOSY AND PHYTOCHEMISTRY I (Practical)

4 Hours/Week

1. Analysis of crude drugs by chemical tests: (i)Tragaccanth (ii) Acacia (iii)Agar (iv) Gelatin (v) starch (vi) Honey (vii) Castor oil
2. Determination of stomatal number and index
3. Determination of vein islet number, vein islet termination and paliside ratio.
4. Determination of size of starch grains, calcium oxalate crystals by eye piece micrometer
5. Determination of Fiber length and width
6. Determination of number of starch grains by Lycopodium spore method
7. Determination of Ash value
8. Determination of Extractive values of crude drugs
9. Determination of moisture content of crude drugs
10. Determination of swelling index and foaming

Recommended Books: (Latest Editions)

1. W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Sounders & Co., London, 2009.
2. Tyler, V.E., Brady, L.R. and Robbers, J.E., Pharmacognosy, 9th Edn., Lea and Febiger, Philadelphia, 1988.
3. Text Book of Pharmacognosy by T.E. Wallis
4. Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers & Distribution, New Delhi.
5. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, New Delhi.
6. Herbal drug industry by R.D. Choudhary (1996), Ist Edn, Eastern Publisher, New Delhi.
7. Essentials of Pharmacognosy, Dr.SH.Ansari, IInd edition, Birla publications, New Delhi, 2007
8. Practical Pharmacognosy: C.K. Kokate, Purohit, Gokhlae
9. Anatomy of Crude Drugs by M.A. Iyengar

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32

14.08.2020

Ref: 18/20-21

To
The Principal,
Aditya Pharmacy College,
Surampalem.

Dear Sir,

We like to inform you that Miss Mohammad Khamurunnisa, D/O Mr Md.Ahamad Vali, B. Pharma student from your college has undergone industrial training in our manufacturing unit from 15th July 2020 to 14th Aug 2020.

During the training much exposure has been imparted to her in manufacturing of tablets and analysis of various formulations. She shown keen interest in learning and her observation level is excellent.

We wish her all success in the future.

For Veras Pharmaceuticals Pvt Ltd,

V. V.

(V.V.RAO)
Production Manager.

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e-mail : verasphaimaceuticals@gmail.com

BP 508 P. PHARMACOGNOSY AND PHYTOCHEMISTRY II (Practical)

4 Hours/Week

1. Morphology, histology and powder characteristics & extraction & detection of: Cinchona, Cinnamon, Senna, Clove, Ephedra, Fennel and Coriander
2. Exercise involving isolation & detection of active principles
   a. Caffeine - from tea dust.
   b. Diosgenin from Dioscorea
   c. Atropine from Belladonna
   d. Sennosides from Senna
3. Separation of sugars by Paper chromatography
4. TLC of herbal extract
5. Distillation of volatile oils and detection of phytoconstitutents by TLC
6. Analysis of crude drugs by chemical tests: (i) Asafoetida (ii) Benzoin (iii) Colophony (iv) Aloes (v) Myrrh

Recommended Books: (Latest Editions)

1. W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Sounders & Co., London, 2009.
2. Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers & Distribution, New Delhi.
3. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, New Delhi.
4. Herbal drug industry by R.D. Choudhary (1996), Ist Edn, Eastern Publisher, New Delhi.
5. Essentials of Pharmacognosy, Dr.SH.Ansari, IInd edition, Birla publications, New Delhi, 2007
6. Herbal Cosmetics by H.Pande, Asia Pacific Business press, Inc, New Delhi.
7. A.N. Kalia, Textbook of Industrial Pharmacognosy, CBS Publishers, New Delhi, 2005.
8. R Endress, Plant cell Biotechnology, Springer-Verlag, Berlin, 1994.
9. Pharmacognosy & Pharmacobiotechnology. James Bobbers, Marilyn KS, VE Tylor.
10. The formulation and preparation of cosmetic, fragrances and flavours.
11. Remington's Pharmaceutical sciences.
12. Text Book of Biotechnology by Vyas and Dixit.
13. Text Book of Biotechnology by R.C. Dubey.

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12.07.2021

Ref: 27/21-22

To
The Principal,
Aditya Pharmacy College,
Aditya Nagar, ADB Road,
Surampalem, E.G.Dist.

Dear Sir,

We like to inform you that Miss. Mohammad Sheema, D/o Mr. Mohammad Asif, B. Pharma student from your college has undergone industrial training in our manufacturing unit from 13th Jun 2021 to 12st Jul 2021.

During the training much exposure has been imparted to her in manufacturing of tablets and analysis of various formulations. She shown keen interest in learning and her observation level is excellent.

We wish her all success in the future.

For Veras Pharmaceuticals Pvt Ltd,

(V.V.RAO)
Production Manager.

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Aditya Pharmacy College
SURAMPALEM 533 437

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e-mail : veraspharmaceuticals@gmail.com

BP104T. PHARMACEUTICAL INORGANIC CHEMISTRY (Theory)

45 Hours

Scope: This subject deals with the monographs of inorganic drugs and pharmaceuticals.

Objectives: Upon completion of course student shall be able to

- know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals
- understand the medicinal and pharmaceutical importance of inorganic compounds

Course Content:

UNIT I **10 Hours**

- **Impurities in pharmaceutical substances:** History of Pharmacopoeia, Sources and types of impurities, principle involved in the limit test for Chloride, Sulphate, Iron, Arsenic, Lead and Heavy metals, modified limit test for Chloride and Sulphate

  General methods of preparation, assay for the compounds superscripted with **asterisk (*),** properties and medicinal uses of inorganic compounds belonging to the following classes

UNIT II **10 Hours**

- **Acids, Bases and Buffers:** Buffer equations and buffer capacity in general, buffers in pharmaceutical systems, preparation, stability, buffered isotonic solutions, measurements of tonicity, calculations and methods of adjusting isotonicity.
- **Major extra and intracellular electrolytes**: Functions of major physiological ions, Electrolytes used in the replacement therapy: Sodium chloride*, Potassium chloride, Calcium gluconate* and Oral Rehydration Salt (ORS), Physiological acid base balance.
- **Dental products**: Dentifrices, role of fluoride in the treatment of dental caries, Desensitizing agents, Calcium carbonate, Sodium fluoride, and Zinc eugenol cement.

UNIT III **10 Hours**

- **Gastrointestinal agents**

  Acidifiers: Ammonium chloride* and Dil. HCl

  Antacid: Ideal properties of antacids, combinations of antacids, Sodium

Bicarbonate*, Aluminum hydroxide gel, Magnesium hydroxide mixture

Cathartics: Magnesium sulphate, Sodium orthophosphate, Kaolin and Bentonite

Antimicrobials: Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide*, Chlorinated lime*, Iodine and its preparations

UNIT IV **08 Hours**

- **Miscellaneous compounds**

  Expectorants: Potassium iodide, Ammonium chloride*.

  Emetics: Copper sulphate*, Sodium potassium tartarate

  Haematinics: Ferrous sulphate*, Ferrous gluconate

  Poison and Antidote: Sodium thiosulphate*, Activated charcoal, Sodium nitrite333

  Astringents: Zinc Sulphate, Potash Alum

UNIT V **07 Hours**

- **Radiopharmaceuticals**: Radio activity, Measurement of radioactivity, Properties of α, β, γ radiations, Half life, radio isotopes and study of radio isotopes - Sodium iodide I^{131}, Storage conditions, precautions & pharmaceutical application of radioactive substances.

BRIDGE PHARMACEUTICALS PVT. LTD.

AUGUST 17, 2020

TO WHOMSOEVER IT MAY CONCERN

*****

This is to certify that Ms. GANUGULA . SIVA PARVATHI, D/O G.SRINIVASA RAO, student of ADITYA PHARMACY COLLEGE, Surampalem bearing Roll No (173G1R0016) has undergone Industrial Training to part fulfillment of her B.pharmacy in our organization from 1st July 2020 to 16th August 2020.

During this period, her conduct is satisfactory and we wish her all the best for her future endeavors.

With Best Wishes,

For Bridge Pharmaceuticals Pvt Ltd

DIRECTOR

(M.SAMBASIVA RAO)

ADITYA PHARMACY COLLEGE SURAMPALEM

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Aditya Pharmacy College
SURAMPALEM 533

Regd. Office & Factory : Plot No. 89, Prashanthi Nagar, Industrial Estate, Kukatpally, Hyderabad - 72.
Phone No. 040-23073058, E-mail : bridgepharmaceuticals46@gmail.com

HERBAL AND COSMETIC ANALYSIS
(MPA 204T)

Scope

This course is designed to impart knowledge on analysis of herbal products. Regulatory requirements, herbal drug interaction with monographs. Performance evaluation of cosmetic products is included for the better understanding of the equipments used in cosmetic industries for the purpose.

Objectives

At completion of this course student shall be able to understand

- Determination of herbal remedies and regulations
- Analysis of natural products and monographs
- Determination of Herbal drug-drug interaction
- Principles of performance evaluation of cosmetic products.

THEORY 60 Hrs

1. Herbal remedies- Toxicity and Regulations: Herbals vs Conventional drugs, Efficacy of herbal medicine products, Validation of Herbal Therapies, Pharmacodynamic and Pharmacokinetic issues. Herbal drug standardization: WHO and AYUSH guidelines. — 12 Hrs

2 Adulteration and Deterioration: Introduction, types of adulteration/substitution of herbal drugs, Causes and Measure of adulteration, Sampling Procedures, Determination of Foreign Matter, DNA Finger printing techniques in identification of drugs of natural origin, heavy metals, pesticide residues, phototoxin and microbial contamination in herbal formulations. — 12 Hrs

Regulatory requirements for setting herbal drug industry: Global marketing management, Indian and international patent law as applicable herbal drugs and natural products and its protocol.

3 Testing of natural products and drugs: Effect of herbal medicine on clinical laboratory testing, Adulterant Screening using modern analytical instruments, Regulation and dispensing of herbal drugs, Stability testing of natural products, protocol. — 12 Hrs

Monographs of Herbal drugs: Study of monographs of herbal drugs and comparative study in IP, USP, Ayurvedic

PRINCIPAL
Aditya Pharmacy College
KAKINADA-533 437

PHYTOCHEMICAL ANALYSIS OF HERBAL EXTRACTS AND TABLET FORMULATION OF *GYMNEMA SYLVESTRE*

Is a Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS

By

BOLEM RENUKA SAI SRI B. Pharm.,

(Reg. No. 193G1S1601)

Under the guidance of

Dr. P. S. S. Sai Kiran M. Pharm., Ph.D.

Associate Professor

Department of Pharmaceutical Analysis

Aditya Pharmacy College

Surampalem – 533 437

2019- 2021

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE

(Approved by PCI & AICTE, Affiliated to JNTUK)

Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P-533437

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled **"Phytochemical Analysis of Herbal Extracts and Tablet Formulation of Gymnema sylvestre"** is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutical Analysis. This is a bonafied work carried out by Ms. Bolem Renuka Sai Sri (Regd No:193G1S1601) under the guidance and supervision of Dr.P.S.S.Sai kiran, Associate Professor, Aditya Pharmacy College, Surampalem

Date:

SIGNATURE OF EVALUATOR 1

Place:

SIGNATURE OF EVALUATOR 2

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

I, Ms. Bolem Renuka Sai Sri (Regd No: 193G1S1601), do hereby declare that the dissertation entitled "**Phytochemical Analysis of Herbal Extracts and Tablet Formulation of Gymnema sylvestre**" is a record of genuine research work carried out by me under the supervision of Dr. D.SathisKumar, Professor, Aditya Pharmacy College, Surampalem. The work reported here in has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

B. Renuka

(Bolem Renuka Sai Sri)

Regd no: **193G1S1601**

Place: Surampalem

Date:

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Aditya Pharmacy College
SURAMPALEM 533 437

7. CONCLUSION

Gymnema sylvestre (Asclepiadaceae), popularly known as "gurmar" for its distinct property as sugar destroyer, is a reputed herb in the Ayurvedic system of medicine. The phytoconstituents responsible for sweet suppression activity includes triterpene saponins known as gymnemic acids, Gymnema saponins, and a polypeptide, gurmarin. The herb exhibits a broad range of therapeutic effects as an effective natural remedy for diabetes, besides being used for arthritis, diuretic, anemia, osteoporosis, hypercholesterolemia, cardiopathy, asthma, constipation, microbial infections, indigestion, and anti-inflammatory. G.sylvestre has good prospects in the treatment of diabetes as it shows positive effects on blood sugar homeostasis, controls sugar cravings, and promotes regeneration of pancreas. The herbal extract is used in dietar supplements since it reduces body weight, blood cholesterol, and triglyceride levels and holds great prospects in dietary as well as pharmacological applications.

In the present study we have performed comparative pharmaceutical analysis of *Gymnema sylvestre* herbal powder and marketed tablet formulation and found herbal powder is efficacious than the marketed formulation.

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MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES
(MPA 101T)

Scope

This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

Objectives

After completion of course student is able to know about chemicals and excipients

- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills of the instruments

THEORY 60 Hrs

1. a. UV-Visible spectroscopy: Introduction, Theory, Laws, Instrumentation associated with UV-Visible spectroscopy, Choice of solvents and solvent effect and Applications of UV-Visible spectroscopy, Difference/ Derivative spectroscopy. 10 Hrs

   b. IR spectroscopy: Theory, Modes of Molecular vibrations, Sample handling, Instrumentation of Dispersive and Fourier - Transform IR Spectrometer, Factors affecting vibrational frequencies and Applications of IR spectroscopy, Data Interpretation.

   c. Spectroflourimetry: Theory of Fluorescence, Factors affecting fluorescence (Characterestics of drugs that can be analysed by flourimetry), Quenchers, Instrumentation and Applications of fluorescence spectrophotometer.

   d. Flame emission spectroscopy and Atomic absorption spectroscopy: Principle, Instrumentation, Interferences and Applications.

2. NMR spectroscopy: Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and 13C NMR. Applications of NMR spectroscopy. 10 Hrs

3. Mass Spectroscopy: Principle, Theory, Instrumentation of Mass 10

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	Spectroscopy, Different types of ionization like electron impact, chemical, field, FAB and MALDI, APCI, ESI, APPI Analyzers of Quadrupole and Time of Flight, Mass fragmentation and its rules, Meta stable ions, Isotopic peaks and Applications of Mass spectroscopy.	Hrs
4	Chromatography: Principle, apparatus, instrumentation, chromatographic parameters, factors affecting resolution, isolation of drug from excipients, data interpretation and applications of the following: a. Thin Layer chromatography b. High Performance Thin Layer Chromatography c. Ion exchange chromatography d. Column chromatography e. Gas chromatography f. High Performance Liquid chromatography g. Ultra High Performance Liquid chromatography h. Affinity chromatography i. Gel Chromatography	10 Hrs
5	a. Electrophoresis: Principle, Instrumentation, Working conditions, factors affecting separation and applications of the following: a) Paper electrophoresis b) Gel electrophoresis c) Capillary electrophoresis d) Zone electrophoresis e) Moving boundary electrophoresis f) Iso electric focusing b. X ray Crystallography: Production of X rays, Different X ray methods, Bragg's law, Rotating crystal technique, X ray powder technique, Types of crystals and applications of X-ray diffraction	10 Hrs
6	Potentiometry: Principle, working, Ion selective Electrodes and Application of potentiometry. Thermal Techniques: Principle, thermal transitions and instrumentation (Heat flux and power-compensation and designs), Modulated DSC, Hyper DSC, experimental parameters (sample preparation, experimental conditions, calibration, heating and cooling rates, resolution, source of errors) and their influence, advantage and disadvantages, pharmaceutical applications. Differential Thermal Analysis (DTA): Principle, instrumentation	10 Hrs

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Aditya Pharmacy College
SURAMPALEM 533 437

Optimization of HPLC method Using Central composite design for the estimation of Cyproheptadine hydrochloride in bulk and dosage form and its validation

Is a Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS

By

CHEGONDI SRAVANI

(Regd. No. 193G1S1602)

Under the guidance of

Dr. D. SathisKumar M. Pharmacy., Ph.D.

Principal & Professor

Department of Pharmaceutical Analysis

Aditya Pharmacy College

Surampalem – 533 437

2019- 2021

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE

(Approved by PCI & AICTE, Affiliated to JNTUK)

Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P-533437.

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled **"Optimization of HPLC method Using Central composite design for the estimation of Cyproheptadine hydrochloride in bulk and dosage form and its validation"** is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of **Master of Pharmacy in Pharmaceutical Analysis**. This is a bonafied work carried out by Chegondi Sravani **(Regd No: 193G1S1602)** under the guidance and supervision of **Dr. D.Sathis Kumar,** Principal & Professor, Aditya Pharmacy College, Surampalem

Date:

SIGNATURE OF EVALUATOR 1

Place:

SIGNATURE OF EVALUATOR 2

ADITYA PHARMACY COLLEGE * SURAMPALEM *

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Aditya Pharmacy College
SURAMPALEM 533 437

ABSTRACT

A simple, precise and accurate RP-HPLC method was developed for estimation of Cyproheptadine hydrochloride in bulk and dosage form using DOE software. In this we have achieved shorter run time and as well as studied multiple factors. Chromatographic condition was achieved on C_{18} column using mobile phase consisting of a mixture of Acetonitrile and Water (49:51) and ortho phosphoric acid was used as buffer. DOE as an effective tool for related substance method development and during less run time in RP-HPLC method was proven can be used for bulk and dosage form.

Keywords: Cyproheptadine hydrochloride, DOE, RP-HPLC.

Conclusion:

The developed method is easy, accurate, sensitive and precise. The positive traits of the proposed method are its short duration for analysis and a simple process for sample preparation. The satisfying % recoveries and low % RSD values confirmed the suitability of the developed method for the usual analysis of Cyproheptadine hydrochloride in pharmaceuticals.

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ADVANCED PHARMACEUTICAL ANALYSIS
(MPA 102T)

Scope

This subject deals with the various aspects of Impurity, Impurities in new drug products, in residual solvents, Elemental impurities, Impurity profiling and characterization of degradents, Stability testing of phytopharmaceuticals and their protocol preparation. It also covers the biological testing of various vaccines and their principle and procedure.

Objective

After completion of the course students shall able to know,

- Appropriate analytical skills required for the analytical method development.
- Principles of various reagents used in functional group analysis that renders necessary support in research methodology and demonstrates its application in the practical related problems.
- Analysis of impurities in drugs, residual solvents and stability studies of drugs and biological products

THEORY — 60 Hrs

1. Impurity and stability studies: — 10 Hrs

Definition, classification of impurities in drug Substance or Active Pharmaceutical Ingredients and quantification of impurities as per ICH guidelines

Impurities in new drug products:

Rationale for the reporting and control of degradation products, reporting degradation products content of batches, listing of degradation products in specifications, qualification of degradation products

Impurities in residual solvents:

General principles, classification of residual solvents, Analytical procedures, limits of residual solvents, reporting levels of residual solvents .

2 Elemental impurities: — 10 Hrs

Element classification, control of elemental impurities, Potential Sources of elemental Impurities, Identification of Potential Elemental Impurities, analytical procedures, instrumentation & C, H, N and S analysis

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Aditya Pharmacy College
SURAMPALEM 533 437

ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR THE ESTIMATION OF RELATED SUBSTANCES IN FEBUXOSTAT TABLETS BY RP-HPLC

Dissertation submitted to

Jawaharlal Nehru Technological University, Kakinada, A.P

In Partial Fulfillment of the Requirement for the Award of the Degree of

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS AND QUALITY ASSURANCE

By

CHINTA SURYATEJA

(Regd.No-193GIS1603)

Under the guidance of

GUIDE:

NAMIDALA NAGESWARARAO M.PHARM (Ph.D)

ASSOC PROFESSOR,

DEPT OF PHARMACOLOGY,

ADITYA PHARMACY COLLEGE

CO-GUIDE:

BALLA SUJIVA M.PHARM

ASST PROFESSOR

DEPT OF PHARMCEUTICAL ANALYSIS,

ADITYA PHARMACY COLLEGE

INDUSTRIAL GUIDE:

M BALA VENKATAREDDY M.PHARM (Ph.D)

DEPT OF PHARMCEUTICALANALYSIS

Department of Pharmaceutical Analysis and Quality assurance

Aditya Pharmacy College

Surampalem-533437

2019-2021

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SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE

(Approved by AICTE and affiliated to JNT University, Kakinad:

Aditya Nagar, ADB Road, Surampalem, E.G. Dist., A.P

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "**ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR THE ESTIMATION OF RELATED SUBSTANCES IN FEBUXOSTAT TABLETS BY RP-HPLC**" is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of **Master of Pharmacy in Pharmaceutical Analysis and Quality assurance**. This is a bonafied work carried out by **CHINTA SURYATEJA (Regd No:193G1S1603)** under the guidance and supervision of **SAMIDALA NAGESWARARAO,** Associate Professor, Aditya Pharmacy College, Surampalem.

Place: Surampalem

Date:

SIGNATURE OF EVALUATOR 1

SIGNATURE OF EVALUATOR 2

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Aditya Pharmacy College
SURAMPALEM 533 437

ABSTRACT

This method has been developed for the determination of related compound of Febuxostat hydrochloride in pure for and in tablet dosage form. Gradient elution at a flow rate 1.2 ml / min was employed on a Kromosil- C_{18} column (250 × 4.6mm, 5µm SS) at 30°c. The mobile phase-A consists of 0.01% w/ v KH_2PO_4 in water Ph adjusted to 3.0 with OPA. 100% ACN was used as a mobile phase- B and the UV detection wave length was 316nm. The developed method was validated for linearity, accuracy, precision, detection limit, quantification limit, robustness, specificity, and system suitability. Results of all validation parameters were within the limits as per ICH Guidelines.

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CHAPTER-9

SUMMARY AND CONCLUSION

A simple and reproducible RP-HPLC procedure was developed and validated as per ICH guidelines for the estimation of Related substances in Febuxostat. Estimation of Related substances in Febuxostat by RP-HPLC usingpH3.0 buffer as a mobile phase-A and Acetonitrile (100%) as mobile phase-B and columnKromosil C18(250 x 4.6mm, 5µ) as a stationary phase and the peaks were observed at 316nm which was selected as a wavelength for estimation. After development of the method it was validated for specificity, system suitability, accuracy, linearity, and precision. The value of theoretical plates, tailing factor, retention time and peak area was found to be within limits, hence it is concluded that the system is suitable to perform Related substances estimation. The method was found to be specific and it did not show any interference with placebo and blank. The linearity studies were performed for the sample and found to be linear. From the linearity studies, the specified range was found to be 50% to 150% of the target concentration of Febuxostat. The precision was checked and found to be within limits, hence the method is precise. The accuracy has been determined and the prescribed limits for recovery are 85.0%-115.0%. From accuracy studies, % recovery was calculated and found to be within limits. Therefore it was concluded that the proposed method can be used for routine analysis of Febuxostat tablet dosage form.

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PHARMACEUTICAL VALIDATION
(MPA 103T)

Scope

The main purpose of the subject is to understand about validation and how it can be applied to industry and thus to improve the quality of the products. The subject covers the complete information about validation, types, methodology and application.

Objectives

Upon completion of the subject student shall be able to

- Explain the aspect of validation
- Carryout validation of manufacturing processes
- Apply the knowledge of validation to instruments and equipments
- Validate the manufacturing facilities

THEORY

60 Hrs

1. Introduction: Definition of Qualification and Validation, Advantage of Validation, Streamlining of Qualification & Validation process and Validation Master Plan. — 12 Hrs

   Qualification: User Requirement Specification, Design Qualification, Factory Acceptance Test (FAT)/ Site Acceptance Test (SAT), Installation Qualification, Operational Qualification, Performance Qualification, Re- Qualification (Maintaining status- Calibration Preventive Maintenance, Change management), Qualification of Manufacturing Equipments, Qualification of Analytical Instruments and Laboratory equipments.

2. Qualification of analytical instruments: Electronic balance, pH meter, UV-Visible spectrophotometer, FTIR, GC, HPLC, HPTLC — 12 Hrs
   Qualification of Glassware: Volumetric flask, pipette, Measuring cylinder, beakers and burette.

3. Validation of Utility systems: Pharmaceutical Water System & pure steam, HVAC system, Compressed air and nitrogen. — 12 Hrs
   Cleaning Validation: Cleaning Validation - Cleaning Method development, Validation and validation of analytical method used in cleaning. Cleaning of Equipment, Cleaning of Facilities. Cleaning in place (CIP).

4. Analytical method validation: General principles, Validation of analytical method as per ICH guidelines and USP. — 12 Hrs

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CHARACTERIZATION OF QUALITY DEVELOPMENT ON PAPAYA LEAF EXTRACT, FORMULATIONS AND THEIR COMPARATIVE STUDIES WITH MARKETED FORMULATIONS

Is a Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS

By

DEVAGUPTAPU DIVYA

(Regd. No. 193G1S1604)

Under the guidance of

Dr. D. SathisKumar M. Pharmacy., Ph.D

Professor

Department of Pharmaceutical Analysis

Aditya Pharmacy College

Surampalem – 533 437

2019- 2021

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ADITYA PHARMACY COLLEGE

(Approved by PCI & AICTE, Affiliated to JNTUK)

Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P-533437.

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled **"Characterization of Quality Development on Papaya Leaf Extract, Formulations And Their Comparative Studies With Marketed Formulations"** is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutical Analysis. This is a bonafied work carried out by Ms.Devaguptapu Divya **(Regd No:193G1S1604)** under the guidance and supervision of Dr. D.Sathis Kumar, Professor, Aditya Pharmacy College, Surampalem

Date:

SIGNATURE OF EVALUATOR 1

Place:

SIGNATURE OF EVALUATOR 2

PRINCIPAL
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SURAMPALEM 533 437

ABSTRACT

Plants have provided man with all his needs in terms of shelter, clothing, food, flavours and fragnances. Herbal medicines were being used by about 80% of the population. Primarily in the developing countries for primary health care. These drugs are made from renewable resources of raw materials by ecofriendly processes and will bring economic prosperity to the masses growing these raw materials. Standardization was an important aspect for maintaining and assessing the quality and safety of herbal formulation to attain the desired therapeutic effect.Standardization of prepared formulation and marketed formulation were performed. Based on result, the main phytoconstituents of phenolic compounds in the extract does not show any interactions with excipients of marketed formulation and the prepared formulations. The prepared formulation enhances the bioavailability of main active constituents which was proved by invitro dissolution studies and its kinetic models.

Finally, we concluded that our prepared formulation will helpful for the treatment of Dengue in a effective manner compare than direct administration of extracts or marketed products.

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Standardization of prepared formulation and marketed formulation were performed. Based on result, the main phytoconstituents of phenolic compounds in the extract does not show any interactions with excipients of marketed formulation and the prepared formulations. The prepared formulation enhances the bioavailability of main active constituents which was proved by invitro dissolution studies and its kinetic models.

Finally , we concluded that our prepared formulation will helpful for the treatment of Dengue in a effective manner compare than direct administration of extracts or marketed products.

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ADVANCED INSTRUMENTAL ANALYSIS
(MPA 201T)

Scope

This subject deals with various hyphenated analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are LC-MS, GC-MS, and hyphenated techniques.

Objectives

After completion of course student is able to know,

- interpretation of the NMR, Mass and IR spectra of various organic compounds
- theoretical and practical skills of the hyphenated instruments
- identification of organic compounds

THEORY 60 Hrs

1. HPLC: Principle, instrumentation, pharmaceutical applications, peak shapes, capacity factor, selectivity, plate number, plate height, resolution, band broadening, pumps, injector, detectors, columns, column problems, gradient HPLC, HPLC solvents, trouble shooting, sample preparation, method development, New developments in HPLC-role and principles of ultra, nano liquid chromatography in pharmaceutical analysis. Immobilized polysaccharide CSP's: Advancement in enantiomeric separations, revised phase Chiral method development and HILIC approaches. HPLC in Chiral analysis of pharmaceuticals. Preparative HPLC, practical aspects of preparative HPLC. — 12 Hrs

2 Biochromatography: Size exclusion chromatography, ion exchange chromatography, ion pair chromatography, affinity chromatography general principles, stationary phases and mobile phases. — 12 Hrs

Gas chromatography: Principles, instrumentation, derivatization, head space sampling, columns for GC, detectors, quantification.

High performance Thin Layer chromatography: Principles, instrumentation, pharmaceutical applications.

3 Super critical fluid chromatography: Principles, instrumentation, pharmaceutical applications. — 12 Hrs

Capillary electrophoresis: Overview of CE in pharmaceutical analysis, basic configuration, CE characteristics, principles of CE, methods and modes of CE. General considerations and method

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Optimization of HPLC method Using Central composite design for the estimation of Paracetamol and Mefenamic acid in bulk and dosage form and its validation

Is a Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS

By

GATIGANTI SRAVYA SRI

(Regd. No. 193G1S1605)

Under the guidance of

Dr. D. SathisKumar M.Pharmacy., Ph.D

Principal & Professor

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Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P-533437.

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "Optimization of HPLC method Using Central composite design for the estimation of Paracetamol and Mefenamic acid in bulk and dosage form and its validation" is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutical Analysis. This is a bonafied work carried out by Gatiganti Sravya Sri (**Regd No: 193G1S1605**) under the guidance and supervision of **Dr. D. Sathis Kumar**, Principal & Professor, Aditya Pharmacy College, Surampalem

Date:

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ABSTRACT

A simple, precise and accurate RP-HPLC method was developed for estimation of Mefenamic acid and Paracetamol in bulk and dosage form using DOE software. In this we have achieved shorter run time and as well as studied multiple factors. Chromatographic condition was achieved on C_{18} column using mobile phase consisting of a mixture of Methanol and Buffer (70:30) and Buffer consisting of a mixture of Acetonitrile and Water (50:50) pH of buffer was adjusted with Ortho phosphoric acid. DOE as an effective tool for related substance method development and during less run time in RP-HPLC method was proven can be used for bulk and dosage form.

Keywords: Mefenamic acid, Paracetamol, DOE, RP-HPLC.

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CONCLUSION

The developed method is easy, accurate, sensitive and precise. The positive traits of the proposed method are its short duration for analysis and a simple process for sample preparation. The satisfying % recoveries and low % RSD values confirmed the suitability of the developed method for the usual analysis of mixtures of Mefanamic acid and Paracetamol in pharmaceuticals.

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QUALITY CONTROL AND QUALITY ASSURANCE
(MPA 203T)

Scope

This course deals with the various aspects of quality control and quality assurance aspects of pharmaceutical industries. It covers the important aspects like cGMP, QC tests, documentation, quality certifications, GLP and regulatory affairs.

Objectives

At the completion of this subject it is expected that the student shall be able to know

- the cGMP aspects in a pharmaceutical industry
- to appreciate the importance of documentation
- to understand the scope of quality certifications applicable to Pharmaceutical industries
- to understand the responsibilities of QA & QC departments

THEORY — 60 hrs

1. Concept and Evolution of Quality Control and Quality Assurance — 12 Hrs

   Good Laboratory Practice, GMP, Overview of ICH Guidelines - QSEM, with special emphasis on Q-series guidelines.

   Good Laboratory Practices: Scope of GLP, Definitions, Quality assurance unit, protocol for conduct of non clinical testing, control on animal house, report preparation and documentation.

2. cGMP guidelines according to schedule M, USFDA (inclusive of CDER and CBER) Pharmaceutical Inspection Convention (PIC), WHO and EMEA covering: Organization and personnel responsibilities, training, hygiene and personal records, drug industry location, design, construction and plant lay out, maintenance, sanitation, environmental control, utilities and maintenance of sterile areas, control of contamination and Good Warehousing Practice. CPCSEA guidelines. — 12 Hrs

3. Analysis of raw materials, finished products, packaging materials, in process quality control (IPQC), Developing specification (ICH Q6 and Q3) — Hrs

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DEVELOPMENT AND VALIDATION OF STABILITY INDICATING METHOD FOR THE ESTIMATION OF IVACAFTOR AND LUMACAFTOR IN TABLET DOSAGE FORM USING RP-HPLC

Is a Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS

By

OLETI DURGA RAMA KRISHNA GUPTA

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Institutional Guide
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Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P-533437.

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled **"Development And Validation Of Stability Indicating Method For The Estimation Of Ivacaftor And Lumacaftor In Tablet Dosage form using RP-HPLC "** is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutical Analysis. This is a bonafied work carried out by **Oleti Durga Krishna Gupta** (Regd No: 193G1S1607) under the guidance and supervision of **Dr. D.Sathis Kumar**, Professor, Aditya Pharmacy College, Surampalem

Date:

SIGNATURE OF EVALUATOR 1

Place:

SIGNATURE OF EVALUATOR 2

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ABSTRACT

A simple, Accurate, precise method was developed for the simultaneous estimation of the Lumacaftor and Ivacaftor in bulk and Tablet dosage form. Chromatogram was run through phenomenex C18 150 x 4.6 mm, 5µ. Mobile phase containing Buffer 0.01N Kh2po4: Acetonitrile taken in the ratio 65:35 was pumped through column at a flow rate of 1.0 ml/min. Buffer used in this method was potassium dihydrogen ortho phosphate. Temperature was maintained at 30°C. Optimized wavelength selected was 272 nm. Retention time of Lumacaftor and Ivacaftor were found to be 2.331 min and 3.280. %RSD of the Lumacaftor and Ivacaftor were and found to be 1.4 and 1.5 respectively. %Recovery was obtained as 100.02% and 100.32% for Lumacaftor and Ivacaftor respectively. LOD, LOQ values obtained from regression equations of Lumacaftor and Ivacaftor were 0.45, 1.38 and 0.33, 1.00 respectively. Regression equation of Ivacaftor is y = 23079x + 5320.1, and y = 27366x + 6599 of Lumacaftor. Retention times were decreased and that run time was decreased, so the method developed was simple and economical that can be adopted in regular Quality control test in Industries.

Key Words: Lumacaftor, Ivacaftor, RP-HPLC

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Conclusion

A simple, Accurate, precise method was developed for the simultaneous estimation of the Lumacaftor and Ivacaftor in bulk and Tablet dosage form. Retention time of Lumacaftor and Ivacaftor were found to be 2.331 min and 3.280. %RSD of the Lumacaftor and Ivacaftor were and found to be 1.4 and 1.5 respectively. %Recovery was obtained as 100.02% and 100.32% for Lumacaftor and Ivacaftor respectively. LOD, LOQ values obtained from regression equations of Lumacaftor and Ivacaftor were 0.45, 1.38 and 0.33, 1.00 respectively. Regression equation of Ivacaftor is y = 23079x + 5320.1, and y = 27366x + 6599 of Lumacaftor. Retention times were decreased and that run time was decreased, so the method developed was simple and economical that can be adopted in regular Quality control test in Industries.

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PHARMACEUTICAL ANALYSIS PRACTICALS - I
(MPA 205P)

1. Comparison of absorption spectra by UV and Wood ward - Fiesure rule
2. Interpretation of organic compounds by FT-IR
3. Interpretation of organic compounds by NMR
4. Interpretation of organic compounds by MS
5. Determination of purity by DSC in pharmaceuticals
6. Identification of organic compounds using FT-IR, NMR, CNMR and Mass spectra
7. Bio molecules separation utilizing various sample preparation techniques and Quantitative analysis of components by gel electrophoresis.
8. Bio molecules separation utilizing various sample preparation techniques and Quantitative analysis of components by HPLC techniques.
9. Isolation of analgesics from biological fluids (Blood serum and urine).
10. Protocol preparation and performance of analytical/Bioanalytical method validation.
11. Protocol preparation for the conduct of BA/BE studies according to guidelines.
12. In process and finished product quality control tests for tablets, capsules, parenterals and creams
13. Quality control tests for Primary and secondary packing materials
14. Assay of raw materials as per official monographs
15. Testing of related and foreign substances in drugs and raw materials
16. Preparation of Master Formula Record.
17. Preparation of Batch Manufacturing Record.
18. Quantitative analysis of rancidity in lipsticks and hair oil
19. Determination of aryl amine content and Developer in hair dye
20. Determination of foam height and SLS content of Shampoo.
21. Determination of total fatty matter in creams (Soap, skin and hair creams)
22. Determination of acid value and saponification value.
23. Determination of calcium thioglycolate in depilatories

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DEVELOPMENT AND VALIDATION OF STABILITY INDICATING RP-HPLC METHOD FOR THE ESTIMATION OF MEMANTINE AND DONEPEZIL IN CAPSULE DOSAGE FORM

Is a Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS

By

VUDI SIVA RAMA KRISHNA

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Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P-533437.

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled **"Development And Validation Of Stability Indicating RP-HPLC Method For The Estimation Of Memantine And Donepezil In Capsule Dosage form "** is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutical Analysis. This is a bonafied work carried out by Vudi Siva Rama Krishna (Regd No: 193G1S1608) under the guidance and supervision of Mr. SK.Rafi , Assistant Professor, Aditya Pharmacy College, Surampalem

Date:

SIGNATURE OF EVALUATOR 1

Place:

SIGNATURE OF EVALUATOR 2

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SURAMPALEM 533 437

DECLARATION

I,Vudi Siva Ramakrishna (Regd No: 193G1S1608), do hereby declare that the dissertation entitled **"Development And Validation Of Stability Indicating RP-HPLC Method For The Estimation Of Memantine And Donepezil In Capsule Dosage Form"** is a record of genuine research work carried out by me under the supervision of Mr.SK.Rafi,Asst Professor, Aditya Pharmacy College, Surampalem. The work reported here in has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

V.S.R.Krishna

(Vudi Siva Rama Krishna)

Regd no: 193G1S1608

Place: Surampalem

Date:

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Conclusion

A simple, Accurate, precise method was developed for the simultaneous estimation of the Memantine and Donepezil in Pharmaceutical dosage form. Retention time of Memantine and Donepezil were found to be 2.323 min and 3.837. %RSD of the Memantine and Donepezil were and found to be 0.7 and 1.0 respectively. %Recovery was obtained as 100.05% and 99.57% for Memantine and Donepezil respectively. LOD, LOQ values obtained from regression equations of Memantine and Donepezil were 0.13, 0.40 and 0.08, 0.23 respectively. Regression equation of Donepezil is y = 35412x + 3363.7, and y = 32166x + 4310.7 of Memantine. Retention times were decreased and that run time was decreased, so the method developed was simple and economical that can be adopted in regular Quality control test in Industries.

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MODERN BIO-ANALYTICAL TECHNIQUES
(MPA 202T)

Scope

This subject is designed to provide detailed knowledge about the importance of analysis of drugs in biological matrices.

Objectives

Upon completion of the course, the student shall be able to understand

- Extraction of drugs from biological samples
- Separation of drugs from biological samples using different techniques
- Guidelines for BA/BE studies.

THEORY 60 Hrs

1. Extraction of drugs and metabolites from biological matrices: General need, principle and procedure involved in the Bioanalytical methods such as Protein precipitation, Liquid - Liquid extraction and Solid phase extraction and other novel sample preparation approach. Bioanalytical method validation: USFDA and EMEA guidelines. — 12 Hrs

2. Biopharmaceutical Consideration: Introduction, Biopharmaceutical Factors Affecting Drug Bioavailability, In Vitro: Dissolution and Drug Release Testing, Alternative Methods of Dissolution Testing Transport models, Biopharmaceutics Classification System. Solubility: Experimental methods. Permeability: In-vitro, in-situ and In-vivo methods. — 12 Hrs

3. Pharmacokinetics and Toxicokinetics: Basic consideration, Drug interaction (PK-PD interactions), The effect of protein-binding interactions, The effect of tissue-binding interactions, Cytochrome P450-based drug interactions, Drug interactions linked to transporters. Microsomal assays Toxicokinetics-Toxicokinetic evaluation in preclinical studies, Importance and applications of toxicokinetic studies. LC-MS in bioactivity screening and proteomics. — 12 Hrs

4. Cell culture techniques — 12 Hrs
Basic equipments used in cell culture lab. Cell culture media, various types of cell culture, general procedure for cell cultures; isolation of cells, subculture, cryopreservation, characterization of

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ANALYTICAL CHARACTERIZATION OF FLUPHENAZINE ENCAPSULATED ZINC OXIDE NANO PARTICLES

Is a Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS

KONDRU UMA MAHESHWARI B. Pharm.,

(Reg.No. 193G1S1610)

Under the guidance of

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Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P-533437.

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "Analytical Characterization of Fluphenazine Encapsulated Zinc Oxide Nanoparticles" is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutical Analysis. This is a bonafied work carried out by Ms.Kondru Uma Maheshwari (Regd No:193G1S1610) under the guidance and supervision of Dr.P.S.S.Sai Kiran, Associate Professor, Aditya Pharmacy College, Surampalem.

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ABSTRACT

ZnO nanoparticles are a recent innovation for the delivery of therapeutic agents specifically, poorly soluble drugs. In the present study fluphenazine delivered through the ZnO nanoparticles have nanometric dimensions, low drug dose, and hydrophilic properties has the potential to enhance the dissolution of the less soluble drug. Fluphenazine loaded nanoparticles gave gradual and linear release. Nanosize can be customized further to enhance the delivery of many drugs through oral route.

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6. CONCLUSION

ZnO nanoparticles are a recent innovation for the delivery of therapeutic agents specifically, poorly soluble drugs. In the present study fluphenazine delivered through the ZnO nanoparticles have nanometric dimensions, low drug dose, and hydrophilic properties has the potential to enhance the dissolution of the less soluble drug. Fluphenazine loaded nanoparticles gave gradual and linear release. Nanosize can be customized further to enhance the delivery of many drugs through oral route.

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PHARMACEUTICAL ANALYSIS PRACTICALS - II
(MPA 105P)

1. Analysis of Pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on HPLC
4. Experiments based on Gas Chromatography
5. Estimation of riboflavin/quinine sulphate by fluorimetry
6. Estimation of sodium/potassium by flame photometry
7. Assay of official compounds by different titrations
8. Assay of official compounds by instrumental techniques.
9. Quantitative determination of hydroxyl group.
10. Quantitative determination of amino group
11. Colorimetric determination of drugs by using different reagents
12. Imupurity profiling of drugs
13. Calibration of glasswares
14. Calibration of pH meter
15. Calibration of UV-Visible spectrophotometer
16. Calibration of FTIR spectrophotometer
17. Calibration of GC instrument
18. Calibration of HPLC instrument
19. Cleaning validation of any one equipment
20. Determination of total reducing sugar
21. Determination of proteins
22. Determination of saponification value, Iodine value, Peroxide value, Acid value in food products
23. Determination of fat content and rancidity in food products
24. Analysis of natural and synthetic colors in food
25. Determination of preservatives in food
26. Determination of pesticide residue in food products
27. Analysis of vitamin content in food products
28. Determination of density and specific gravity of foods
29. Determination of food additives

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CHARACTERIZATION OF QUALITY DEVELOPMEMENT ON POLYHERBAL EXTRACT (Kabasura Kudineer), FORMULATIONS AND THEIR COMPARATIVE EVALUATION

Is a Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS

By

KAVALA RAJESH

(Regd. No. 193G1S1606)

Under the guidance of

Dr. D. SathisKumar M. Pharmacy., Ph.D.

Professor

Department of Pharmaceutical Analysis

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Dr.D.SATHISKUMAR, M.Pharm., Ph.D.,
Principal & Professor

CERTIFICATE

This is to certify that the dissertation work entitled **"Characterization of Quality Development on Polyherbal Extract (Kabasura kudineer), Formulations And Their Comparative Evaluation"** is submitted to the JNT University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutical Analysis. This is a bonafied work carried out by **Kavala Rajesh (Regd No: 193G1S1606)** under the guidance and supervision of Dr. D. Sathis Kumar, Professor, Department of Pharmaceutical Analysis, Aditya Pharmacy College, Surampalem.

Place: Surampalem

Date: 30/11/19

Dr. D.Sathiskumar M.Pharm., Ph. D

Principal and Professor,

Aditya Pharmacy College

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ABSTRACT

Plants have provided man with all his needs in terms of shelter, clothing, food, flavors and fragrances. Herbal medicines were being used by about 80% of the population primarily in the developing countries for primary health care. These drugs are made from renewable resources of raw materials by ecofriendly processes and will bring economic prosperity to masses growing these raw materials. Standardization was an important aspect for maintainingand assessing the quality and safety of the polyherbal formulation as these are combinationsof more than one herb to attain the desire therapeutic effect. Standardization of prepared formulation and marketed formulation were performed. Based on result, the main phytoconstituents of phenolic compounds in the extract does not show any interactions with excipients of marketed formulation and the prepared formulations. The prepared formulation enhances the bioavailability of main active constituents which was proved by invitro dissolution studies and its kinetic models.

Finally, we concluded that our prepared formulation is used for improving the immunity in an effective manner compare than direct administration of extracts or marketed products.

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Standardization of prepared formulation and marketed formulation were performed. Based on result, the main phytoconstituents of phenolic compounds in the extract does not show any interactions with excipients of marketed formulation and the prepared formulations. The prepared formulation enhances the bioavailability of main active constituents which was proved by invitro dissolution studies and its kinetic models.

Finally, we concluded that our prepared formulation is used for improving the immunity in a effective manner compare than direct administration of extracts or marketed products.

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PHARMACEUTICS(MPH)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES
(MPH 101T)

Scope

This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

Objectives

After completion of course student is able to know,

- Chemicals and Excipients
- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills of the instruments

THEORY 60 HOURS

1. a. UV-Visible spectroscopy: Introduction, Theory, Laws, Instrumentation associated with UV-Visible spectroscopy, Choice of solvents and solvent effect and Applications of UV-Visible spectroscopy. 11 Hrs

   b. IR spectroscopy: Theory, Modes of Molecular vibrations, Sample handling, Instrumentation of Dispersive and Fourier - Transform IR Spectrometer, Factors affecting vibrational frequencies and Applications of IR spectroscopy

   c. Spectroflourimetry: Theory of Fluorescence, Factors affecting fluorescence, Quenchers, Instrumentation and Applications of fluorescence spectrophotometer.

   d. Flame emission spectroscopy and Atomic absorption spectroscopy: Principle, Instrumentation, Interferences and Applications.

2 NMR spectroscopy: Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and 13C NMR. Applications of NMR spectroscopy. 11 Hrs

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3	Mass Spectroscopy: Principle, Theory, Instrumentation of Mass Spectroscopy, Different types of ionization like electron impact, chemical, field, FAB and MALDI, APCI, ESI, APPI Analyzers of Quadrupole and Time of Flight, Mass fragmentation and its rules, Meta stable ions, Isotopic peaks and Applications of Mass spectroscopy	11 Hrs
4	Chromatography: Principle, apparatus, instrumentation, chromatographic parameters, factors affecting resolution and applications of the following: a) Paper chromatography b) Thin Layer chromatography c) Ion exchange chromatography d) Column chromatography e) Gas chromatography f) High Performance Liquid chromatography g) Affinity chromatography	11 Hrs
5	a. Electrophoresis: Principle, Instrumentation, Working conditions, factors affecting separation and applications of the following: a) Paper electrophoresis b) Gel electrophoresis c) Capillary electrophoresis d) Zone electrophoresis e) Moving boundary electrophoresis f) Iso electric focusing b. X ray Crystallography: Production of X rays, Different X ray diffraction methods, Bragg's law, Rotating crystal technique, X ray powder technique, Types of crystals and applications of X-ray diffraction.	11 Hrs
6	Immunological assays : RIA (Radio immuno assay), ELISA, Bioluminescence assays.	5 Hrs

REFERENCES

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, Sixth edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis – Willards, 7th edition, CBS publishers.
4. Practical Pharmaceutical Chemistry – Beckett and Stenlake, Vol II, 4th edition, CBS Publishers, New Delhi, 1997.
5. Organic Spectroscopy - William Kemp, 3rd edition, ELBS, 1991.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi, 1997.
7. Pharmaceutical Analysis- Modern methods – Part B - J W Munson, Volume 11, Marcel Dekker Series

SOLUBILITY ENHANCEMENT OF RITONAVIR USING SOLID DISPERSION TECHNIQUE

Dissertation submitted to the JNTU – K University in partial fulfillment of the requirements for the degree of Master of Pharmacy

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

IN

PHARMACEUTICS

By

ADAPA VIJAY MOUNIKA

(Regd. No. 193G1S0301)

Under the guidance of

Mr.T.UDAY KUMAR, *M. Pharm, (Ph.D)*

Associate professor

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Department of Pharmaceutics

Aditya Pharmacy College

Surampalem – 533 437

2019- 2021

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "SOLUBILITY ENHANCEMENT OF RITONAVIR USING SOLID DISPERSION TECHNIQUE" is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutics. This is a bonafide work carried out by ADAPA.VIJAY MOUNIKA (Regd. No193G1S0301) under the guidance and supervision of

T. UDAY KUMAR,Assoc. Professor, Aditya Pharmacy College, Surampalem

Date:

SIGNATURE OF EVALUATOR 1

Place:

SIGNATURE OF EVALUATOR 2

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ADITYA PHARMACY COLLEGE * SURAMPALEM *

DECLARATION

I, **ADAPA.VIJAY MOUNIKA** (Regd. No.193G1S0301), do hereby declare that the dissertation entitled **"SOLUBILITY ENHANCEMENT OF RITONAVIR USING SOLID DISPERSION TECHNIQUE"** is a record of genuine research work carried out by me under the supervision of Mr.**T.UDAY KUMAR**, Associate Professor, Aditya Pharmacy College, Surampalem. The work reported here in has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

A. Vijay Mounika

Place: Surampalem

Date:

A.VIJAY MOUNIKA

(Regd. No. 193G1SO301)

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CONCLUSION

Solubility of drug molecule is a significant factor that affects the dissolution rate and bioavailability. According to biopharmaceutical classification Ritonavir belongs to class II drug, acting as an antiretroviral drug of the protease inhibitor class. The major problem associated with this drug is its poor bioavailability because of its insolubility in water and reduced dissolution rate. So in order to improve the drug solubility the drug must be formulated as conventional tablets by solid dispersion technique using different polymers.

Dissolution is the rate limiting step for poorly water soluble drugs.Ritonavir is one such drug.The use of Solid dispersion technique has increased the dissolution rate of the drug by 30-65%.The solid dispersions of Ritonavir were successfully formulated by solvent evaporation method using carriers like PVP, SLS, mannitol, and urea. In-vitro release studies reveal that there is marked increase in the dissolution rate of Ritonavir from all the solid dispersions when compared to the pure Ritonavir itself. Using all four polymers 12 different formulations are prepared using the ratio 1:2, 1:3 and 1:4 All the 12 formulations are then subjected to various characterization studies like *FT-IR*, tablet evaluation studies, *in-vitro* drug release studies, and stability studies etc.

Preformulation study is carried out, bulk density, tapped density, Angle of repose, percentage compressibility was found out and all values are within the acceptable limit.The dissolution studies indicating that solid dispersion showing maximum cumulative percentage drug release compared to unprocessed drug. Tablet evaluation tests like hardness, Friability test, weight variation, disintegration test complies with specifications mentions in the IP. *In-vitro* drug release studies shows release rate was in the order of F9>F11>F5>F7>F3>F1>F12>F10>F8>F6>F4>F2. The increase in dissolution rate is due to the presence of carrier and the order was found to be PVP> Mannitol> Urea>SLS. Thus it can be concluded that, if we formulate a poorly water soluble drugs like Ritonavir as solid dispersions the dissolution rate of drug can be increased markedly and hence higher plasma levels can be achieved.

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PHARMACEUTICS PRACTICALS - I
(MPH 105P)

1. Analysis of pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on HPLC
4. Experiments based on Gas Chromatography
5. Estimation of riboflavin/quinine sulphate by fluorimetry
6. Estimation of sodium/potassium by flame photometry
7. To perform In-vitro dissolution profile of CR/ SR marketed formulation
8. Formulation and evaluation of sustained release matrix tablets
9. Formulation and evaluation osmotically controlled DDS
10. Preparation and evaluation of Floating DDS- hydro dynamically balanced DDS
11. Formulation and evaluation of Muco adhesive tablets.
12. Formulation and evaluation of trans dermal patches.
13. To carry out preformulation studies of tablets.
14. To study the effect of compressional force on tablets disintegration time.
15. To study Micromeritic properties of powders and granulation.
16. To study the effect of particle size on dissolution of a tablet.
17. To study the effect of binders on dissolution of a tablet.
18. To plot Heckal plot, Higuchi and peppas plot and determine similarity factors.

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"APPLICABILITY OF GUM KARAYA IN THE DESIGN OF OLMESARTAN MEDOXOMIL GASTRORETENTIVE FLOATING TABLETS"

Dissertation submitted to

Jawaharlal Nehru Technological University, Kakinada, A.P

In Partial Fulfillment of the Requirement for the Award of the Degree of

MASTER OF PHARMACY

In

PHARMACEUTICS

By

AKONDY KEERTHANA

(Regd no-193G1S0302)

Under the guidance of

Ms. Dr. J. Anu Pravallika M.Pharm., Ph.D.
Associate professor

Department of Pharmaceutics

Aditya Pharmacy College

Surampalem-533437

2019-2021

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EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled **"APPLICABILITY OF GUM KARAYA IN THE DESIGN OF OLMESARTAN MEDOXOMIL GASTRORETENTIVE FLOATING TABLETS"** is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of **Master of Pharmacy in Pharmaceutics**. This is a bonafied work carried out by **AKONDY KEERTHANA (Regd No: 193G1S0302)** under the guidance and supervision of Associate Professor **Ms. Dr. J. Anu Pravallika**, Aditya Pharmacy college, Surampalem.

Place: Surampalem

Date:

SIGNATURE OF EVALUATOR 1

SIGNATURE OF EVALUATOR 2

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DECLERATION

I, AKONDY KEERTHANA (Regd No:193G1S0302), do hereby declare that the dissertation entitled APPLICABILITY OF GUM KARAYA IN THE DESIGN OF OLMESARTAN MEDOXOMIL GASTRORETENTIVE FLOATING TABLETS" is a record of genuine research work carried out by me nder the supervision of **Ms. Dr. J. Anu Pravallika, Associate Professor**, Aditya Pharmacy College, urampalem. The work reported here in has not been previously submitted by other persons for qualifications t any other University or academic institutions unless otherwise referenced or acknowledged.

A. Keerthana

Place: Surampalem

Date: 1/12/21

AKONDY KEERTHANA

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Conclusion

The prepared tablets were able to prolong drug release for up to 6 hours and exhibited good physico-chemical properties. All the tests were performed on the produced tablets and the results were within acceptable limits. Among all the formulation prepared with two different polymers OGK6 showed an effective drug release when compared with already established synthetic polymer. Hence the applicability of gum karaya as natural polymer was successfully tested in the design of Olmesartan Medoxomil floating tablets.

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DRUG DELIVERY SYSTEMS
(MPH 102T)

SCOPE

This course is designed to impart knowledge on the area of advances in novel drug delivery systems.

OBJECTIVES

Upon completion of the course, student shall be able to understand

The various approaches for development of novel drug delivery systems.

The criteria for selection of drugs and polymers for the development of delivering system

The formulation and evaluation of Novel drug delivery systems..

THEORY 60 Hrs

1.	Sustained Release(SR) and Controlled Release (CR) formulations: Introduction & basic concepts, advantages/ disadvantages, factors influencing, Physicochemical & biological approaches for SR/CR formulation, Mechanism of Drug Delivery from SR/CR formulation. Polymers: introduction, definition, classification, properties and application Dosage Forms for Personalized Medicine: Introduction, Definition, Pharmacogenetics, Categories of Patients for Personalized Medicines: Customized drug delivery systems, Bioelectronic Medicines, 3D printing of pharmaceuticals, Telepharmacy.	10 Hrs
2	Rate Controlled Drug Delivery Systems: Principles & Fundamentals, Types, Activation; Modulated Drug Delivery Systems;Mechanically activated, pH activated, Enzyme activated, and Osmotic activated Drug Delivery Systems Feedback regulated Drug Delivery Systems; Principles & Fundamentals.	10 Hrs
3	Gastro-Retentive Drug Delivery Systems: Principle, concepts advantages and disadvantages, Modulation of GI transit time approaches to extend GI transit. Buccal Drug Delivery Systems: Principle of muco adhesion, advantages and disadvantages, Mechanism of drug permeation, Methods of formulation and its evaluations.	10 Hrs
4	Occular Drug Delivery Systems: Barriers of drug permeation, Methods to overcome barriers.	06 Hrs

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5	Transdermal Drug Delivery Systems: Structure of skin and barriers, Penetration enhancers, Transdermal Drug Delivery Systems, Formulation and evaluation.	10 Hrs
6	Protein and Peptide Delivery: Barriers for protein delivery. Formulation and Evaluation of delivery systems of proteins and other macromolecules.	08 Hrs
7	Vaccine delivery systems: Vaccines, uptake of antigens, single shot vaccines, mucosal and transdermal delivery of vaccines.	06 Hrs

REFERENCES

1. Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded,
Marcel Dekker, Inc., New York, 1992.
2. Robinson, J. R., Lee V. H. L, Controlled Drug Delivery Systems, Marcel Dekker,Inc., New York, 1992.
3. Encyclopedia of controlled delivery, Editor- Edith Mathiowitz, Published by WileyInterscience Publication, John Wiley and Sons, Inc, New York! Chichester/Weinheim
4. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, New Delhi, First edition 1997 (reprint in 2001).
5. S.P.Vyas and R.K.Khar, Controlled Drug Delivery - concepts and advances, Vallabh Prakashan, New Delhi, First edition 2002

JOURNALS

1. Indian Journal of Pharmaceutical Sciences (IPA)
2. Indian drugs (IDMA)
3. Journal of controlled release (Elsevier Sciences) desirable
4. Drug Development and Industrial Pharmacy (Marcel & Decker) desirable

ADITYA PHARMACY COLLEGE SURAMPALEM

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SURAMPALEM 533 437

DEVELOPMENT AND EVALUATION OF SUMATRIPTAN BASED ETHOSOMAL GEL

Dissertation submitted to

Jawaharlal Nehru Technological University, Kakinada, A.P

In Partial Fulfillment of the Requirement for the Award of the Degree of

MASTER OF PHARMACY
In

PHARMACEUTICS

Submitted by

JALLURI N.V.L.E.PADMAJA

(Regd no-193G1S0303)

Under the guidance of

Mrs.Gowripattapu Sridevi M. Pharm (Ph. D)
Assoc. professor

Department of Pharmaceutics

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2019-2021

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EVALUATION CERTIFICATE

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Place: surampalem

Date:

SIGNATURE OF EVALUATOR 1

SIGNATURE OF EVALUATOR 2

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DECLERATION

I, JALLURI N.V.L.E.PADMAJA (Regd No:193G1S0303), do hereby declare that the dissertation entitled "DEVELOPMENT AND EVALUATION OF SUMATRIPTAN BASED ETHOSOMAL GEL" is a record of genuine research work carried out by me under the supervision of **Mrs.G.Sridevi, Associate Professor,** Aditya Pharmacy College, Surampalem. The work reported herein has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

J. Padmaja

Place: surampalem
Date:

JALLURI N.V.L.E.PADMAJA
Regd No-193G1S0303

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SUMMARY AND CONCLUSION

Ethosomal drug delivery system enhances the permeability of the drug molecules. Thus by incorporating of drug into ethosomes and delivery through the transdermal route may significantly improve the bioavailability of Sumatriptan.

- From the present study, standard calibration curve was plotted shows best fit line with regression (R^2) 0.9947 which obeys Beer's-Lambert law.
- FT-IR studies was carried out and results shown that there is no interaction of API with excipients used in formulations.
- Colorimeter results shows particle size where EF12 Ethosomal formulation showing greater transmittance indicates smaller particle size.
- From the Nephelometer studies shows optimum turbidity for EF12 formulation which provides good drug release kinetics.
- The percentage Drug content of EF12 formulations was found to be 98.8±0.49 and Entrapment Efficiency of ethosomes of Sumatriptan was found to be 78.63±0.14.
- The Ethosomal gel formulation parameters like organoleptic characteristics, Washability, Spreadability are found to be within the range and pH of Ethosomal gel formulation was found to be pH 7.44±0.05.
- In the present study, the Drug release studies was carried out by Franz diffusion cell ,was found that the drug release from all 12 formulations gave the better release. In these all formulations EF12 showing highest release when compare with r^2 value of zero order and first order graphs for EF12 it shows that it was following first order kinetics because r^2 value is high for first order.
- From the above graphs and regression values, it was observed that the highest r^2 value for EF12 is 0.9664 which is showing good correlation coefficient so it was

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following diffusion mechanism. From the data of peppas plot it was observed that diffusion coefficient values was in the range of 0.45-0.89 (0.5689) which indicates the release model was non -fickian anomalous. The release rate was increases initially when Ethanol and Tween 80 concentration increased. So, it shows that decrease in Ethanol and Tween 80 concentration shows slows down of drug release rate.

- Stability studies was carried out for both Ethosomal formulation and Ethosomal gel according to ICH guidelines was found to be 4±2°C and 25±2°C.

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ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS
(MPH 202T)

Scope

This course is designed to impart knowledge and skills necessary for dose calculations, dose adjustments and to apply biopharmaceutics theories in practical problem solving. Basic theoretical discussions of the principles of biopharmaceutics and pharmacokinetics are provided to help the students' to clarify the concepts.

Objectives

Upon completion of this course it is expected that students will be able understand,

- The basic concepts in biopharmaceutics and pharmacokinetics.
- The use raw data and derive the pharmacokinetic models and parameters the best describe the process of drug absorption, distribution, metabolism and elimination.
- The critical evaluation of biopharmaceutic studies involving drug product equivalency.
- The design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.
- The potential clinical pharmacokinetic problems and application of basics of pharmacokinetic

THEORY — 60 Hrs

1. Drug Absorption from the Gastrointestinal Tract: 12 Hrs

Gastrointestinal tract, Mechanism of drug absorption, Factors affecting drug absorption, pH–partition theory of drug absorption. Formuulation and physicochemical factors: Dissolution rate, Dissolution process, Noyes–Whitney equation and drug dissolution, Factors affecting the dissolution rate. Gastrointestinal absorption: role of the dosage form: Solution (elixir, syrup and solution) as a dosage form ,Suspension as a dosage form, Capsule as a dosage form, Tablet as a dosage form ,Dissolution methods ,Formulation and processing factors, Correlation of in vivo data with in vitro dissolution data.Transport models, Permeability-Solubility-Charge State and the pH Partition Hypothesis, Properties of the Gastrointestinal Tract (GIT), pH Microclimate Intracellular pH Environment, Tight-Junction Complex.

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2	Biopharmaceutic considerations in drug product design and In Vitro Drug Product Performance: Introduction, biopharmaceutic factors affecting drug bioavailability, rate-limiting steps in drug absorption, physicochemical nature of the drug formulation factors affecting drug product performance, in vitro: dissolution and drug release testing, compendial methods of dissolution, alternative methods of dissolution testing,meeting dissolution requirements,problems of variable control in dissolution testingperformance of drug products. In vitro–in vivo correlation, dissolution profile comparisons, drug product stability,considerations in the design of a drug product.	12 Hrs
3	Pharmacokinetics: Basic considerations, pharmacokinetic models, compartment modeling: one compartment model- IV bolus, IV infusion, extra-vascular. Multi compartment model:two compartment - model in brief, non-linear pharmacokinetics: cause of non-linearity, Michaelis – Menten equation, estimation of k_{max} and v_{max}. Drug interactions: introduction, the effect of protein-binding interactions,the effect of tissue-binding interactions,cytochrome p450-based drug interactions,drug interactions linked to transporters.	12 Hrs
4	Drug Product Performance, In Vivo: Bioavailability and Bioequivalence: drug product performance, purpose of bioavailability studies, relative and absolute availability. methods for assessing bioavailability, bioequivalence studies, design and evaluation of bioequivalence studies, study designs, crossover study designs, evaluation of the data, bioequivalence example, study submission and drug review process. biopharmaceutics classification system, methods. Permeability: In-vitro, in-situ and In-vivo methods.generic biologics (biosimilar drug products),clinical significance of bioequivalence studies, special concerns in bioavailability and bioequivalence studies, generic substitution.	12 Hrs
5	Application of Pharmacokinetics: Modified-Release Drug Products, Targeted Drug Delivery Systems and Biotechnological Products. Introduction to Pharmacokinetics and pharmacodynamic, drug interactions. Pharmacokinetics and pharmacodynamics of biotechnology drugs. Introduction, Proteins and peptides, Monoclonal antibodies, Oligonucleotides, Vaccines (immunotherapy), Gene therapies.	12 Hrs

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FORMULATION DEVELOPMENT AND EVALUATION OF GASTRO-RETENTIVE FLOATING TABLETS CONTAINING TELMISARTAN

Dissertation submitted to

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

IN

PHARMACEUTICS

By

MATTAPARTHI KRISHNAVENI

(Regd. No. 193G1S0304)

Under the guidance of

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2019- 2021

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled **"FORMULATION DEVELOPMENT AND EVALUATION OF GASTRO-RETENTIVE FLOATING TABLETS CONTAINING TELMISARTAN"** is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutics. This is a bonafide work carried out by MATTAPARTHI KRISHNAVENI (Regd. No193G1S0304) under the guidance and supervision of Mr. T. UDAY KUMAR, Assoc. Professor, Aditya Pharmacy College, Surampalem

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SIGNATURE OF EVALUATOR 2

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DECLARATION

I, M. KRISHNAVENI (Regd. No.193G1S0304), do hereby declare that the dissertation entitled "FORMULATION DEVELOPMENT AND EVALUATION OF GASTRO-RETENTIVE FLOATING TABLETS CONTAINING TELMISARTAN" is a record of genuine research work carried out by me under the supervision of Mr. T.UDAY KUMAR, Associate Professor, Aditya Pharmacy College, Surampalem. The work reported here in has not been previously submitted by other persons for qualification at any other University or academic institutions unless otherwise referenced or acknowledged.

M.KRISHNAVENI

(Regd. No. 193G1S0304)

Place: Surampalem

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8. SUMMARY AND CONCLUSION

The main aim of the study was to formulate and develop floating effervescent tablets of Telmisartan to improve its biovailability. Telmisartan is an angiotensin II receptor antagonist(ARB) which is widely prescribed in order to control blood pressure. Angiotensin II receptor blockers (ARBs), such as telmisartan, bind to the angiotensin II type I (AT1) receptors with high affinity, inhibiting angiotensin II's action on vascular smooth muscle and, as a result, lowers the arterial blood pressure. Telmisartan has an absolute bioavailability of 42%. Development of gastro-retentive tablets of telmisartan can be advantageous, as it can prolong gastric residence time and increase the efficacy of the dosage form.

A traditional oral sustained release formulation releases most of the drug at the colon, thus the drug should have an absorption window either in the colon or throughout the gastrointestinal tract. Telmisartan is absorbed only in the initial part of the small intestine and has 42% absolute bioavailability. Moreover, the colonic metabolism of telmisartan is partly responsible for the poor bioavailability of telmisartan from the colon. These properties of telmisartan do not favor the traditional approach to sustained release delivery. Hence, it is decided to prepare gastroretentive tablets of telmisartan to facilitate its absorption from gastric mucosa and increase its gastric residence time so as to improve its bioavailability. The research work is carried out using polymers namely HPMC (5cps), Ethyl cellulose (EC) and Xanthan Gum.

Drug excipient compatibility studies using FTIR showed that all the selected excipients do not show any interaction with the Telmisartan. The pre-compression and post-compression parameters of all the prepared formulations are found to be within the acceptable parameters. All the polymers HPMC, EC and Xanthan Gum are found to have

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significant effect on drug release and buoyancy. However, EC and Xanthan Gum are found to be superior when compared to HPMC.

Basing on the drug release, and gastric buoyancy properties F10 containing 5% EC and 5% Xanthan Gum is chosen as the best formulation. The optimized formulation is stress tested under accelerated stability criteria which is shown to have negligible effects on the physicochemical properties of the drug.

Thus it is summarized and concluded that HPMC, EC and Xanthan Gum can be successfully used in the formulation of telmisartan gastro retentive floating drug delivery system for the treatment of hypertension.

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PHARMACEUTICS PRACTICALS - II

(MPH 205P)

1. To study the effect of temperature change , non solvent addition, incompatible polymer addition in microcapsules preparation
2. Preparation and evaluation of Alginate beads
3. Formulation and evaluation of gelatin /albumin microspheres
4. Formulation and evaluation of liposomes/niosomes
5. Formulation and evaluation of spherules
6. Improvement of dissolution characteristics of slightly soluble drug by Solid dispersion technique.
7. Comparison of dissolution of two different marketed products /brands
8. Protein binding studies of a highly protein bound drug & poorly protein bound drug
9. Bioavailability studies of Paracetamol in animals.
10. Pharmacokinetic and IVIVC data analysis by Winnoline^{R} software
11. In vitro cell studies for permeability and metabolism
12. DoE Using Design Expert® Software
13. Formulation data analysis Using Design Expert® Software
14. Quality-by-Design in Pharmaceutical Development
15. Computer Simulations in Pharmacokinetics and Pharmacodynamics
16. Computational Modeling Of Drug Disposition
17. To develop Clinical Data Collection manual
18. To carry out Sensitivity Analysis, and Population Modeling.
19. Development and evaluation of Creams
20. Development and evaluation of Shampoo and Toothpaste base
21. To incorporate herbal and chemical actives to develop products
22. To address Dry skin, acne, blemish, Wrinkles, bleeding gums and dandruff

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FORMULATION AND EVALUATION OF BILASTINE ORODISPERSIBLE TABLETS BY USING SOLID DISPERSION METHOD

Dissertation submitted to

Jawaharlal Nehru Technological University, Kakinada, A.P

In Partial Fulfillment of the Requirement for the Award of the Degree of

MASTER OF PHARMACY

In

PHARMACEUTICS

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EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "**FORMULATION AND EVALUATION OF ILASTINE ORODISPERSIBLE TABLETS BY USING SOLID DIESPERSION**" is submitted to the waharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of **laster of Pharmacy in Pharmaceutics**. This is a bonafied work carried out by **NGWUCHUKWU ODWIN IFEANYI (Regd No: 193G1S0305)** under the guidance and supervision of **Mrs. G. Sridevi** ssociate Professor, Aditya Pharmacy college, surampalem.

lace: surampalem

ate:

SIGNATURE OF EVALUATOR 1

SIGNATURE OF EVALUATOR 2

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DECLARATION

I, **NGWUCHUKWU GODWIN IFEANYI (Regd No:193G1S0305)**, do hereby declare that the ssertation entitled **"FORMULATION AND EVALUATION OF BILASTINE ORODISPERSIBLE ABLETS BY USING SOLID DISPERION"** is a record of genuine research work carried out by me ıder the supervision of **Mrs.G.Sridevi, Associate Professor**, Aditya Pharmacy College, Surampalem. The ork reported herein has not been previously submitted by other persons for qualifications at any other niversity or academic institutions unless otherwise referenced or acknowledged.

ace: surampalem
ate: 30/11/2021

NGWUCHUKWU GODWIN IFEANYI
Regd No-193G1S0305

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SUMMARY AND CONCLUSION

Studies was undertaken to formulate orodispersible tablets of Bilastine.

The formulation prepared with Solid dispersion, SSG, CP, MCC, Mg stearate, talc yielded the required release of Bilastine.

The following conclusions were drawn from these experimental results;

- Bilastine was found to be compatible with Solid dispersion, CP, MCC, Mg stearate, and talc.
- From the Table no.14, BLN shows highest solubility in 0.1 N Hydrochloride was found to be 14.88.
- From the figure no.19, standard calibration curve was plotted shows best fit line with regression r^2 0.9997 which obeys Beer's-Lambert law.
- FT-IR studies was carried out and results shows there is no interaction between the API and the excipients used in the formulation.
- The results obtained by evaluating the powder blends of drug and excipients are shown in Table no.16 showing that blend of powder mass was good flowing.
- When compared to pure drug and ration of bilastine solid dispersions, the solid dispersion comprising drug: PEG4000 (1:2) is regarded a quick release dosage form of bilastine as shown in Table no. 17
- All the 12 formulations, the average weight, thickness, hardness, drug content, friability, disintegration values were within the acceptable limits shows in Table no.18.
- From Table no. 19, dissolution studies shows higher release for F12 formulation was about 99.99 ±0.012% at 300 seconds which was influenced by the composition and concentration of polymer.

- The F12 follows first order because r^2 values for first order (0.9964) are higher than zero order (0.9953) is displayed in Table no.20.
- The dissolution profile of optimize formulation at 40°c/75%RH shows no significant change in the dissolution profile and also there was no significant changes observed in case of physical appearance and dissolution studies when compared with initial samples. Thus, it implies that formulation F12 was found to be stable shows in Table no.21

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MOLECULAR PHARMACEUTICS (NANO TECHNOLOGY & TARGETED DDS) (NTDS)

(MPH 201T)

Scope

This course is designed to impart knowledge on the area of advances in novel drug delivery systems.

Objectives

Upon completion of the course student shall be able to understand

- The various approaches for development of novel drug delivery systems.
- The criteria for selection of drugs and polymers for the development of NTDS
- The formulation and evaluation of novel drug delivery systems.

THEORY		60 Hrs
1.	Targeted Drug Delivery Systems: Concepts, Events and biological process involved in drug targeting. Tumor targeting and Brain specific delivery.	12 Hrs
2	Targeting Methods: introduction preparation and evaluation. Nano Particles & Liposomes: Types, preparation and evaluation.	12 Hrs
3	Micro Capsules / Micro Spheres: Types, preparation and evaluation , Monoclonal Antibodies ; preparation and application, preparation and application of Niosomes, Aquasomes, Phytosomes, Electrosomes.	12 Hrs
4	Pulmonary Drug Delivery Systems : Aerosols, propellents, ContainersTypes, preparation and evaluation, Intra Nasal Route Delivery systems; Types, preparation and evaluation.	12 Hrs
5	Nucleic acid based therapeutic delivery system : Gene therapy, introduction (ex-vivo & in-vivo gene therapy). Potential target diseases for gene therapy (inherited disorder and cancer). Gene expression systems (viral and nonviral gene transfer). Liposomal gene delivery systems. Biodistribution and Pharmacokinetics. knowledge of therapeutic antisense molecules and aptamers as drugs of future.	12 Hrs

REFERENCES

1. Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded,Marcel Dekker, Inc., New York, 1992.
2. S.P.Vyas and R.K.Khar, Controlled Drug Delivery - concepts and advances, VallabhPrakashan, New Delhi, First edition 2002.
3. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, NewDelhi, First edition 1997 (reprint in 2001).

APPLICABILITY OF RAW BANANA AS SUPER DISINTEGRANT IN THE DESIGN OF BUPROPION HCl ORODISPERSIBLE TABLETS

Dissertation submitted to

Jawaharlal Nehru Technological University, Kakinada, A.P

In Partial Fulfillment of the Requirement for the Award of the Degree of

MASTER OF PHARMACY

In

PHARMACEUTICS

By

VEGESNA CHANDINI

(Regd no-193G1S0306)

Under the guidance of

Ms. Dr. J. Anu Pravallika M.Pharm., Ph.D.
Associate professor

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Department of Pharmaceutics

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Aditya Nagar, ADB Road, surampalem, E.G.Dist. , A.P
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EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled **"APPLICABILITY OF RAW BANANA AS SUPER DISINTEGRANT IN THE DESIGN OF BUPROPION HCl ORODISPERSIBLE TALETS"** is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of **Master of Pharmacy in Pharmaceutics**. This is a bonafied work carried out by **VEGESNA CHANDINI (Regd No: 193G1S0306)** under the guidance and supervision of Associate Professor **Ms. Dr. J. Anu Pravallika**, Aditya Pharmacy college, surampalem.

Place: surampalem

Date:

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SIGNATURE OF EVALUATOR 2

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DECLERATION

I, VEGESNA CHANDINI (Regd No:193G1S0306), do hereby declare that the dissertation entitled APPLICABILITY OF RAW BANANA AS SUPER DISINTEGRANT IN THE DESIGN OF BUPROPION HCl ORODISPERSIBLE TALETS" is a record of genuine research work carried out by me under the supervision of **Ms. Dr. J. Anu Pravallika, Associate Professor**, Aditya Pharmacy College, Surampalem. The work reported here in has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

V. chandini

Place: surampalem
Date: 1/12/21

VEGESNA CHANDINI
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The drug-polymer interaction studies were carried out using FTIR. From the results, it was observed that there no significant physical or chemical interactions were observed between the drug and polymers used.

The results of the study clearly indicated the superiority of raw banana on the design of orodispersible tablets compared to sodium starch glycolate.

CONCLUSION:

The prepared orodispersible tablets could able to extend the drug release over a period of 1 hour and exhibited good physico-chemical properties. The prepared tablets were evaluated for all the tests and the results indicated the acceptable limits. Among all the formulations prepared with 2 different polymers BRB5 showed an effective drug release when compared with already established synthetic polymer. Hence the applicability of raw banana as superdisintegrant was successfully tested in the design of Bupropion HCl orodispersible tablets.

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MODERN PHARMACEUTICS
(MPH 103T)

Scope

Course designed to impart advanced knowledge and skills required to learn various aspects and concepts at pharmaceutical industries

Objectives

Upon completion of the course, student shall be able to understand

- The elements of preformulation studies.
- The Active Pharmaceutical Ingredients and Generic drug Product development
- Industrial Management and GMP Considerations.
- Optimization Techniques & Pilot Plant Scale Up Techniques
- Stability Testing, sterilization process & packaging of dosage forms.

THEORY 60 HRS

1.	a. Preformation Concepts – Drug Excipient interactions - different methods, kinetics of stability, Stability testing. Theories of dispersion and pharmaceutical Dispersion (Emulsion and Suspension, SMEDDS) preparation and stability Large and small volume parental - physiological and formulation consideration, Manufacturing and evaluation.	10 Hrs
	b. Optimization techniques in Pharmaceutical Formulation: Concept and parameters of optimization, Optimization techniques in pharmaceutical formulation and processing. Statistical design, Response surface method, Contour designs, Factorial designs and application in formulation	10 Hrs
2	Validation : Introduction to Pharmaceutical Validation, Scope & merits of Validation, Validation and calibration of Master plan, ICH & WHO guidelines for calibration and validation of equipments, Validation of specific dosage form, Types of validation. Government regulation, Manufacturing Process Model, URS, DQ, IQ, OQ & P.Q. of facilities.	10 Hrs
3	cGMP & Industrial Management: Objectives and policies of current good manufacturing practices, layout of buildings, services, equipments and their maintenance Production management: Production organization, , materials management, handling and transportation, inventory management and control, production and planning control, Sales forecasting, budget and cost control, industrial and personal relationship. Concept of Total Quality Management.	10 Hrs

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4	Compression and compaction: Physics of tablet compression, compression, consolidation, effect of friction, distribution of forces, compaction profiles. Solubility.	10 Hrs
5	Study of consolidation parameters; Diffusion parameters, Dissolution parameters and Pharmacokinetic parameters, Heckel plots, Similarity factors – f2 and f1, Higuchi and Peppas plot, Linearity Concept of significance, Standard deviation , Chi square test, students T-test , ANOVA test.	10 Hrs

REFERENCES

1. Theory and Practice of Industrial Pharmacy By Lachmann and Libermann
2. Pharmaceutical dosage forms: Tablets Vol. 1-3 by Leon Lachmann.
3. Pharmaceutical Dosage forms: Disperse systems, Vol, 1-2; By Leon Lachmann.
4. Pharmaceutical Dosage forms: Parenteral medications Vol. 1-2; By Leon Lachmann.
5. Modern Pharmaceutics; By Gillbert and S. Banker.
6. Remington's Pharmaceutical Sciences.
7. Advances in Pharmaceutical Sciences Vol. 1-5; By H.S. Bean & A.H. Beckett.
8. Physical Pharmacy; By Alfred martin
9. Bentley's Textbook of Pharmaceutics – by Rawlins.
10. Good manufacturing practices for Pharmaceuticals: A plan for total quality control, Second edition; By Sidney H. Willig.
11. Quality Assurance Guide; By Organization of Pharmaceutical producers of India.
12. Drug formulation manual; By D.P.S. Kohli and D.H.Shah. Eastern publishers, New Delhi.
13. How to practice GMPs; By P.P.Sharma. Vandhana Publications, Agra.
14. Pharmaceutical Process Validation; By Fra. R. Berry and Robert A. Nash.
15. Pharmaceutical Preformulations; By J.J. Wells.
16. Applied production and operations management; By Evans, Anderson, Sweeney and Williams.
17. Encyclopaedia of Pharmaceutical technology, Vol I – III.

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APPLICABILITY OF TRAGACANTH IN THE DESIGN OF HYDROCHLOROTHIAZIDE FLOATING TABLETS

Dissertation submitted to the JNTU – K University in partial fulfilment of

the requirements for the degree of Master of Pharmacy

Jawaharlal Nehru Technological University, Kakinada, A.P

MASTER OF PHARMACY

IN PHARMACEUTICS

BY

VOGIREDDY ALEKYA (193G1S0307)

Under the guidance of

Dr. J. Anu Pravalika M. Pharmacy, Ph.D

Associate Professor

Department of Pharmaceutics

Aditya Pharmacy College

Surampalem – 533437

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2019- 2021

EVALUTION CERTIFICATE

This is to certify that the dissertation entitled "APPLICABILITY OF TRAGACANTH IN THE DESIGN OF HYDROCHLOROTHIAZIDE FLOATING TABLETS" is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfilment for the award of the degree of Master of Pharmacy in Pharmaceutics. This is a bonafied work carried out by Vogireddy Alekya (193G1S0307) under the guidance and supervision of Dr. J. Anu Pravalika, Associate Professor, Aditya Pharmacy College, Surampalem.

Date:

Place:

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SIGNATURE OF EVALUATOR 1 SIGNATURE OF EVALUATOR 2

DECLARATION

I, Vogireddy Alekya (193G1S0307), do hereby declare that the dissertation entitled "APPLICABILITY OF TRAGACANTH IN THE DESIGN OF HYDROCHLOROTHIAZIDE FLOATING TABLETS" is a genuine research work carried out by me under the supervision of Dr.J.Anu Pravalika, Associate Professor, Aditya Pharmacy College, Surampalem. The work reported herein has not been previously submitted by other person for qualification at any other University or academic institution unless otherwise referenced or acknowledged.

V. Alekya
(VOGIREDDY ALEKYA)

193G1S0307

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The Tragacanth and carbopol formulations have zero order kinetics. In all of the formulations, the diffusion method is implemented.

The drug-polymer interaction studies were carried out using FTIR. From the results, it was observed that there are no significant physical or chemical interactions between the drug and polymers used.

The results of the study clearly indicated the superiority of tragacanth on the design of floating tablets compared to carbopol.

6.2. CONCLUSION

The manufactured floating tablets had good physico-chemical characteristics and were able to extend drug release for up to 6 hours. All of the tests were performed on the produced tablets, and the results were within acceptable limits. When compared to a well-known synthetic polymer, HZT5 showed the most effective drug release of all the formulations made with two distinct polymers. As a result, the suitability of Tragacanth as a natural polymer in the construction of Hydrochlorothiazide floating tablets was effectively investigated.

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APPENDIX-A

(See regulation 8)

PHARM.D. SYLLABUS

First Year

1.1 HUMAN ANATOMY & PHYSIOLOGY (THEORY)

Theory : 3 Hrs. /Week

1. **Scope and Objectives:** This course is designed to impart a fundamental knowledge on the structure and functions of the human body. It also helps in understanding both homeostasis mechanisms and homeostatic imbalances of various body systems. Since a medicament, which is produced by pharmacist, is used to correct the deviations in human body, it enhances the understanding of how the drugs act on the various body systems in correcting the disease state of the organs.

2. **Upon completion of the course the student shall be able to:**
   a. describe the structure (gross and histology) and functions of various organs of the human body;
   b. describe the various homeostatic mechanisms and their imbalances of various systems;
   c. identify the various tissues and organs of the different systems of the human body;
   d. perform the hematological tests and also record blood pressure, heart rate, pulse and Respiratory volumes;
   e. appreciate coordinated working pattern of different organs of each system; and
   f. appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body

3. **Course materials:**

   Text books

   a. Tortora Gerard J. and Nicholas, P. Principles of anatomy and physiology Publisher Harpercollins college New York.
   b. Wilson, K.J.W. Ross and Wilson's foundations of anatomy and physiology. Publisher: Churchill Livingstone, Edinburg.

   Reference books

   a. Guyton arthur, C. *Physiology of human body*. Publisher: Holtsaunders.
   b. Chatterjee,C.C. *Human physiology*. Volume 1&11. Publisher: medical allied agency, Calcutta.
   c. Peter L. Williams, Roger Warwick, Mary Dyson and Lawrence, H.
   d. *Gray's anatomy*. Publisher:Churchill Livingstone, London

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DRUG UTILIZATION ANALYSIS AND PRESCRIPTION PATTERN MONITORING IN PATIENTS WITH CORONARY ARTERY DISEASE

Dissertation submitted to

Jawaharlal Nehru Technological University,

Kakinada.

In partial fulfilment of the award of the degree of

DOCTOR OF PHARMACY

Submitted by,

M. SAI HARSHA	(Reg.no. 163G1T0011)
LAIGIN SEBASTIAN	(Reg. no. 163G1T0025)
SWATI SINHA	(Reg. no. 163G1T0022)
GUNDABATHULA SUKESH	(Reg. no. 163G1T0007)

Under the Guidance of

Clinical Guide

Dr. CHANDRAMOULI S MANTRAVADI

MD, DM., IDCC, PDF(EP),

Consultant Cardiologist and Electrophysiologist,

Trust Hospital, Kakinada.

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2020 - 2021

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Aditya Nagar, ADB Road, Surampalem, E.G District., A.P – 533437.

EVALUATION CERTIFICATE

This is to certify that the work embodied in this dissertation entitled "*Drug Utilization Analysis and Prescription Pattern Monitoring in patients with Coronary Artery Disease*", submitted to "*Jawaharlal Nehru Technological University*", Kakinada, in partial fulfilment to the requirement for the award of Degree of '*Doctor of Pharmacy*', is a bonafide work carried out by, *M. Sai Harsha* (163G1T0011), *Laigin Sebastian* (163G1T0025), *Swati Sinha* (163G1T0022), and *Gundabathula Sukesh* (163G1T0007), during the academic year 2020-2021, under the guidance and direct supervision of *Dr. M. Krishna Priya*, Assistant Professor, Department of Pharmacy Practice and Pharm. D., Aditya Pharmacy College, Surampalem.

Date:

SIGNATURE OF EVALUATOR

Place: Surampalem.

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Date:

Place: Surampalem

DECLARATION

We, *M. Sai Harsha , Laigin Sebastian, Swati Sinha,* and *Gundabathula Sukesh,* do hereby declare that the work embodied in this dissertation entitled "*Drug Utilization Analysis and Prescription Pattern Monitoring in patients with Coronary Artery Disease*", submitted to " *Jawaharlal Nehru Technological University*", Kakinada, in partial fulfilment to the requirement for the award of Degree of '*Doctor of Pharmacy*', is a bonafide work carried out during the academic year 2020-2021, under the guidance and direct supervision of *Dr. M. Krishna Priya*, Assistant Professor, Department of Pharmacy Practice and Pharm. D., Aditya Pharmacy College, Surampalem.

We do further declare that this work is original and has not been submitted previously for award of any other degree or similar title. The information furnished in this dissertation is genuine to the best of our knowledge.

GUNDABATHULA SUKESH
(163G1T0007)

M. SAI HARSHA
(163G1T0011)

SWATI SINHA
(163G1T0022)

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ABSTRACT

Aim: To analyze the drug utilization and prescription pattern of drugs prescribed to the patients with Coronary Artery Disease.

Objectives: To evaluate the clinical characteristics, pattern of drug utilization and the adherence to WHO prescribing indicators and NLEM in patients with coronary artery disease and assess the cardiovascular drug use among them and observe any sort drug interactions that may occur.

Method: The method of study followed is a cross-sectional study, where the medical records of patients are reviewed during the study period extended over three months.

Results and Discussion: A total of 100 individuals aged between 18-80 was included in the study. The mean age of the study group was 59.42 ± 11.65 years. There was a high prevalence of major cardiovascular risk factors, Hypertension 67% and Diabetes mellitus 42%. Chest pain was found to be most common symptoms. The prescribing pattern was rational, following a standard treatment guideline, so was the treatment getting effective. Antiplatelets and Statins were dominant cardiovascular drugs when compared to others while Antianginals, Beta blockers, ACE inhibitors, Diuretics are predominant in anti-hypertensive group. Diuretics were the most prescribed drug class in LV dysfunction. ARNI was prescribed in Ejection Fraction less than 30% patients. The study reveals 58.33% drugs compiling with that of NLEM 2015.

Conclusion: The prevalence of CAD is still found increasing which makes it need of the hour to implement disease prevention and management program and initiate patient education programs.

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Chapter 5

CONCLUSION

The study concluded that most of the patients, who suffered from CAD was of the age group 50-59, which may be due to their food habits, smoking, poor health hygiene and other life style changes.

The prescribing pattern was rational, following a standard treatment guideline, so was the treatment getting effective. The irrationality could be due to lack of patient education and negligence by the patients.

Palpitation was observed to the predominant symptom in females compared to males where it was found less. An underlying risk factor increased the incidence of CAD; Females who had Diabetes were found to have CAD even before menopause. The maximum number of patients were males, may be due to smoking and alcohol habits among them.

Antiplatelets and Statins were dominant cardiovascular drugs when compared to others while Antianginals, Beta blockers, ACE inhibitors, Diuretics are predominant in anti-hypertensive group. Diuretics were the most prescribed drug class in LV dysfunction. ARNI was prescribed in Ejection Fraction less than 30% patients. The study reveals 58.33% drugs compiling with that of NLEM 2015.

The study has some limitations which leads to say it cannot be a standard one because it is carried out in a tertiary care hospital, may not be in accordance with data to other generalized hospitals. Besides, the sample size does not reflect the actual population and prescription pattern in whole country.

A further deep insight into the function of left ventricle and the ejection fraction changes could help in selection of drugs in way to avoid polypharmacy medication.

1.3 MEDICINAL BIOCHEMISTRY (THEORY)

Theory : 3 Hrs. /Week

1. **Scope of the Subject:** Applied biochemistry deals with complete understanding of the molecular level of the chemical process associated with living cells.Clinical chemistry deals with the study of chemical aspects of human life in health and illness and the application of chemical laboratory methods to diagnosis, control of treatment, and prevention of diseases.

2. **Objectives of the Subject** (Know, do, appreciate) :

   The objective of the present course is providing biochemical facts and the principles to the students of pharmacy. Upon completion of the subject student shall be able to –

   a. understand the catalytic activity of enzymes and importance of isoenzymes in diagnosis of diseases;
   b. know the metabolic process of biomolecules in health and illness (metabolic disorders);
   c. understand the genetic organization of mammalian genome; protein synthesis; replication; mutation and repair mechanism;
   d. know the biochemical principles of organ function tests of kidney, liver and endocrine gland; and
   e. do the qualitative analysis and determination of biomolecules in the body fluids.

   Text books (Theory)

   a. Harpers review of biochemistry - Martin
   b. Text book of biochemistry – D.Satyanarayana
   c. Text book of clinical chemistry- Alex kaplan &Laverve L.Szabo

   Reference books (Theory)

   a. Principles of biochemistry -- Lehninger
   b. Text book of biochemistry -- Ramarao
   c. Practical Biochemistry-David T.Plummer.
   d. Practical Biochemistry-Pattabhiraman.

3. **Lecture wise programme:**

   Topics

   1 **Introduction to biochemistry:** Cell and its biochemical organization, transport process across the cell membranes. Energy rich compounds; ATP, Cyclic AMP and their biological significance.

   2 **Enzymes**: Definition; Nomenclature; IUB classification; Factor affecting enzyme activity; Enzyme action; enzyme inhibition. Isoenzymes and their therapeutic and diagnostic applications; Coenzymes and their biochemical role and deficiency diseases.

   3 **Carbohydrate metabolism**: Glycolysis, Citric acid cycle (TCA cycle), HMP shunt, Glycogenolysis, gluconeogenesis, glycogenesis. Metabolic disorders of carbohydrate metabolism (diabetes mellitus and glycogen storage diseases); Glucose, Galactose tolerance test and their significance; hormonal regulation of carbohydrate metabolism.

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4 **Lipid metabolism:** Oxidation of saturated (β-oxidation); Ketogenesis and ketolysis; biosynthesis of fatty acids, lipids; metabolism of cholesterol; Hormonal regulation of lipid metabolism. Defective metabolism of lipids (Atheroslerosis, fatty liver, hypercholesterolmiea).

5 **Biological oxidation:** Coenzyme system involved in Biological oxidation. Electron transport chain (its mechanism in energy capture; regulation and inhibition); Uncouplers of ETC; Oxidative phosphorylation;

6 **Protein and amino acid metabolism:** protein turn over; nitrogen balance; Catabolism of Amino acids (Transamination, deamination & decarboxylation). Urea cycle and its metabolic disorders; production of bile pigments; hyperbilirubinemia, porphoria, jaundice. Metabolic disorder of Amino acids.

7 **Nucleic acid metabolism:** Metabolism of purine and pyrimidine nucleotides; Protein synthesis; Genetic code; inhibition of protein synthesis; mutation and repair mechanism; DNA replication (semiconservative /onion peel models) and DNA repair mechanism.

8 **Introduction to clinical chemistry: Cell**; composition; malfunction; Roll of the clinical chemistry laboratory.

9 **The kidney function tests:** Role of kidney; Laboratory tests for normal function includes-

a) Urine analysis (macroscopic and physical examination, quantitative and semiquantitative tests.)

b) Test for NPN constituents. (Creatinine /urea clearance, determination of blood and urine creatinine, urea and uric acid)

c) Urine concentration test

d) Urinary tract calculi. (stones)

10 **Liver function tests:** Physiological role of liver, metabolic, storage, excretory, protective, circulatory functions and function in blood coagulation.

a) Test for hepatic dysfunction-Bile pigments metabolism.

b) Test for hepatic function test- Serum bilirubin, urine bilirubin, and urine urobilinogen.

c) Dye tests of excretory function.

d) Tests based upon abnormalities of serum proteins.

Selected enzyme tests.

11 **Lipid profile tests:** Lipoproteins, composition, functions. Determination of serum lipids, total cholesterol, HDL cholesterol, LDL cholesterol and triglycerides.

12 **Immunochemical techniques** for determination of hormone levels and protein levels in serum for endocrine diseases and infectious diseases.

Radio immuno assay (RIA) and Enzyme Linked Immuno Sorbent Assay (ELISA)

13 **Electrolytes:** Body water, compartments, water balance, and electrolyte distrubution. Determination of sodium, calcium potassium, chlorides, bicarbonates in the body fluids.

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PRESCRIPTION PATTERN MONITORING AND PROGRESSION OF KIDNEY DISEASE IN HYPERTENSIVE CHRONIC KIDNEY DISEASE PATIENTS

Dissertation submitted to

Jawaharlal Nehru Technological University,

Kakinada.

In partial fulfilment of the award of the degree of

DOCTOR OF PHARMACY

Submitted by

RONGALA LOKESH	(Reg. No.163G1T0020)
PIJUS KANTI JANA	(Reg. No.163G1T0016)
CHITRADA SAIRAM	(Reg. No.163G1T0006)
PAILA LAXMI	(Reg. No.163G1T0014)

Under the Guidance of

Clinical Guide

DR. PRAVEEN SANA

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2020 - 2021

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EVALUATION CERTIFICATE

This is to certify that the work embodied in this dissertation entitled "*Prescription pattern monitoring and progression of kidney disease in hypertensive chronic kidney disease patients*", submitted to " *Jawaharlal Nehru Technological University*", Kakinada, in partial fulfilment to the requirement for the award of Degree of '*Doctor of Pharmacy*', is a bonafide work carried out by, ***Rongala Lokesh*** (163G1T0020), ***Pijus Kanti Jana*** (163G1T0016), ***Chitrada Sairam*** (163G1T0006), ***Paila Laxmi*** (163G1T0014), during the academic year 2020-2021, under the guidance and direct supervision of ***Dr. M. Krishna Priya***, Assistant Professor, Department of Pharmacy Practice and Pharm. D., Aditya Pharmacy College, Surampalem.

Date:

SIGNATURE OF EVALUATOR

Place: Surampalem.

ADITYA PHARMACY COLLEGE SURAMPALEM

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ADITYA PHARMACY COLLEGE
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Aditya Nagar, ADB Road, Surampalem, E.G District., A.P - 533437

Date:

Place: Surampalem

DECLARATION

We, *Rongala Lokesh , Pijus Kanti Jana, Chitrada Sairam, Paila Laxmi,* do hereby declare that the work embodied in this dissertation entitled ***"Prescription pattern monitoring and progression of kidney disease in hypertensive chronic kidney disease patients"***, submitted to " ***Jawaharlal Nehru Technological University***", Kakinada, in partial fulfilment to the requirement for the award of Degree of '***Doctor of Pharmacy***',is a bonafide work carried out during the academic year 2020-2021, under the guidance and direct supervision of *Dr. M. Krishna Priya*, Assistant Professor, Department of Pharmacy Practice and Pharm. D., Aditya Pharmacy College, Surampalem.

We do further declare that this work is original and has not been submitted previously for award of any other degree or similar title. The information furnished in this dissertation is genuine to the best of our knowledge.

RONGALA LOKESH
(163G1T0020)

PIJUS KANTI JANA
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CHITRADA SAIRAM
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ABSTRACT

Aim: To analyze the prescription pattern and progression of kidney disease in hypertensive chronic kidney disease patients.

Objectives:

To study the demographic details of CKD patients.

To study the category of drugs prescribed to CKD patients.

To study the average number of drugs per patient.

To assess the Hypertension control in CKD patients.

To assess the adherence of prescription to WHO core prescribing indicators.

Assess the prescribing pattern of Anti-hypertensive drugs.

Methodology: Cross- Sectional study is a type of observational study where the collection of data is done at specific time without influencing the subjects and then analyzing the data variables of the sample population

Results and Discussion:

The average age of patients with CKD tends to be 50.42 ± 14.24 years. The WHO prescribing pattern parameters for evaluating was found to be 100% in all the prescriptions encountered. The incidence of CKD was found to be higher in males compared to females. The highest prevalence of CKD was found to be in the age group of 40-49 yrs. The incidence of chronic kidney disease was very highin patients with diabetes compared to cardiovascular disease.

Difficult to controlhypertension, requiring 4 or 5 antihypertensive agents was seen in a largeproportion of patients with either Diabetes or cardiovascular disease with co- existent chronic kidney disease. Across all stages of CKD, a large proportion of patients required either 4 or 5 drugs for hypertension control.

Conclusion:

Calcium channel blockers were the most commonly administered drugs followed by diuretics. The co-morbidconditions present among the CKD patients, on analysis, showed patients with Diabetes were more prone to kidney disease and those with diabetes and hypertension were administered maximum number of antihypertensives.

Chapter 5

CONCLUSION

The study concluded that most of the patients who suffered from hypertensive chronic kidney disease were of age group 40-49 yrs. which was in contrast to the studies conducted outside India where the patients were more among age group 50-59 yrs. This increasing incidence in the younger population may be due to changes in Indian life style conditions, socio economic factors, a high incidence of Diabetes in the region and known and unknown nephrotoxins.

The prescribing pattern was rational, in accordance with standard treatment guidelines (JNC-8 Hypertension guideline algorithm). Calcium channel blockers was the most administered drug followed by Diuretics, Beta adrenergic blockers, alpha adrenergic blockers, centrally acting alpha agonists, Angiotensin receptor blockers, Vasodilators and ACE-Inhibitors. Across all the stages of CKD in an average of 4-5 drugs was administered to each patient which was highly observed in patients of progression from stage IV to stage V.

The co-morbid conditions present among the CKD patients, on analysis, showed patients with Diabetes were more prone to kidney disease and those with diabetes and hypertension were administered maximum number of antihypertensives.

The study has some limitations which leads to say it cannot be standard one because it is carried out in a tertiary care hospital which may not be in accordance with data of other generalized hospitals. Besides, the sample size does not reflect the actual population and prescription pattern of whole country.

Second year

2.1 PATHOPHYSIOLOGY (THEORY)

Theory : 3 Hrs. /Week

1. **Scope of the Subject:** This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic Pathophysiological mechanisms. Hence it will not only help to study the syllabus of pathology, but also to get baseline knowledge of its application in other subject of pharmacy.

2. **Objectives of the Subject :** Upon completion of the subject student shall be able to –
   a. describe the etiology and pathogenesis of the selected disease states;
   b. name the signs and symptoms of the diseases; and
   c. mention the complications of the diseases.

   Text books (Theory)
   a. Pathologic basis of disease by- Cotran, Kumar, Robbins
   b. Text book of Pathology- Harsh Mohan
   c. Text book of Pathology- Y.M. Bhinde

   Reference books (Theory)
   a. Clinical Pharmacy and Therapeutics; Second edition; Roger Walker; Churchill Livingstone publication

3. **Detailed syllabus and lecture wise schedule :**

   Chapter

   1 **Basic principles of cell injury and Adaptation**
   a) Causes, Pathogenesis and morphology of cell injury
   b) Abnormalities in lipoproteinaemia, glycogen infiltration and glycogen infiltration and glycogen infiltration and glycogen storage diseases

   2 **Inflammation**
   a) Pathogenesis of acute inflammation, Chemical mediators in inflammation, Types of chronic inflammation
   b) Repairs of wounds in the skin, factors influencing healing of wounds

   3 **Diseases of Immunity**
   a) Introduction to Tand B cells
   b) MHC proteins or transplantation antigens
   c) Immune tolerance
   - Hypersensitivity
     Hypersensitivity type I, II, III, IV, Biological significance, Allergy due to food, chemicals and drugs
   - Autoimmunity
     Criteria for autoimmunity, Classifications of autoimmune diseases in man, mechanism of autoimmunity, Transplantation and immunologic tolerance, allograft rejections, transplantation antigens, mechanism of rejection of allograft.
   - Acquired immune deficiency syndrome (AIDS)

- Amylodosis

4 **Cancer:** differences between benign and malignant tumors, Histological diagnosis of malignancy, invasions and metastasis, patterns of spread, disturbances of growth of cells, classification of tumors, general biology of tumors, spread of malignant tumors, etiology and pathogenesis of cancer.

5 Types of shock, mechanisms, stages and management

6 Biological effects of radiation

7 Environmental and nutritional diseases
   i) Air pollution and smoking- SO2,NO, NO2, and CO
   ii) Protein calorie malnutrition, vitamins, obesity, pathogenesis of starvation.

8 Pathophysiology of common diseases
   a. Parkinsonism
   b. Schizophrenia
   c. Depression and mania
   d. Hypertension,
   e. Stroke (ischaemic and hemorrhage)
   f. Angina, CCF, Atherosclerosis, Myocardial infarction
   g. Diabetes Mellitus
   h. Peptic ulcer and inflammatory bowel diseases
   i. Cirrhosis and Alcoholic liver diseases
   j. Acute and chronic renal failure
   k. Asthma and chronic obstructive airway diseases

9 Infectious diseases :
   Sexually transmitted diseases (HIV,Syphilis,Gonorrhea), Urinary tract infections, Pneumonia, Typhoid, Tuberculosis, Leprosy, Malaria Dysentery (bacterial and amoebic), Hepatitis- infective hepatitis.

4. Assignments :

Title of the Experiment

1 Chemical Mediators of inflammation
2 Drug Hypersensitivity
3 Cigarette smoking & its ill effects
4 Biological Effects of Radiation
5 Etiology and hazards of obesity
6 Complications of diabetes
7 Diagnosis of cancer
8 Disorders of vitamins
9 Methods in Pathology-Laboratory values of clinical significance
10 Pathophysiology of Dengue Hemorrhagic Fever (DHF)

Format of the assignment

1 Minimum & Maximum number of pages.
2. Reference(s) shall be included at the end.
3. Assignment can be a combined presentation at the end of the academic year
4. It shall be computer draft copy.
5. Name and signature of the student
6. Time allocated for presentation may be 5-12 Min.

ADITYA PHARMACY COLLEGE SURAMPALEM

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A STUDY OF INCIDENCE, TYPES, TREATMENT PROTOCOLS AND TARGET ORGAN DAMAGES INVOLVED IN DIABETIC PATIENTS.

Dissertation submitted to

Jawaharlal Nehru Technological University,

Kakinada.

In partial fulfilment of the award of the degree of

DOCTOR OF PHARMACY

Submitted by,

B.BHARATHI DEVI	**(Reg. No.163G1T0004)**
CH.D.S.N. KIRANMAI	**(Reg. No.163H1T0005)**
SIDDHI KUMARI	**(Reg. No.163G1T0021)**
D.KEERTHANA	**(Reg. No.163G1T0027)**

Under the Guidance of

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DR. M. PHANI RAMANA BHUSHAN

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Trust Hospital, Kakinada.

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DR. M. KRISHNA PRIYA, Pharm. D

Assistant Professor,

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Aditya Pharmacy College,

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2020 - 2021

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Aditya Nagar, ADB Road, Surampalem, E.G District., A.P – 533437.

EVALUATION CERTIFICATE

This is to certify that the work embodied in this dissertation entitled "***A Study of incidence, types, treatment protocols and target organ damage involved in diabetic patients***", submitted to " ***Jawaharlal Nehru Technological University***", Kakinada, in partial fulfilment to the requirement for the award of Degree of '***Doctor of Pharmacy***', is a bonafide work carried out by, ***B. Bharathi Devi*** (163G1T0004), ***CH.D.S.N. Kiranmai*** (163G1T0005), ***Siddhi Kumari*** (163G1T0021), ***D. Keerthana*** (163G1T0027), during the academic year 2020-2021, under the guidance and direct supervision of ***Dr. M. Krishna Priya***, Assistant Professor, Department of Pharmacy Practice and Pharm. D., Aditya Pharmacy College, Surampalem.

Date:

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Place: Surampalem.

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Date:

Place: Surampalem

DECLARATION

We, *B. Bharathi Devi, CH.D.S.N. Kiranmai, Siddhi Kumari, D. Keerthana,* do hereby declare that the work embodied in this dissertation entitled **"*A STUDY OF INCIDENCE,TYPES,TREATMENT PROTOCOLS AND TARGET ORGAN DAMAGE INVOLVED IN DIABETIC PATIENTS*"**, submitted to " ***Jawaharlal Nehru Technological University***", Kakinada, in partial fulfilment to the requirement for the award of Degree of '***Doctor of Pharmacy***', is a bonafide work carried out during the academic year 2020-2021, under the guidance and direct supervision of ***Dr. M. Krishna Priya***, Assistant Professor, Department of Pharmacy Practice and Pharm. D., Aditya Pharmacy College, Surampalem.

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Chapter 5
CONCLUSION

The study concludes that the incidence of diabetes is observed mostly in 55- 65 years followed by 45-55 yrs. Males are more prone to develop diabetes compared to females, due to various socioeconomic factors and disease conditions. The incidence of diabetes in our study is 55% of males and 45% of females. BMI should be maintained in order to reduce the incidence of diabetes and other complications. People who were with overweight are more likely to develop diabetes as well as target organ damage. Type 2 diabetes have more incidence compared to type 1 in our study. Combinational therapy is prescribed effectively compared to monotherapy. Along with medications, proper diet and exercise should be maintained in order to control glucose levels. Selective appropriate treatment regimen is metformin, along with Glimiperide and Voglibose in our study. Overall in our study we found the proper identification of the disease condition, selective appropriate therapy is given to determine the better prognosis of the disease.

4.1 PHARMACOTHERAPEUTICS – III (PRACTICAL)

Practical : 3 Hrs./Week

Practicals:

Hospital postings for a period of at least 50 hours is required to understand the principles and practice involved in ward round participation and clinical discussion on selection of drug therapy. Students are required to maintain a record of 15 cases observed in the ward and the same should be submitted at the end of the course for evaluation. Each student should present at least two medical cases they have observed and followed in the wards.

Etiopathogenesis and pharmacotherapy of diseases associated with following systems/ diseases:

Title of the topic

1. **Gastrointestinal system:** Peptic ulcer disease, Gastro Esophageal Reflux Disease, Inflammatory bowel disease, Liver disorders - Alcoholic liver disease, Viral hepatitis including jaundice, and Drug induced liver disorders.
2. **Haematological system:** Anaemias, Venous thromboembolism, Drug induced blood disorders.
3. **Nervous system:** Epilepsy, Parkinsonism, Stroke, Alzheimer's disease,
4. **Psychiatry disorders:** Schizophrenia, Affective disorders, Anxiety disorders, Sleep disorders, Obsessive Compulsive disorders
5. Pain management including Pain pathways, neuralgias, headaches.
6. Evidence Based Medicine

Assignments:

Students are required to submit written assignments on the topics given to them. Topics allotted should cover recent developments in drug therapy of various diseases. A minimum of THREE assignments [1500 – 2000 words] should be submitted for evaluation.

Format of the assignment:

1. Minimum & Maximum number of pages
2. Reference(s) shall be included at the end.
3. Assignment can be a combined presentation at the end of the academic year
4. It shall be computer draft copy
5. Name and signature of the student
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination :

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	**20**	**70**
Duration	**03hrs**	**04hrs**

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

ASSESSMENT OF EFFICACY OF PROTON PUMP INHIBITORS IN GASTRO – ESOPHAGEAL REFLUX DISEASE

Dissertation submitted to

Jawaharlal Nehru Technological University,

Kakinada.

In partial fulfilment of the award of the degree of

DOCTOR OF PHARMACY

Submitted by

M.MOUNIKA REDDY	**(Reg. No.163G1T0012)**
P.JYOSHNA SRI	**(Reg. No.163G1T0013)**
KARABI DAS	**(Reg. No.163G1T0009)**
P.BHANU SRI	**(Reg. No.163G1T0015)**

Under the Guidance of

Clinical Guide

DR. R. SRINIVASA MURTY

MD (AIIMS), DM (AIIMS)

Consultant Gastroenterologist and Hepatologist

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Surampalem-533437, Andhra Pradesh.

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EVALUATION CERTIFICATE

This is to certify that the work embodied in this dissertation entitled "***Assessment of efficacy of proton pump inhibitors in Gastro-esophageal reflux disease***", submitted to " ***Jawaharlal Nehru Technological University***", Kakinada, in partial fulfilment to the requirement for the award of Degree of '***Doctor of Pharmacy***', is a bonafide work carried out by, ***Karabi Das*** (163G1T0009), ***M. Mounika Reddy*** (163G1T0012), ***P. Jyoshna Sri*** (163G1T0013), ***P. Bhanusri*** (163G1T0015), during the academic year 2020-2021, under the guidance and direct supervision of ***Dr. M. Krishna Priya***, Assistant Professor, Department of Pharmacy Practice and Pharm. D., Aditya Pharmacy College, Surampalem.

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Place: Surampalem

DECLARATION

We, *Karabi Das, M. Mounika Reddy, P. Jyoshna Sri, P. Bhanusri,* do hereby declare that the work embodied in this dissertation entitled "***Assessment of efficacy of proton pump inhibitors in Gastro-esophageal reflux disease***", submitted to " ***Jawaharlal Nehru Technological University***", Kakinada, in partial fulfilment to the requirement for the award of Degree of '***Doctor of Pharmacy'***, is a bonafide work carried out during the academic year 2020-2021, under the guidance and direct supervision of ***Dr. M. Krishna Priya***, Assistant Professor, Department of Pharmacy Practice and Pharm. D., Aditya Pharmacy College, Surampalem.

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ABSTRACT

Aim: To assess the efficacy of Proton pump inhibitors in Gastroesophageal Reflux Disease.

Objective: To assess the PPI's efficacy in GERD patients, Healing of erosive esophagitis, Prevention of complications, Demonstrate the known treatment of strategies of esophagitis, Relief of symptoms, To assess the PPI's efficacy in GERD patients.

Method: The method of study followed is a cross-sectional study, where the medical records of patients are reviewed during the study period extended over three months.

Results and Discussion: A total of 30 individuals aged between 18-80 was included in the study. The mean age of the study group was 44.08 ± 14.82 years. According to our study out of 30 patients 66.6% are males and 33.3% are females. Most of the patients in GERD suffering with symptoms like Belching (80%), Heartburn (50%), Bloating (36.6%), Reflux (26.6%), Abdominal Pain (20%), Dysphagia (16.6%), Nausea (16.6%), Vomiting (16.6%), Chest Pain (6.6%), Persistent Nocturnal Cough (6.6%), Constipation (6.6%) and Dyspepsia (3.3%).In endoscopy evaluation we have found 43.33% patients with small hiatus hernia, 36.66% patients with large hiatus hernia, 63.33% patients with mild diffuse gastritis, 23.33% patients with severe diffuse gastritis, 16.66% patients with duodenal ulcer and 3.33% patients were found with esophageal mucosal breaks. PPIs help to decrease stomach acid over a 4 to 12-week period. Patients with GERD respond to PPI treatment, which may improve symptoms at 4 weeks and endoscopic healing rate at 8 weeks. The most frequently prescribed drug was found to be esomeprazole followed by pantoprazole.

Conclusion: PPI's are irreplaceable drugs in management of GERD. Patients with GERD respond to PPI treatment, which may improve symptoms at 4 week and endoscopic healing rate at 8 weeks. In present study total of 30 patients, all the patients were treated with PPIs in that 1 patient(3.3%) got relapsed after stopping of PPIs. Over all, PPI's are safe and most effective medical therapy for GERD due to their profound and consistent acid suppression.

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Chapter 5

CONCLUSION

Proton pump inhibitors are irreplaceable drugs in management of GERD. High doses are more effective in relieving typical GERD symptoms and some atypical symptoms.

Most of the patients have non erosive esophagitis

Most of the patients symptomatically respond to the duration of 4-8 weeks

Patients with GERD respond to PPI treatment, which may improve symptoms at 4 weeks and endoscopic healing rate at 8 weeks. The rate of symptomatic relief of PPIs in GERD patients has been shown as well controlled in 66.6% of patients, completely controlled in 30% of patients, poorly controlled in 0% of patients, Not controlled in 0% of patients, relapsed in 3.3%.

Over all, PPIs are safe and most effective medical therapy for GERD due to their profound and consistent acid suppression.

2.5 COMMUNITY PHARMACY (THEORY)

Theory : 2 Hrs. /Week

1. **Scope**: In the changing scenario of pharmacy practice in India, Community Pharmacists are expected to offer various pharmaceutical care services. In order to meet this demand, students will be learning various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counselling, health screening services for improved patient care in the community set up.

2. **Objectives:** Upon completion of the course, the student shall be able to –
   a. know pharmaceutical care services;
   b. know the business and professional practice management skills in community pharmacies;
   c. do patient counselling & provide health screening services to public in community pharmacy;
   d. respond to minor ailments and provide appropriate medication;
   e. show empathy and sympathy to patients; and
   f. appreciate the concept of Rational drug therapy.

   Text Books:
   a. Health Education and Community Pharmacy by N.S.Parmar.
   b. WHO consultative group report.
   c. Drug store & Business management by Mohammed Ali & Jyoti.

   Reference books:
   a. Handbook of pharmacy – health care.Edt. Robin J Harman. The Pharmaceutical press.
   b. Comprehensive Pharmacy Review – Edt. Leon Shargel Lippincott Williams & Wilkins.

   Special requirements:
   1. Either the college is having model community pharmacy (meeting the schedule N requirement) or sign MoU with at least 4-5 community pharmacies nearby to the college for training the students on dispensing and counselling activities.
   2. Special equipments like B.P apparatus, Glucometer, Peak flow meter, and apparatus for cholesterol estimation.

3. **Scheme of evaluation (80 Marks)**

1.	Synopsis	10
2.	Major Experiment (Counselling of patients with specific diseases – emphasis should be given on Counselling introduction, content, process and conclusion)	30
3.	Minor Experiment(Ability to measure B.P/ CBG / Lung function)	15
4.	Prescription Analysis (Analyzing the prescriptions for probable drug interaction and ability to tell the management)	15
5.	Viva – Voce	10

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4. **Lecture wise programme :**

Topics

1 **Definition, scope, of community pharmacy**
Roles and responsibilities of Community pharmacist

2 **Community Pharmacy Management**
a) Selection of site, Space layout, and design
b) Staff, Materials- coding, stocking
c) Legal requirements
d) Maintenance of various registers
e) Use of Computers: Business and health care soft wares

3 **Prescriptions** – parts of prescription, legality & identification of medication related problems like drug interactions.

4 **Inventory control in community pharmacy**
Definition, various methods of Inventory Control
ABC, VED, EOQ, Lead time, safety stock

5 **Pharmaceutical care**
Definition and Principles of Pharmaceutical care.

6 **Patient counselling**
Definition, outcomes, various stages, barriers, Strategies to overcome barriers
Patient information leaflets- content, design, & layouts, advisory labels

7 **Patient medication adherence**
Definition, Factors affecting medication adherence, role of pharmacist in improving the adherence.

8 **Health screening services**
Definition, importance, methods for screening
Blood pressure/ blood sugar/ lung function and Cholesterol testing

9 **OTC Medication- Definition, OTC medication list & Counselling**

10 **Health Education**
WHO Definition of health, and health promotion, care for children, pregnant & breast feeding women, and geriatric patients.
Commonly occurring Communicable Diseases, causative agents,
Clinical presentations and prevention of communicable diseases – Tuberculosis, Hepatitis, Typhoid, Amoebiasis, Malaria, Leprosy,
Syphilis, Gonorrhea and AIDS
Balance diet, and treatment & prevention of deficiency disorders
Family planning – role of pharmacist

11 **Responding to symptoms of minor ailments**
Relevant pathophysiology, common drug therapy to,
Pain, GI disturbances (Nausea, Vomiting, Dyspepsia, diarrhea, constipation), Pyrexia, Opthalmic symptoms, worms infestations.

12 **Essential Drugs concept and Rational Drug Therapy**
Role of community pharmacist

13 **Code of ethics for community pharmacists**

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A COMPARATIVE STUDY BETWEEN GENERAL ANAESTHESIA AND NERVE BLOCK ON THE BASIS OF PAIN SCORE USING UNIVERSAL PAIN ASSESSMENT TOOL IN UPPER EXTREMITIES FRACTURE SURGERIES

Dissertation submitted to

Jawaharlal Nehru Technological University,

Kakinada.

In partial fulfilment of the award of the degree of

DOCTOR OF PHARMACY

Submitted by,

ROBBI DURGA MALLESWARI	(Reg.no. 163G1T0019)
KUKKAMALLA SNIGDHA ANNIE PAULINE	(Reg. no. 163G1T0010)
VANACHERLA SONY	(Reg. no. 163G1T0023)
PILLA SATYA RANI	(Reg. no. 163G1T0017)

Under the Guidance of

Clinical Guide

Dr. BORRA SURENDRA NATH

M.S., M.Ch. (Plastic Surgery),

General, Laparoscopic and Plastic Surgeon,

Trust Hospital, Kakinada.

Academic Guide

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EVALUATION CERTIFICATE

This is to certify that the work embodied in this dissertation entitled "***A comparative study between general anaesthesia and nerve block on the basis of pain score using universal pain assessment tool in upper extremities fracture surgeries***", submitted to "***Jawaharlal Nehru Technological University***", Kakinada, in partial fulfilment to the requirement for the award of Degree of '***Doctor of Pharmacy***', is a bonafide work carried out by, ***Robbi Durga Malleswari*** (163G1T0019), ***Kukkamalla Snigdha Annie Pauline*** (163G1T0010), ***Vanacherla Sony*** (163G1T0023), and ***Pilla Satya Rani*** (163G1T0017), during the academic year 2020-2021, under the guidance and direct supervision of ***M. Krishna Priya***, Assistant Professor, Department of Pharmacy Practice and Pharm. D., Aditya Pharmacy College, Surampalem.

Date: **SIGNATURE OF EVALUATOR**

Place: Surampalem.

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Date:

Place: Surampalem

DECLARATION

We, ***Robbi Durga Malleswari, Kukkamalla Snigdha Annie Pauline, Vanacherla Sony,*** and ***Pilla Satya Rani,*** do hereby declare that the work embodied in this dissertation entitled "***A comparative study between general anaesthesia and nerve block on the basis of pain score using universal pain assessment tool in upper extremities fracture surgeries.***", submitted to " ***Jawaharlal Nehru Technological University***", Kakinada, in partial fulfilment to the requirement for the award of Degree of '***Doctor of Pharmacy***', is a bonafide work carried out during the academic year 2020-2021, under the guidance and direct supervision of ***Dr. M. Krishna Priya***, Assistant Professor, Department of Pharmacy Practice and Pharm. D., Aditya Pharmacy College, Surampalem.

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ABSTRACT

Aim: To compare intensity of post- operative pain using UPAT (universal pain assessment tool) in both the population groups of general anaesthesia and nerve block, who underwent upper extremities bone fracture surgeries

Objectives: To evaluate the post-operative pain score by using "Universal pain assessmenttool". To study and list out the side effects of both general anesthesia

Method: The method of study followed is a Randomized prospective study.

Results and Discussion: A total of24 eligible individuals were approached for the study. Occurrence of side effects related to nerve block and general anaesthesia are nausea (83.33% and 91.66%), vomiting (33.33% and 50%), sore throat (0% and 58.33%), fatigue (66.66%and 83.33%), loss of concentration(25% and 41.66%) . 83.33% subjects with nerve block administration has mobility score 1 – 2, and 50% subjects with general anaesthesia has 1 – 2.

Conclusion: patients who have been underwent upper extremity bone fracture surgery with nerve block has lowpain score.

Chapter 5

CONSLUSION

This study was conducted to understand whether patients with nerve block or patient with general anaesthesia have low post – operative pain score. Along with this study, we also found faster mobility, less side effects and earlier discharge. After going through the results, it is confirmed that patients who have been underwent upper extremity bone fracture surgery with nerve block has lowpain score.

After analyzing three divisions of universal pain assessment tool that is verbal descriptor scale, Wong – baker facial grimace scale, and activity tolerance scale, thescores were low in case of nerve block when compared to general anaesthesia. Mobility assessment tool has also been assessed.

It is also confirmed that nerve block has less post – operative side effects, faster nobilization, and earlier discharge.

The limitations of this study are :

1) Cannot be a standard one becauseit is carried out in a tertiary care hospital, may not be in accordance with data to other generalized hospitals.

2) he sample size does not reflect the actual population and prescription pattern in whole country.

BP107P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)

4 Hours/week

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

1. Study of compound microscope.
2. Microscopic study of epithelial and connective tissue
3. Microscopic study of muscular and nervous tissue
4. Identification of axial bones
5. Identification of appendicular bones

6. Introduction to hemocytometry.
7. Enumeration of white blood cell (WBC) count
8. Enumeration of total red blood corpuscles (RBC) count
9. Determination of bleeding time
10. Determination of clotting time
11. Estimation of hemoglobin content
12. Determination of blood group.
13. Determination of erythrocyte sedimentation rate (ESR).
14. Determination of heart rate and pulse rate.
15. Recording of blood pressure.

Recommended Books (Latest Editions)

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York
3. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co,Riverview,MI USA
4. Text book of Medical Physiology- Arthur C,Guyton andJohn.E. Hall. Miamisburg, OH, U.S.A.
5. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.

6. Textbook of Human Histology by Inderbir Singh, Jaypee brother's medical publishers, New Delhi.
7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brother's medical publishers, New Delhi.
8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi.

Reference Books (Latest Editions)

1. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, Riverview, MI USA
2. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
3. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje ,Academic Publishers Kolkata

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

HUMAN ANATOMY AND PHYSIOLOGY

Name Chintha Gayathri Manisha PIN No. 203G1R0016

Certified that this is the bonafide record of practical work done by

Mr. / Ms. Chintha Gayathri Manisha

a student of I-I B.pharmacy *with Regd. No.* 203G1R0016

in the Human anatomy and Physiology *Laboratory during the year* 2021

No. of Experiments Conducted 12 *No. of Experiments Attended* 12

Signature - Faculty incharge

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Signature - Head of the Department

Submitted for the Practical examination held on .....

EXAMINER-1 28/2/21

ADITYA PHARMACY COLLEGE SURAMPALEM

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EXAMINER-2

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1	22/2/21	Compound microscope	1 - 3	
2	1/3/21	Microscope Study of Epithelium and Connective tissue	4 - 11	
3	8/3/21	Microscope study of muscular and Nervous tissue	12 - 15	
4	15/3/21	Determination of Bleeding time	16 - 17	
5	22/3/21	Determination of clotting time	18 - 19	
6	5/4/21	To study the identification of Axial Bones	20 - 22	
7	12/4/21	Identification of Appendicular Bones	23 - 26	
8	26/4/21	Determination of Blood Groups	27 - 28	
9	3/5/21	Estimation of Heamoglobin content	29 - 30	
10	17/5/21	Introduction of Heamocytometry	31 - 33	
11	24/5/21	Enomcnation of white blood cell	34 - 37	
12	21/5/21	Enomeration of Total Red blood cells count	38 - 40	

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BP109P. PHARMACEUTICSI (Practical)

3 Hours / week

1 . Syrups
- a) Syrup IP'66
- b) Compound syrup of Ferrous Phosphate BPC'68

2. Elixirs
- a) Piperazine citrate elixir
- b) Paracetamol pediatric elixir

3.Linctus
- a) Terpin Hydrate Linctus IP'66
- b) Iodine Throat Paint (Mandles Paint)

4. Solutions
- a) Strong solution of ammonium acetate
- b) Cresol with soap solution
- c) Lugol's solution

5. Suspensions
- a) Calamine lotion
- b) Magnesium Hydroxide mixture
- c) Aluminimum Hydroxide gel

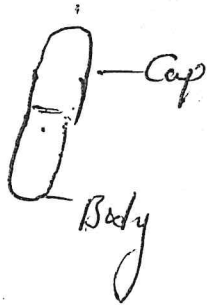
6. Emulsions
- a) Turpentine Liniment
- b) Liquid paraffin emulsion

7. Powders and Granules
- a) ORS powder (WHO)
- b) Effervescent granules
- c)Dusting powder
- d)Divded powders

8. Suppositories
- a) Glycero gelatin suppository
- b) Coca butter suppository
- c) Zinc Oxide suppository

8. Semisolids
- a) Sulphur ointment
- b) Non staining-iodine ointment with methyl salicylate
- c) Carbopal gel

9. Gargles and Mouthwashes
- a) Iodine gargle
- b) Chlorhexidine mouthwash



Recommended Books: (Latest Editions)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name Kedarisetty Meghna Kavya PIN No. 203G1R0032

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Mr. / Ms. Kedarisetty Meghna Kavya

a student of I-I B.Pharmacy *with Regd. No.* 203G1R0032

in the Pharmaceutics *Laboratory during the year* 2021

No. of Experiments Conducted 27 *No. of Experiments Attended* 27

T. Udaya Kumar 27/7/21

Signature - Faculty incharge

Signature - Head of the Department

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the Practical examination held on .....

G. Meghna 28/7/21

EXAMINER-1

G. Sudeer 28/7/21

EXAMINER-2

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
	03/3/2021	General Procedure for Writing experiment.	01	
	03/3/2021	Syrups	02	
01	03/03/2021	Simple Syrup I.P	05	
02	02/03/2021	Paracetamol Paediatric Syrup-I.P	06	
03	16/03/2021	Ferrous Phosphate Syrup - B.P	07	
	16/03/2021	Elixirs	09	
04	16/03/2021	Piperzine Citrate Elixir (B.P)	10	
05	16/03/2021	Paracetamol Pediatric Elixir - B.P	12	
	23/03/2021	Solutions	13	
06	23/03/2021	Strong Solution of Ammonium Acetate	14	
07	23/03/2021	Cresol With Soap Solution (I.P)	16	
08	23/3/2021	Aqueous Iodine Solution - I.P	18	
	30/3/2021	Suspensions	20	
09	30/3/2021	Calamine lotion - I.P	22	
10	6/4/2021	Magnesium Hydroxide Mixture	24	
11	30/3/2021	Aluminium Hydroxide Suspension (GEL)	27	
	06/4/2021	Linctus	29	
12	06/4/2021	Terpin Hydrate Linctus	30	
13	06/4/2021	Iodine Throat Paint	31	
	28/04/2021	Emulsions	33	
14	28/04/2021	Turpentine Liniment - I.P	35	
15.	28/04/2021	Liquid Paraffin Emulsions	37	
	05/05/2021	Powders	39	
16	05/05/2021	ORS Powder	40	
17	05/05/2021	Diclofene Sodium Effervescent Granules	42	
18	12/05/2021	Zinc Oxide Starch Dusting powder.	44	
19	12/05/2021	Divided Powder.	46	

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S.No.	Date	Name of the Experiment	Page No.	Remarks
	19/05/2021	Suppositories	47	
20	19/05/2021	Glycero-gelatin Suppositories	48	
21	19/05/2021	Coca butter Suppository	50	
22	26/05/2021	Zinc Oxide Suppository	52	
	02/06/2021	Semi Solids.	53	
23	02/06/2021	Sulphur Ointment.	54	
24	02/06/2021	Non staining iodine ointment with Methyl Salicylate.	56	
25	02/06/2021	Carbopal Gel.	58	
	9/06/2021	Gargles And Mouthwashes	59	
26	09/06/2021	Iodine Gargles	60	
27	09/06/2021	Chloro heridine Mouth Wash.	61	

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BP 207 P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)

4 Hours/week

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

1. To study the integumentary and special senses using specimen, models, etc.,
2. To study the nervous system using specimen, models, etc.,
3. To study the endocrine system using specimen, models, etc
4. To demonstrate the general neurological examination
5. To demonstrate the function of olfactory nerve
6. To examine the different types of taste.
7. To demonstrate the visual acuity
8. To demonstrate the reflex activity
9. Recording of body temperature
10. To demonstrate positive and negative feedback mechanism.
11. Determination of tidal volume and vital capacity.
12. Study of digestive, respiratory, cardiovascular systems, urinary and reproductive systems with the help of models, charts and specimens.
13. Recording of basal mass index
14. Study of family planning devices and pregnancy diagnosis test.
15. Demonstration of total blood count by cell analyser
16. Permanent slides of vital organs and gonads.

Recommended Books (Latest Editions)

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York
3. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co,Riverview,MI USA

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Human anatomy and physiology

Name ch.Gayathri Manisha PIN No. 20361R0016

Certified that this is the bonafide record of practical work done by

Mr. / Ms. chintha Gayathri manisha

a student of I-B.Pharmacy *with Regd. No.* 20361R0016

in the Human anatomy and physiology -II *Laboratory during the year* 20-21

No. of Experiments Conducted 13 *No. of Experiments Attended* 13

23/9/21

Signature - Faculty incharge

Signature - Head of the Department

Aditya Pharmacy College
SURAMPALEM 533 437

Submitted for the Practical examination held on .....

P. Ramesh.

EXAMINER-1

ADITYA PHARMACY COLLEGE * SURAMPALEM

23/9/21

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EXAMINER-2

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POINTER

S.No.	Date	Name of the Experiment	Page No.	Remarks
1	10/8/21	To study the integumentary system and special senses using specimen model, charts Etc.	1-6	
2.	11/8/21	To study the nervous system using Specimen, models etc.	7-11	
3.	11/8/21	To Study The Endocrine system using Specimen, model Etc	12-16	
4.	13/8/21	To demonstrate The function of olfactory nerve	17-18	
5	13/8/21	To Examine the different types of tastes	19-20	
6	14/8/21	To demonstrate the visual acuity	21-23	
7	14/8/21	To demonstrate The reflex activity	24-26	
8	17/8/21	Recording of body temparature	27-28	
9	17/8/21	To demonstrate the positive and negative feedback mechanism	29-30	
10	18/8/21	Determination of Tidal volume and vital capacity	31-32	
11	18/8/21	Study of digestive, Respiratory, cardio vascular system urinary and reproductive system with help of models charts Etc.	33-39	
12	21/8/21	Recording of basal mass Index [BMI]	40-	
13	21/8/21	study of family planning and pregnancy diagnosis	41-46	

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BP305P. PHARMACEUTICAL ORGANIC CHEMISTRY -II (Practical)

4 Hrs/week

I Experiments involving laboratory techniques

- Recrystailization
- Steam distillation

II Determination of following oil values (including standardization of reagents)

- Acid value
- Saponification value
- Iodine value

III **Preparation of compounds**

- Benzanilide/Phenyl benzoate/Acetanilide from Aniline/ Phenol /Aniline by acylation reaction.
- 2,4,6-Tribromo aniline/Para bromo acetanilide from Aniline/
- Acetanilide by halogenation (Bromination) reaction.
- 5-Nitro salicylic acid/Meta di nitro benzene from Salicylic acid / Nitro benzene by nitration reaction.
- Benzoic acid from Benzyl chloride by oxidation reaction.
- Benzoic acid/ Salicylic acid from alkyl benzoate/ alkyl salicylate by hydrolysis reaction.
- 1-Phenyl azo-2-napthol from Aniline by diazotization and coupling reactions.
- Benzil from Benzoin by oxidation reaction.
- Dibenzal acetone from Benzaldehyde by Claison Schmidt reaction
- Cinnammic acid from Benzaldehyde by Perkin reaction
- *P*-Iodo benzoic acid from *P*-amino benzoic acid

Recommended Books (Latest Editions)

1. Organic Chemistry by Morrison and Boyd
2. Organic Chemistry by I.L. Finar , Volume-I
3. Textbook of Organic Chemistry by B.S. Bahl & Arun Bahl.
4. Organic Chemistry by P.L.Soni
5. Practical Organic Chemistry by Mann and Saunders.
6. Vogel's text book of Practical Organic Chemistry
7. Advanced Practical organic chemistry by N.K.Vishnoi.

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

PHARMACEUTICAL ORGANIC CHEMISTRY - II

Name GRANDHI SATYA SNEHAJA PIN No. 193G1R0032

Certified that this is the bonafide record of practical work done by

Mr. / Ms. Grandhi Satya Snehaja

a student of B.Tech B.Pharmacy *with Regd. No.* 193G1R0032

in the Pharmaceutical organic chemistry-II *Laboratory during the year* 2020-2021

No. of Experiments Conducted 13 *No. of Experiments Attended* 13

CHV Apparao
Signature - Faculty incharge

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437
Signature - Head of the Department

Submitted for the Practical examination held on .....

EXAMINER-1

ADITYA PHARMACY COLLEGE SURAMPALEM

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EXAMINER-2

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Pointer

No.	Date	Name of the Experiment	Page No.	Remarks
1	2/11/2020	Purification of Organic Compounds	1-4	CW Approved 13.11.20
2	6/11/2020	Preparation of Dibenzal acetone	5-6	
3	9/11/2020	Preparation of Benzil	7-8	
4	13/11/2020	Preparation of Meta dinitro benzene	9-10	CW Approved 04.01.21
5	25/12/2020	Preparation of Benzoic acid	11-12	
6	28/12/2020	Determination of Acid value	13-14	
7	04/01/2021	Determination of Saponification value	15-16	CW Approved 01/02/21
8	08/01/2021	Determination of Iodine value	17-19	
9	11/01/2021	Preparation of Acetanilide	20-21	
10	01/02/2021	Preparation of Benzoic acid from Benzyl chloride	22-23	CW Approved 05/02/21
	5/02/2021	Preparation of phenyl azo-β-napthol	24-25	
	8/02/2021	Preparation of Para-iodo Benzoic acid	26-27	CW Approved 13.02.21
13	12/02/2021	Preparation of 2,4,6-Tribromo Aniline	28-29	

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BP306P. PHYSICAL PHARMACEUTICS – I (Practical) 4 Hrs/we

1. Determination the solubility of drug at room temperature
2. Determination of pKa value by Half Neutralization/ Henderson Hasselbalch equation.
3. Determination of Partition co- efficient of benzoic acid in benzene and water
4. Determination of Partition co- efficient of Iodine in CCl_4 and water
5. Determination of % composition of NaCl in a solution using phenol-water system l CST method
6. Determination of surface tension of given liquids by drop count and drop weight method
7. Determination of HLB number of a surfactant by saponification method
8. Determination of Freundlich and Langmuir constants using activated char coal
9. Determination of critical micellar concentration of surfactants
10. Determination of stability constant and donor acceptor ratio of PABA-Caffeine complex by solubility method
11. Determination of stability constant and donor acceptor ratio of Cupric-Glycine complex by pH titration method

Recommended Books: (Latest Editions)

1. Physical Pharmacy by Alfred Martin
2. Experimental Pharmaceutics by Eugene, Parott.
3. Tutorial Pharmacy by Cooper and Gunn.
4. Stocklosam J. Pharmaceutical Calculations, Lea &Febiger, Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-3, MarcelDekkar Inc.
6. Liberman H.A, Lachman C, Pharmaceutical Dosage forms. Disperse systems, volume 1, 2, 3. Marcel Dekkar Inc.
7. Physical Pharmaceutics by Ramasamy C and ManavalanR.
8. Laboratory Manual of Physical Pharmaceutics, C.V.S. Subramanyam, J. Thimma settee
9. Physical Pharmaceutics by C.V.S. Subramanyam
10. Test book of Physical Phramacy, by Gaurav Jain & Roop K. Khar

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

PHYSICAL PHARMACEUTICS

Name ..P. Satya lakshmi.. PIN No. 193G1R0075

Certified that this is the bonafide record of practical work done by

Mr. / Ms. ..P. Satya lakshmi..

a student of B.B-pharmacy..... *with Regd. No.* 193G1R0075.....

in the Physical pharmaceutics.. *Laboratory during the year* 2020-2021

No. of Experiments Conducted 11 *No. of Experiments Attended* 11

S. Hadheer

Signature - Faculty incharge

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Signature - Head of the Department

Submitted for the Practical examination held on .....

EXAMINER-1

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EXAMINER-2

ADITYA PHARMACY COLLEGE * SURAMPALEM *

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1)	2/11/20	Determination of Solubility of Drug at room temperature.	1-2	
2)	9/11/20	Determination of pK_a value by half neutralization method	3-4	
3)	28/12/20	Determination of Partition Co-efficient of Benzoic acid in benzene and water	5-6	
4)	4/1/21	Determination of Surface Tension of the given liquid by using Drop count method	7-9	
5)	11/1/21	Determination of Surface Tension of the given liquid by using Drop weight method	10-12	
6)	18/1/21	Determination of % Composition of NaCl in a Solution using phenol-water System by CST method	13-14	
7)	25/1/21	Determination of Critical micellar Conc. of Surfactants	15-17	
8)	1/2/21	Determination of HLB number of Surfactant by Saponification method	18-21	
9)	8/2/21	Determination of Freundlich and Langmuir Constants using activated Charcoal	22-24	
10)	11/2/21	Determination of Stability Constant and donar acceptar ratio of Cupric glycine Complex by pH Titration	25-28	
11)	15/2/21	Determination of Stability Constant and donar acceptor ratio of PABA-Caffine Complex by Solubility method	29-31	

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BP 407P. PHYSICAL PHARMACEUTICS- II (Practical)

3 Hrs/week

1. Determination of particle size, particle size distribution using sieving method
2. Determination of particle size, particle size distribution using Microscopic method
3. Determination of bulk density, true density and porosity
4. Determine the angle of repose and influence of lubricant on angle of repose
5. Determination of viscosity of liquid using Ostwald's viscometer
6. Determination sedimentation volume with effect of different suspending agent
7. Determination sedimentation volume with effect of different concentration of single suspending agent
8. Determination of viscosity of semisolid by using Brookfield viscometer
9. Determination of reaction rate constant first order.
10. Determination of reaction rate constant second order
11. Accelerated stability studies

Recommended Books: (Latest Editions)

1. Physical Pharmacy by Alfred Martin, Sixth edition
2. Experimental pharmaceutics by Eugene, Parott.
3. Tutorial pharmacy by Cooper and Gunn.
4. Stocklosam J. Pharmaceutical calculations, Lea & Febiger, Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-1 to 3, Marcel Dekkar Inc.
6. Liberman H.A, Lachman C, Pharmaceutical dosage forms. Disperse systems, volume 1, 2, 3. Marcel Dekkar Inc.
7. Physical Pharmaceutics by Ramasamy C, and Manavalan R.

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

PHYSICAL PHARMACEUTICS - II

Name GRANDHI SATYA SNEHAJA PIN No. 193G1R0032

Certified that this is the bonafide record of practical work done by

Mr. / Ms. Grandhi. Satya Snehaja

a student of II year B pharmacy II semester *with Regd. No.* 193G1R0032

in the Physical pharmaceutics-II *Laboratory during the year* 2020-21

No. of Experiments Conducted 12

No. of Experiments Attended 12

G. Satya 19/8/21

Signature - Faculty incharge

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Signature - Head of the Department

Submitted for the Practical examination held on .....

EXAMINER-1

ADITYA PHARMACY COLLEGE * SURAMPALEM *

G. Satya 23/8/21

EXAMINER-2

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	6/4/2021	Determination of particle size, size distribution using sieving method	1-5	19/8/21
2.	20/4/2021	Determination of particle size, size distribution (globule size) in emulsion by microscopy	6-8	19/8/21
3	16/7/2021	Estimation of true density of Zinc oxide powder	9-10	19/8/21
4	16/7/2021	Estimation of Bulk density and percentage porosity	11-12	19/8/21
5	20/7/2021	Effect of glidant on flow properties of given granules.	13-14	19/8/21
6	20/7/2021	Determination of viscosity using ostwald viscometer	15-16	19/8/21
7.	23/7/2021	Determination of Sedimentation volume of suspension using Suspending agents	17-19	19/8/21
8.	27/7/2021	Determination of Sedimentation volume of suspension by different Suspending agents	20-23	19/8/21
9.	27/7/2021	Accelerated Stability testing based on Arrhenies principle.	24-26	19/8/21

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
10	30/7/2021	Determination of viscosity by Brook field viscometer	27-29	19/8/21
11	3/8/2021	Determination of Reaction rate constant of Pseudo 1st order reaction (Acid hydro-lysis of ester)	30-32	19/8/21
12	10/8/2021	Determination of Reaction rate constant of 2nd order reaction of alkaline (hydrolysis of ethyl acetate)	33-34	19/8/21

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BP408 P. PHARMACOGNOSY AND PHYTOCHEMISTRY I (Practical)

4 Hours/Week

1. Analysis of crude drugs by chemical tests: (i)Tragaccanth (ii) Acacia (iii)Agar (iv) Gelatin (v) starch (vi) Honey (vii) Castor oil
2. Determination of stomatal number and index
3. Determination of vein islet number, vein islet termination and paliside ratio.
4. Determination of size of starch grains, calcium oxalate crystals by eye piece micrometer
5. Determination of Fiber length and width
6. Determination of number of starch grains by Lycopodium spore method
7. Determination of Ash value
8. Determination of Extractive values of crude drugs
9. Determination of moisture content of crude drugs
10. Determination of swelling index and foaming

Recommended Books: (Latest Editions)

1. W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Sounders & Co., London, 2009.
2. Tyler, V.E., Brady, L.R. and Robbers, J.E., Pharmacognosy, 9th Edn., Lea and Febiger, Philadelphia, 1988.
3. Text Book of Pharmacognosy by T.E. Wallis
4. Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers & Distribution, New Delhi.
5. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, New Delhi.
6. Herbal drug industry by R.D. Choudhary (1996), Ist Edn, Eastern Publisher, New Delhi.
7. Essentials of Pharmacognosy, Dr.SH.Ansari, IInd edition, Birla publications, New Delhi, 2007
8. Practical Pharmacognosy: C.K. Kokate, Purohit, Gokhlae
9. Anatomy of Crude Drugs by M.A. Iyengar

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name Eduresi Manjusha PIN No. 183G1R0033

Certified that this is the bonafide record of practical work done by

Mr. / Ms. E. Manjusha

a student of III B. pharm *with Regd. No.* 183G1R0033

in the pharmacology & phytochemistry *Laboratory during the year* 2020-21

No. of Experiments Conducted 16 No. of Experiments Attended 16

Signature - Faculty incharge 12/12/20.

Signature - Head of the Department

Submitted for the Practical examination held on

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EXAMINER-1

EXAMINER-2 22/3/21

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	1/12/20	Chemical Test of colophony	1-2	
2.	2/12/20	Chemical Test of Benzoin	3-4	
3.	3/12/20	Chemical Test of Myrrh	5-6	
4.	4/12/20	Chemical Test of Asafoetida	7-8	
5.	5/12/20	Chemical Test of Aloes	9-11	
6	7/12/20	Morphology Microscopy & powder Microscopy of cassia cinnamon	12-15	
7	8/12/20	Morphology Microscopy and powder Microscopy of clove	16-18	
8	9/12/20	Morphology & Microscopy of fennel	19-21	
9	10/12/20	Separation of Volatile oil	22-24	
10	10/12/20	TLC OF herbal extract	25-27	
11	11/12/20	Isolation & Detection of caffine from Tea dust	28-29	
12	11/12/20	Isolation & detection of Diosgenin from dioscorea	30-31	

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
13	12/2/20	Isolation & Detection of Sennoside and Senna	32-33	
14	12/12/20	Detection of phytoconsistuents of TLC	34-36	

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BP 507 P. PHARMACOLOGY-II (Practical)

4Hrs/Week

1. Introduction to *in-vitro* pharmacology and physiological salt solutions.
2. Effect of drugs on isolated frog heart.
3. Effect of drugs on blood pressure and heart rate of dog.
4. Study of diuretic activity of drugs using rats/mice.
5. DRC of acetylcholine using frog rectus abdominis muscle.
6. Effect of physostigmine and atropine on DRC of acetylcholine using frog rectus abdominis muscle and rat ileum respectively.
7. Bioassay of histamine using guinea pig ileum by matching method.
8. Bioassay of oxytocin using rat uterine horn by interpolation method.
9. Bioassay of serotonin using rat fundus strip by three point bioassay.
10. Bioassay of acetylcholine using rat ileum/colon by four point bioassay.
11. Determination of PA_2 value of prazosin using rat anococcygeus muscle (by Schilds plot method).
12. Determination of PD_2 value using guinea pig ileum.
13. Effect of spasmogens and spasmolytics using rabbit jejunum.
14. Anti-inflammatory activity of drugs using carrageenan induced paw-edema model.
15. Analgesic activity of drug using central and peripheral methods

Note: All laboratory techniques and animal experiments are demonstrated by simulated experiments by softwares and videos

Recommended Books (Latest Editions)

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, Churchil Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill.
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs, The Point Lippincott Williams & Wilkins.
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology.
6. K.D.Tripathi. Essentials of Medical Pharmacology, , JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher
8. Modern Pharmacology with clinical Applications, by Charles R.Craig& Robert.
9. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.
10. Kulkarni SK. Handbook of experimental pharmacology. Vallabh Prakashan.

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Pharmacology - III

Name O. vijaya lakshmi PIN No. 183G1R0066

Certified that this is the bonafide record of practical work done by

Mr. / Ms. O. vijaya lakshmi

a student of B.Pharmacy - III rd III - I *with Regd. No.* 183G1R0066

in the Pharmacology - II *Laboratory during the year* 2020-2021

No. of Experiments Conducted 12

No. of Experiments Attended 12

Y. Praveen 3/7/21

Signature - Faculty incharge

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Signature - Head of the Department

Submitted for the Practical examination held on .....

P. Ramuchetty 2/8/21

EXAMINER-1

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EXAMINER-2

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Pointer

o.	Date	Name of the Experiment	Page No.	Remarks
	31/3/21	Dose calculation in pharmacological Experiments	1-4	
	7/4/21	Anti-allergic activity by mast cell Stabilization assay	5-6	
	14/4/21	Anti-ulcer Activity of a Drug using Pylorus Ligand (Shay) Rat model & NSaids Induced ulcer model	7-10	
	21/4/21	Study of effect of Drug on Gastro-Intestinal Motility	11-13	
	14/7/21	Effect of Agonist & Antagonist on guinea pig ileum	14-16	
6.	15/7/21	Effect of saline purgative on frog Intestine	17-20	
	16/7/21	Estimation of serum Biochemical parameters by using Semi Auto Analyser.	21-24	
	19/7/21	Insulin Hypoglycemic effects in rabbits	25-27	
	19/7/21	Test for Pyrogens (Rabbit method)	28-30	
	20/7/21	Biostatic Methods in Experimental Pharmacology (students-t-test, Anova)	31-34	
1.	22/7/21	Biostatic methods in Experimental Phamacology (chi-square test, wilcoxon signed rank test).	35-39	
2.	23/7/21	Determination of acute & toxicity (LD50) of a drug from a given data	40-42	

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BP607P. MEDICINAL CHEMISTRY- III (Practical)

4 Hours / week

I Preparation of drugs and intermediates

1 Sulphanilamide

2 7-Hydroxy, 4-methyl coumarin

3 Chlorobutanol

4 Triphenyl imidazole

5 Tolbutamide

6 Hexamine

II Assay of drugs

1 Isonicotinic acid hydrazide

2 Chloroquine

3 Metronidazole

4 Dapsone

5 Chlorpheniramine maleate

6 Benzyl penicillin

III Preparation of medicinally important compounds or intermediates by Microwave irradiation technique

IV Drawing structures and reactions using chem draw®

V Determination of physicochemical properties such as logP, clogP, MR, Molecular weight, Hydrogen bond donors and acceptors for class of drugs course content using drug design software Drug likeliness screening (Lipinskies RO5)

Recommended Books (Latest Editions)

1. Wilson and Giswold's Organic medicinal and Pharmaceutical Chemistry.
2. Foye's Principles of Medicinal Chemistry.
3. Burger's Medicinal Chemistry, Vol I to IV.
4. Introduction to principles of drug design- Smith and Williams.
5. Remington's Pharmaceutical Sciences.
6. Martindale's extra pharmacopoeia.

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ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF Medicinal chemistry

Name A. Preethi PIN No. 18 3G 1R 0005

Certified that this is the bonafide record of practical work done by

Mr. / Ms. A. Preethi

a student of B-Pharmacy *with Regd. No.* 18361R0005

in the Medicinal chemistry *Laboratory during the year* 2021

No. of Experiments Conducted 08 *No. of Experiments Attended* 08

CH V Appa Rao
Signature - Faculty incharge

Signature - Head of the Department

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EXAMINER-1

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EXAMINER-2

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Pointer

Date	Name of the Experiment	Page No.	Remarks
31/03/21	Preparation of 7-hydroxy-4-methyl coumarin	1-2	CHVApparao
07/4/21	Preparation of chlorbutol	3	
13/07/21	Synthesis of sulphanilamide	4-6	CHVApparao
14/07/21	Synthesis of triphenyl imidazole	7-8	
14/07/21	preparation of Tolbutamide	9	CHVApparao
19/07/21	Preparation of Hexamine	10-11	
21/07/21	Microwave assisted synthesis of 7-hydroxy 4-methyl coumarin	1-12	CHVApparao
21/07/21	Microwave assisted synthesis of Triphenyl imidazole	13-14	

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BP 608 P. PHARMACOLOGY-III (Practical)

4Hrs/Week

1. Dose calculation in pharmacological experiments
2. Antiallergic activity by mast cell stabilization assay
3. Study of anti-ulcer activity of a drug using pylorus ligand (SHAY) rat model and NSAIDS induced ulcer model.
4. Study of effect of drugs on gastrointestinal motility
5. Effect of agonist and antagonists on guinea pig ileum
6. Estimation of serum biochemical parameters by using semi- autoanalyser
7. Effect of saline purgative on frog intestine
8. Insulin hypoglycemic effect in rabbit
9. Test for pyrogens (rabbit method)
10. Determination of acute oral toxicity (LD50) of a drug from a given data
11. Determination of acute skin irritation / corrosion of a test substance
12. Determination of acute eye irritation / corrosion of a test substance
13. Calculation of pharmacokinetic parameters from a given data
14. Biostatistics methods in experimental pharmacology(student's t test, ANOVA)
15. Biostatistics methods in experimental pharmacology (Chi square test, Wilcoxon Signed Rank test)

**Experiments are demonstrated by simulated experiments/videos*

Recommended Books (Latest Editions)

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, Churchil Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs. The Point Lippincott Williams & Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology
6. K.D.Tripathi. Essentials of Medical Pharmacology, , JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher Modern Pharmacology with clinical Applications, by Charles R.Craig& Robert,
8. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata,
9. Kulkarni SK. Handbook of experimental pharmacology. VallabhPrakashan,
10. N.Udupa and P.D. Gupta, Concepts in Chronopharmacology.

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ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Pharmacology - II

D. Bindu Madhavi PIN No. 183G1R0030

Certified that this is the bonafide record of practical work done by

Mr./Ms. D. Bindu Madhavi

II - I

student of B.Pharmacy with Regd. No. 183G1R0030

in Pharmacology - II Laboratory during the year 2020-2021

No. of Experiments Conducted 15

No. of Experiments Attended 15

Y. Prasanna

Signature - Faculty incharge

PRINCIPAL
Aditya Pharmacy College
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Signature - Head of the Department

Submitted for the Practical examination held on .....

EXAMINER-1

EXAMINER-2

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Remarks

3/12/20

24/12/20

4/1/21

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	5/11/20	Introduction to Invitro pharmacology and physiology Salt Solution	1-6	
2.	6/11/20	Effect of drug on Isolated frog's heart	7-10	
3.	3/12/20	Effect of various drugs on blood pressure and dog heart rate of dog.	11-14	P 3/12/20
4.	10/12/20	Study of diuretic activity of drugs using rats/mice	15-16	
5.	17/12/20	Drug response curve of acetylcholine on frog rectus abdominus muscle	17-19	
6.	21/12/20	Effect of physostigmine and atropine on DRC of acetylcholine using frog's rectus abdominus muscle and rat ileum respectively	20-24	P 24/12/20
7.	24/12/20	Bioassay of oxytocin using rat uterine horn by Interpolation Method	25-27	
8.	29/12/20	Bioassay of Serotonin using rat fundus strip by three point bioassay	28-30	
10	31/12/20	Bioassay of acetylcholine using rat ileum or colon by four point bioassay	31-33	
10.	7/1/21	Determination of PA_2 value of Propyrin using rat sanococcygeus muscle (by schild's plot Method)	34-36	P 21/1/21
8.	28/1/21	Bioassay of histamine using guinea pig ileum by Matching Method	23-24	
12.	21/1/21	Determination of PD_2 value using guinea pig ileum	37-38	

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
13.	4/2/21	Effect of Spasmogens & Spasmolytics using rabbit jejunum.	39-40	
14.	11/2/21	Ant-Inflammatory activity of drug using carrageenan induce paw oedema model	41-43	
15.	12/2/21	Analgesic activity of drug using central and peripheral method	44-45	12/2/21

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PHARMACEUTICAL ANALYSIS PRACTICAL - III

(MPA 205PA)

1. Comparison of absorption spectra by UV and Wood ward – Fiesure rule
2. Interpretation of organic compounds by FT-IR
3. Interpretation of organic compounds by NMR
4. Interpretation of organic compounds by MS
5. Determination of purity by DSC in pharmaceuticals
6. Identification of organic compounds using FT-IR, NMR, CNMR and Mass spectra
7. Bio molecules separation utilizing various sample preparation techniques and Quantitative analysis of components by gel electrophoresis.
8. Bio molecules separation utilizing various sample preparation techniques and Quantitative analysis of components by HPLC techniques.
9. Isolation of analgesics from biological fluids (Blood serum and urine).
10. Protocol preparation and performance of analytical / Bioanalytical method validation.
11. Protocol preparation for the conduct of BA/BE studies according to guidelines.

PHARMACEUTICAL ANALYSIS PRACTICAL - IV

(MPA 205PB)

1. In process and finished product quality control tests for tablets, capsules, parenterals and creams
2. Quality control tests for Primary and secondary packing materials
3. Assay of raw materials as per official monographs
4. Testing of related and foreign substances in drugs and raw materials
5. Preparation of Master Formula Record.
6. Preparation of Batch Manufacturing Record.
7. Quantitative analysis of rancidity in lipsticks and hair oil
8. Determination of aryl amine content and Developer in hair dye
9. Determination of foam height and SLS content of Shampoo.
10. Determination of total fatty matter in creams (Soap, skin and hair creams)
11. Determination of acid value and saponification value.
12. Determination of calcium thioglycolate in depilatories

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ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name Bande. Sujitha PIN No. 203G1S1605

Certified that this is the bonafide record of practical work done by

Mr. / Ms. Bande. Sujitha

a student of M pharmacy *with Regd. No.* 203G1S1605

in the Pharmaceutical Analysis *Laboratory during the year* 2020-2021

Practical - III

No. of Experiments Conducted 13 *No. of Experiments Attended* 13

Signature - Faculty incharge

Signature - Head of the Department

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Aditya Pharmacy College
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Submitted for the Practical examination held on .....

EXAMINER-1

EXAMINER-2

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POINTER

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	10/08/21	Interpretation of Organic Compound by FT-IR	1	
2.	10/8/21	Interpretation of Organic Compound by ^{1}HNMR	5	
3.	17/8/21	Interpretation of Organic Compound by ^{13}C NMR.	8	
4.	17/8/21	Interpretation of Isophenol using DEPT Spectrum.	12	
5.	24/8/21	Determination of J-Coupling (through bond) in 2-Nitropropane by Cosy Spectra	14	
6.	31/8/21	Comparision of absorption Spectra of Sodium benzoate & Aspirin individually by U.V & woodward Fieser rule.	17	
7.	31/8/21	Comparision of absorption Spectra of paracetamol & Salicylic acid individually by UV & woodward fieser rule.	25	
8.	7/9/21	Interpretation of Organic Compound by mass Spectra.	28	

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POINTER

S.No.	Date	Name of the Experiment	Page No.	Remarks
9.	14/9/21	Distinguish between pentan-2-one and pentan-3-one by mass Spectra.	31	
10.	14/9/21	Determination of purity of drug in physical mixture by differential Scanning Calorimeter.	34	
11.	21/9/21	Identification of given Organic Compound using FT-IR, NMR 13C NMR and mass Spectra.	36	
12.	27/9/21	Isolation of paracetamol from blood [biological fluid] and its estimation.	42	
13	28/9/21	A template of bioequivalence Study protocol.	45	

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SURAMPALEM

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ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Pharmaceutical Analysis

Name M.S.S.V. Uma Gayathri PIN No. 203G1S1603

Certified that this is the bonafide record of practical work done by

Mr./Ms. M. Siva Sai Venkata Uma Gayathri

a student of M.Pharmacy *with Regd. No.* 203G1S1603

in the Pharmaceutical analysis Practical - IV *Laboratory during the year* 2020-21.

No. of Experiments Conducted 15 *No. of Experiments Attended* 15

Signature - Faculty incharge

Signature - Head of the Department

Aditya Pharmacy College
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Submitted for the Practical examination held on 09.10.21

EXAMINER-1

EXAMINER-2 09.10.21

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POINTER

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	5/8/21	IPQC TESTS FOR PHARMACEUTICAL CAPSULES	1-4	
2.	5/8/21	FINISHED PRODUCT QUALITY CONTROL TESTS FOR PARACETMOL TABLETS	5-11	
3.	12/8/21	ASSAY OF IBRUPROFEN USING UV-VISIBLE SPECTROPHOTOMETER	12-15	
4	12/8/21	IDENTIFY THE RELATED SUBSTANCE OF CAFFEINE USING THIN-LAYER CHROMATOGRAPHY	16-17	
5.	19/8/21	INSTRUCTIONS FOR THE PREPARATION OF MASTER FORMULA RECORD	18-22.	
6.	26/8/21	INSTRUCTIONS FOR THE PREPARATION OF BATCH FORMULA RECORD	23-25	
7	2/9/21	ESTIMATION OF RANCIDITY IN HAIR OIL	26-27	
8.	2/9/21	ESTIMATION OF PEROXIDE VALUE IN EDIBLE OIL	28-31	

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S.No.	Date	Name of the Experiment	Page No.	Remarks
9.	9/9/21	DETERMINATION OF ARYL AMINE CONTENT AS THE ACTIVE CONTENT IN HAIR DYE	32-34	
10.	16/9/21	DETERMINATION OF DEVELOPER IN HAIR DYE	35-37	
11.	23/9/21	DETERMINATION OF SLS CONTENT IN SHAMPOO	38-39	
12.	29/9/21	DETERIMINATION OF FOAM HEIGHT IN SHAMPOO.	40-42	
13.	30/9/21	DETERMINATION OF TOTAL FATTY SUBSTANCE CONTENT IN MARKETED BATH SOAP	43-44	
14	30/9/21	DETERMINATION OF ACID VALUE	45-46	
15.	1/10/21	DETERMINATION OF CALCIUM THIOGLYCOLATE IN DEPILATORIES	47-49	

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PHARMACEUTICS PRACTICAL - III

(MPH 205PA)

1. To study the effect of temperature change , non solvent addition, incompatible polymer addition in microcapsules preparation
2. Preparation and evaluation of Alginate beads
3. Formulation and evaluation of gelatin /albumin microspheres
4. Formulation and evaluation of liposomes/niosomes
5. Formulation and evaluation of spherules
6. Improvement of dissolution characteristics of slightly soluble drug by Solid dispersion technique.
7. Comparison of dissolution of two different marketed products /brands
8. Protein binding studies of a highly protein bound drug & poorly protein bound drug
9. Bioavailability studies of Paracetamol in animals.
10. Pharmacokinetic and IVIVC data analysis by Winnoline^{R} software
11. In vitro cell studies for permeability and metabolism

PHARMACEUTICS PRACTICAL - IV

(MPH 205PB)

1. DoE Using Design Expert® Software
2. Formulation data analysis Using Design Expert® Software
3. Quality-by-Design in Pharmaceutical Development
4. Computer Simulations in Pharmacokinetics and Pharmacodynamics
5. Computational Modeling Of Drug Disposition
6. To develop Clinical Data Collection manual
7. To carry out Sensitivity Analysis, and Population Modeling.
8. Development and evaluation of Creams
9. Development and evaluation of Shampoo and Toothpaste base
10. Formulation Development of Multi Vitamnin Syrup
11. Use of Optimization techniques in Formulation Development of Tablets

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ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name M. Geethanjali Devi PIN No. 203G1S0302

Certified that this is the bonafide record of practical work done by

Mr. / Ms. M. Geethanjali Devi

a student of M.Pharmacy I-I *with Regd. No.* 203G1S0302

in the Pharmaceutics-III *Laboratory during the year* 2020-2021

No. of Experiments Conducted 10

No. of Experiments Attended 10

Signature - Faculty incharge

Signature - Head of the Department

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Submitted for the Practical examination held on 09/10/21

EXAMINER-1

EXAMINER-2

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S.No.	Date	Name of the Experiment	Page No.	Remarks
1	4/8/21	Study the improvement in Dissolution character of ibuprofen by solid dispersion Technique	1	
2	7/8/21	Preparation & Evaluation of Ibuprofen Alginate beads	5	
3.	11/8/21	Formulation & Evaluation of Albumin microspheres	9	
4.	14/8/21	Formulation & Evaluation of Liposomes	14	
5.	18/8/21	Formulation & Evaluation of Niosomes	19	
6	25/8/21	Formulation & Evaluation of Spherules	23	
7.	25/8/21	Study of Effect of Addition of Non-Solvent in microcapsule preparation	27	
8.	28/8/21	Study of effect of temperature change in microcapsule preparation	34	
9.	01/9/21	Comparision of dissolution of TWO different marketed products	41	
10	4/9/21	Study of Protein binding of Paracetamol a Strongly Protein Bind drug	44	

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ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name M. Geethanjali Devi PIN No. 203G1S0302

Certified that this is the bonafide record of practical work done by

Mr. / Ms. M. Geethanjali Devi

a student of Aditya pharmacy college *with Regd. No.* 203G1S0302

in the pharmaceutics-IV *Laboratory during the year* 2020-21

No. of Experiments Conducted 9 *No. of Experiments Attended* 9

T. Adityakumar 18/9/21

Signature - Faculty incharge

Signature - Head of the Department

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Submitted for the Practical examination held on .....

10/10/2021

EXAMINER-1

10/10/21

EXAMINER-2

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No.	Date	Name of the Experiment	Page No.	Remarks
1	8/7/21	Over view about DOE using Design expert software	1	A 9/7/21
2.	12/7/21	Formulation Data analysis using deign expert software	8	A 13/7/21
3.	14/7/21	Quality by Design in pharmaceutical development	11	A 15/7/21
4.	4/8/21	computer simulation pharmacodynamics using Rotarod apparatus	13	A 8/8/21
5.	6/8/21	Formulation & Evaluation of Cold cream	16	A 10/8/21
6.	9/8/21	Formulation & Evaluation of Vanishing cream	18	A 13/8/21
7.	11/8/21	Formulation & Evaluation of Shampoo	20	A 16/8/21
8.	13/8/21	Formulation & Evaluation of Tooth paste	22	A 20/8/21
9.	16/8/21	Cosmetic formulation used to overcome various medical conditions.	24	A 28/8/21

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1.1 HUMAN ANATOMY & PHYSIOLOGY (PRACTICAL)

Practical : 3 Hrs./Week

General Requirements: Dissection box, Laboratory Napkin, muslin cloth, record, Observation book(100pages), Stationary items, Blood lancet.

Course materials:

Text books

Goyal, R. K, Natvar M.P, and Shah S.A, Practical anatomy, physiology and biochemistry, latest edition, Publisher: B.S Shah Prakashan, Ahmedabad.

Reference books

Ranade VG, Text book of practical physiology, Latest edition, Publisher: PVG, Pune
Anderson Experimental Physiology, Latest edition, Publisher: NA

List of Experiments:

1. Study of tissues of human body
   (a) Epithelial tissue.
   (b) Muscular tissue.
2. Study of tissues of human body
   (a) Connective tissue.
   (b) Nervous tissue.
3. Study of appliances used in hematological experiments.
4. Determination of W.B.C. count of blood.
5. Determination of R.B.C. count of blood.
6. Determination of differential count of blood.
7. Determination of
   (a) Erythrocyte Sedimentation Rate.
   (b) Hemoglobin content of Blood.
   (c) Bleeding time & Clotting time.
8. Determination of
   (a) Blood Pressure.
   (b) Blood group.
9. Study of various systems with the help of charts, models & specimens
   (a) Skeleton system part I-axial skeleton.
   (b) Skeleton system part II- appendicular skeleton.
   (c) Cardiovascular system.
   (d) Respiratory system.

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(e) Digestive system.
(f) Urinary system.
(g) Nervous system.
(h) Special senses.
(i) Reproductive system.

10. Study of different family planning appliances.
11. To perform pregnancy diagnosis test.
12. Study of appliances used in experimental physiology.
13. To record simple muscle curve using gastroenemius sciatic nerve preparation.
14. To record simple summation curve using gastroenemius sciatic nerve preparation.
15. To record simple effect of temperature using gastroenemius sciatic nerve preparation.
16. To record simple effect of load & after load using gastroenemius sciatic nerve preparation.
17. To record simple fatigue curve using gastroenemius sciatic nerve preparation.

Scheme of Practical Examination:

	Sessionals	Annual
Identification	04	10
Synopsis	04	10
Major Experiment	07	20
Minor Experiment	03	15
Viva	02	15
Max Marks	**20**	**70**
Duration	**03hrs**	**04hrs**

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

1.2 PHARMACEUTICS (THEORY)

Theory : 2 Hrs. /Week

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DEPARTMENT OF

H A P

Name Dandipati Lalitha Maheswari PIN No. 203G1T0005

Certified that this is the bonafide record of practical work done by

Mr. / Ms. DANDIPATI LALITHA MAHESWARI

a student of Pharm-D *with Regd. No.* 203G1T0005

in the HAP *Laboratory during the year* 20-21

No. of Experiments Conducted 23

No. of Experiments Attended 23

Signature - Faculty incharge

PRINCIPAL
SURAMPALEM-533 437

Signature PHead of the Department

Submitted for the Practical examination held on .....

EXAMINER-1

EXAMINER-2

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	6/3/21	Compound-microscope.	1-4	
2.	6/3/21	Estimation of Bleeding Time	5-6	
3.	6/3/21	Determination of Clotting time	7-8	
4.	6/3/21	Determination of breath holding time	9-9½	
5.	13/3/21	Determination of rate of respiration	10-10	
6.	13/3/21	Determination of blood group.	11-12	
7.	13/3/21	Determination of Haemoglobin content of blood.	13-15	
8.	13/3/21	Study of Haemocytometer.	16-19	
9.	20/3/21	Determination of white Blood cell count.	20-24	
10.	20/3/21	Determination of Red Blood cell count.	25-28	
11.	20/3/21	Determination of Erythrocyte sedimentation	29-33	
12.	20/3/21	Determination of Blood pressure.	34-35	
13.	27/3/21	Identification of slides.	36-211	
14.	27/3/21	A. Axial skeleton system part-I	42-44	
15.	3/4/21	B. Appendicular skeleton system: part-II.	45-47	
16.	3/4/21	C. Cardiovascular system.	48-49	
17.	10/4/21	D. Respiratory system.	50-51	
18	10/4/21	E. Digestive system.	52-54	
19.	17/4/21	F. Urinary system.	55-56	
20.	24/4/21	G. Nervous system	57-58	
21	4/4/21	H. Special Senses-	59-61	
22.	4/4/21	I. Male reproductive system.	62-63	
23.	8/4/21	J. Female reproductive system-	64-64	

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7 Biphasic dosage forms: Suspensions and emulsions, Definition, advantages and disadvantages, classification, test for the type of emulsion, formulation, stability and evaluation.

8 Suppositories and pessaries: Definition, advantages and disadvantages, types of base, method of preparation, Displacement value and evaluation.

9 Galenicals: Definition, equipment for different extraction processes like infusion, Decoction, Maceration and Percolation, methods of preparation of spirits, tinctures and extracts.

10 Pharmaceutical calculations.

11 Surgical aids: Surgical dressings, absorbable gelatin sponge, sutures, ligatures and medicated bandages.

12 Incompatibilities: Introduction, classification and methods to overcome the incompatibilities.

1.2 PHARMACEUTICS (PRACTICAL)

Practical : 3 Hrs./Week

List of Experiments:

1. **Syrups**
   a. Simple Syrup I.P
   b. Syrup of Ephedrine Hcl NF
   c. Syrup Vasaka IP
   d. Syrup of ferrous Phosphate IP
   e. Orange Syrup
2. **Elixir**
   a. Piperizine citrate elixir BP
   b. Cascara elixir BPC
   c. Paracetamol elixir BPC
3. **Linctus**
   a. Simple Linctus BPC
   b. Pediatric simple Linctus BPC
4. **Solutions**
   a. Solution of cresol with soap IP
   b. Strong solution of ferric chloride BPC
   c. Aqueous Iodine Solution IP
   d. Strong solution of Iodine IP
   e. Strong solution of ammonium acetate IP

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5. **Liniments**
   a. Liniment of turpentine IP*
   b. Liniment of camphor IP
6. **Suspensions***
   a. Calamine lotion
   b. Magnesium Hydroxide mixture BP
7. **Emulsions***
   a. Cod liver oil emulsion
   b. Liquid paraffin emulsion
8. **Powders***
   a. Eutectic powder
   b. Explosive powder
   c. Dusting powder
   d. Insufflations
9. **Suppositories***
   a. Boric acid suppositories
   b. Chloral suppositories
10. **Incompatibilities**
    a. Mixtures with Physical
    b. Chemical & Therapeutic incompatibilities

* colourless bottles required for dispensing * Paper envelope (white), butter paper and white paper required for dispensing.

Scheme of Practical Examination:

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	**20**	**70**
Duration	**03hrs**	**04hrs**

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

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ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

lame MERCY PINIPE PIN No. 203G1T0016

Certified that this is the bonafide record of practical work done by

Mr. / Ms. MERCY PINIPE

a student of Pharma-D *with Regd. No.* 203G1T0013

in the pharmaceutics *Laboratory during the year* 2020-2021

No. of Experiments Conducted 31

No. of Experiments Attended 31

K. Pushpalatha
Signature - Faculty incharge

Signature - Head of the Department

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Submitted for the Practical examination held on .....

EXAMINER-1

EXAMINER-2

K. Pushpalatha
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S.No.	Date	Name of the Experiment	Page No.	Remarks
20.	19-4-21	Cod liver Emulsion	53-54	
VIII	23-6-21	Powders	55-56	
21	23-6-21	Zinc oxide starch Dusting powder NFI	57-58	
22	23-6-21	Eutectic powder	59-60	
23	23-6-21	Explosive powder	61-62	
IX.	14-9-21	Suppositories	63-65	
24.	14-9-21	Boric acid Suppositories	66-67	
25.	14-9-21	chloral hydrate Supporifics	68-69	
26.	30-6-21	Incompatibility	70	
X.	30-6-21	Emulsion	71	
27.	30-6-21	Mixture - I	72	
28.	30-6-21	Mixture - II	73	
29.	30-6-21	Mixture - III	74	
30.	2-7-21	Spray Solution	75	
31.	2-7-21	Powder	76	

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1.3 MEDICINAL BIOCHEMISTRY (PRACTICAL)

Practical : 3 Hrs./Week

Title of the Experiment:

1 Qualitative analysis of normal constituents of urine.*
2 Qualitative analysis of abnormal constituents of urine.*
3 Quantitative estimation of urine sugar by Benedict's reagent method.**
4 Quantitative estimation of urine chlorides by Volhard's method.**
5 Quantitative estimation of urine creatinine by Jaffe's method.**
6 Quantitative estimation of urine calcium by precipitation method.**
7 Quantitative estimation of serum cholesterol by Libermann Burchard's method.**
8 Preparation of Folin Wu filtrate from blood.*
9 Quantitative estimation of blood creatinine.**
10 Quantitative estimation of blood sugar Folin-Wu tube method.**
11 Estimation of SGOT in serum.**
12 Estimation of SGPT in serum.**
13 Estimation of Urea in Serum.**
14 Estimation of Proteins in Serum.**
15 Determination of serum bilirubin**
16 Determination of Glucose by means of Glucoseoxidase.**
17 Enzymatic hydrolysis of Glycogen/Starch by Amylases.**
18 Study of factors affecting Enzyme activity. (pH & Temp.)**
19 Preparation of standard buffer solutions and its pH measurements (any two)*
20 Experiment on lipid profile tests**
21 Determination of sodium,calcium and potassium in serum.**
** indicate major experiments & * indicate minor experiments

Assignments:

Format of the assignment

1. Minimum & Maximum number of pages.
2. It shall be computer draft copy.
3. Reference(s) shall be included at the end.
4. Name and signature of the student.
5. Assignment can be a combined presentation at the end of the academic year.
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination:

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	20	70
Duration	03hrs	04hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

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ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Medicinal Biochemistry

Name Dandipati Lalitha Maheswari PIN No. 20 3G 1T 0005

Certified that this is the bonafide record of practical work done by

Mr. / Ms. Dandipati Lalitha Maheswari

a student of Pharm.D *with Regd. No.* 203G1T0005

in the Medicinal Biochemistry *Laboratory during the year* 2020-2021

No. of Experiments Conducted 17

No. of Experiments Attended 17

20/9/2021

Signature - Faculty incharge

Signature - Head of the Department

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EXAMINER-1

EXAMINER-2

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S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	24/2/21	Introduction	1 - 3	
2.	24/2/21	Test for normal constituents of urine	4 - 6	
3.	03/03/21	Test for normal constituents of urine	7 - 9	
4.	03/03/21	Test for Normal constituents of urine	10 - 12	
5.	05/03/21	Qualitative Analysis of abnormal constituents of urine.	13 - 14	
6.	12/3/21	General Test for Abnormal constituents of urine.	15 - 18	
7.	12/3/21	Test for Abnormal constituents of urine.	19 - 22	
8.	31/3/21	Test for Abnormal constituents of urine	23 - 26	
9.	7/4/21	Qualitative Estimation of Glucose in urine [Benedicts reagent method].	27 - 28	
10.	08/9/21	Estimation of calcium in urine.	29 - 30	
11.	08/9/21	Estimation of urine creatinine	31 - 32	
12.	08/9/21	Estimation of serum creatinine	33 - 34	
13.	08/09/21	Estimation of glucose in blood by folin-wu method.	35 - 36	
14.	15/9/21	Estimation of cholestrol in serum.	37 - 38	
15.	15/9/21	Estimation of calcium in serum.	39 - 40	
16.	15/9/21	Estimation of blood urea by diacetyl monoxime method.	41 - 43	
17.	17/9/21	Determination of serum bilerubin.	44 - 45	
18.	17/9/21	Estimation of proteins in serum.	46 - 48	
19.	17/9/21	Determination of SGOT in serum.	49 - 51	
20.	20/9/21	Determination of SGPT in serum	52 - 53	
21.	20/9/21	Preparation of standard curve of maltose using 3,5 Dinitro salicylate reagent.	54 - 55	

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12 Mechanism of aldol condensation, claisen condensation, cannizzaro reaction, crossed aldol condensation, crossed cannizzaro reaction, benzoin condensation, perkin condensation. Knoevenagel, Reformatsky reaction, Wittig reaction, Michael addition.

13 Hoffman rearrangement: Migration to electron deficient nitrogen, Sandmeyer's reaction, basicity of amines, diazotisation and coupling, acidity of phenols, Williamson synthesis, Fries rearrangement, Kolbe reaction, Reimer tieman's reactions.

14 Nucleophilic aromatic substitution: Bimolecular displacement mechanisms, orientation, comparison of aliphatic nucleophilic substitution with that of aromatic.

15 Oxidation reduction reaction.

16 Study of the following official compounds- preparation, test for purity, assay and medicinal uses of Chlorbutol, Dimercaprol, Glyceryl trinitrate, Urea, Ethylene diamine dihyrate, Vanillin, Paraldehyde, Ethylene chloride, Lactic acid, Tartaric acid, citric acid, salicylic acid, aspirin, methyl salicylate, ethyl benzoate, benzyl benzoate, dimethyl pthalate, sodium lauryl sulphate, saccharin sodium, mephensin.

1.4 PHARMACEUTICAL ORGANIC CHEMISTRY (PRACTICAL)

Practical : 3 Hrs./Week

I. Introduction to the various laboratory techniques through demonstration involving synthesis of the following compounds (at least 8 compounds to be synthesised):

1. Acetanilde / aspirin (Acetylation)
2. Benzanilide / Phenyl benzoate (Benzoylation)
3. P-bromo acetanilide / 2,4,6 – tribromo aniline (Bromination)
4. Dibenzylidene acetone (Condensation)
5. 1-Phenylazo-2-napthol (Diazotisation and coupling)
6. Benzoic acid / salicylic acid (Hydrolysis of ester)
7. M-dinitro benzene (Nitration)
8. 9, 10 - Antharaquinone (Oxidation of anthracene) / preparation of benzoic acid from toluene or benzaldehyde
9. M-phenylene diamine (Reduction of M-dinitrobenzene) / Aniline from nitrobenzene
10. Benzophenone oxime
11. Nitration of salicylic acid
12. Preparation of picric acid
13. Preparation of O-chlorobenzoic acid from O-chlorotolune
14. Preparation of cyclohexanone from cyclohexanol

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II. Identification of organic compounds belonging to the following classes by :

Systematic qualitative organic analysis including preparation of derivatives Phenols, amides, carbohydrates, amines, carboxylic acids, aldehyde and ketones, Alcohols, esters, hydrocarbons, anilides, nitrocompounds.

III. Introduction to the use of stereo models:

Methane, Ethane, Ethylene, Acetylene, Cis alkene, Trans alkene, inversion of configuration.

Scheme of Practical Examination:

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	**20**	**70**
Duration	**03hrs**	**04hrs**

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name ..... M. Divya ..... PIN No. 203G1T0011

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Mr. / Ms. ..... MERUGU DIVYA .....

a student of ..... pharma ..... *with Regd. No.* ... 203G1T0011 .....

in the ... Organic chemistry ... *Laboratory during the year* 2020-21

No. of Experiments Conducted 7

No. of Experiments Attended 7

CH.V Apparao

Signature - Faculty incharge

Signature - Head of the Department

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Submitted for the Practical examination held on .....

EXAMINER-1

CH.V Apparao

EXAMINER-2

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S.No.	Date	Name of the Experiment	Page No.	Remarks
	27-3-2021	Introduction & Basic Laboratory techniques	1-9	
1	27-3-2021	preparation of Di Benzylidine acetone.	9-10	10/04
2	03-4-2021	preparation of phenyl azo-β Naphthol	11-12	
3	10-4-2021	preparation of Nitro Benzene.	13-14	11/04
4	17-4-2021	preparation of Aspirin.	15-16	
5	24-4-2021	preparation of Benzoic acid.	17-18	
6	11-9-2021	General producer of Qualitative Analysis	19-25	
7	11-9-2021	Qualitative Analysis of Sample-1.		06/10
	18-9-2021	Qualitative Analysis of Sample-2.		

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1.5 PHARMACEUTICAL INORGANIC CHEMISTRY (PRACTICAL)

Practical : 3 Hrs./Week

1. **Limit test (6 exercises)**
   a. Limit test for chlorides
   b. Limit test for sulphates
   c. Limit test for iron
   d. Limit test for heavy metals
   e. Limit test for arsenic
   f. Modified limit tests for chlorides and sulphates

2. **Assays (10 exercises)**
   a. Ammonium chloride- Acid-base titration
   b. Ferrous sulphate- Cerimetry
   c. Copper sulpahte- Iodometry
   d. Calcilugluconate- Complexometry
   e. Hydrogen peroxide – Permanganometry
   f. Sodium benzoate – Nonaqueous titration
   g. Sodium chloride – Modified volhard's method
   h. Assay of KI – KIO_3 titration
   i. Gravimetric estimation of barium as barium sulphate
   j. Sodium antimony gluconate or antimony potassium tartarate

3. **Estimation of mixture (Any two exercises)**
   a. Sodium hydroxide and sodium carbonate
   b. Boric acid and Borax
   c. Oxalic acid and sodium oxalate

4. **Test for identity (Any three exercises)**
   a. Sodium bicorbonate
   b. Barium sulphate
   c. Ferrous sulphate
   d. Potassium chloride

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5. **Test for purity (Any two exercises)**
   a. Swelling power in Bentonite
   b. Acid neutralising capacity in aluminium hydroxide gel
   c. Ammonium salts in potash alum
   d. Adsorption power heavy Kaolin
   e. Presence of Iodates in KI

6. **Preparations (Any two exercises)**
   a. Boric acids
   b. Potash alum
   c. Calcium lactate
   d. Magnesium suphate

Scheme of Practical Examination :

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment1&2	03	15
Viva	02	15
Max Marks	**20**	**70**
Duration	**03hrs**	**04hrs**

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

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ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Inorganic chemistry

Name ..... Chinthakayala kamala ..... PIN No. 203G1T0004

Certified that this is the bonafide record of practical work done by

Mr. / Ms. ..... Chinthakayala kamala .....

a student of ..... pharm-D ..... *with Regd. No.* ..... 203G1T0004 .....

in the ..... Inorganic chemistry ..... *Laboratory during the year* 2020-2021

No. of Experiments Conducted 27

No. of Experiments Attended 27

Signature - Faculty incharge

Signature - Head of the Department

Submitted for the Practical examination held on 9/6/21

EXAMINER-1

EXAMINER-2

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Date	Name of the Experiment	Page No.	Remarks
23/2/202	Apparatus used in volumetric Analysis	1-5	
2/3/21	Calibration of volumetric flask	6-9	
10/3/21	Standaradisation of sodium hydroxide	10-11	
10/3/21	Assay of Ammonium chloride	12-13	
10/3/21	Standardisation of 0.1M HCl using Anhydrous Na_2CO_3	14-15	
16/3/21	Assay of sodium bicarbonate ($NaHCO_3$)	16-17	
16/3/21	Assay of Boric acid	18-19	
16/3/21	Assay of Calcium Carbonate	20-21	
	NON-AQUEOUS TITRATION	22	
23/3/21	Standaradisation of 0.1M perchloric acid	23-24	
23/3/21	Assay of sodium benzoate	25-27	
	COMPLEXOMETRIC TITRATION	28-29	
30/3/21	Standaradisation of Disodium ethylene Diamine tetra acetic acid	30-31	
30/3/21	Assay of Calcium Gluconate	32-33	
	PRECIPITATION TITRATION	34	
6/4/21	Assay of sodium chloride	35-37	
	OXIDATION-REDUCTION TITRATION	38	
	PERMANGNOMETRY	39	
16/4/21	Assay of Hydrogen peroxide	40-41	
	CERIOMETRY	42-43	
16/4/21	Assay of Ferrous sulphate	44-45	
	IODIMETRY	46	
20/4/21	Standaradisation of 0.05M Iodine using Arsenic Trioxide	47-48	
20/4/21	Standaradisation of Sodium thiosulphate	49-50	

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
17	20/4/21	Assay of Sodium thiosulphate	51-52	
18	14/9/21	Assay of copper sulphate	53-54	
		potassium Iodate Titration.	55	
19	14/9/21	Assay of potassium Iodide	56-57	
20	17/9/21	Gravimetric Estimation of Barium as Barium sulphate	58-59	
		LIMIT TESTS	60-61	
21	17/9/21	Limit test for Chloride	62-63	
22	17/9/21	Limit test for sulphate	64-66	
23	18/9/21	Limit test for Iron	67-69	
24	18/9/21	Limit test for heavy metals.	70-74	
25	18/9/21	Limit test for Lead	75-77	
26	18/9/21	Limit test for Arsenic	78-80.	

Completed

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3. Detailed syllabus and lecture wise schedule :

Title of the topic

1 Introduction to the science of microbiology. Major divisions of microbial world and Relationship among them.

2 Different methods of classification of microbes and study of Bacteria, Fungi, virus, Rickettsiae, Spirochetes.

3 Nutritional requirements, growth and cultivation of bacteria and virus. Study of different important media required for the growth of aerobic and anaerobic bacteria & fungi. Differential media, enriched media and selective media, maintenance of lab cultures.

4 Different methods used in isolation and identification of bacteria with emphasis to different staining techniques and biochemical reactions. Counting of bacteria -Total and Viable counting techniques.

5 Detailed study of different methods of sterilization including their merits and demerits. Sterilization methods for all pharmaceutical products. Detailed study of sterility testing of different pharmaceutical preparations . Brief information on Validation.

6 Disinfectants- Study of disinfectants, antiseptics, fungicidal and virucidal agents factors affecting their activation and mechanism of action. Evaluation of bactericidal, bacteristatic, , virucidal activities, evaluation of preservatives in pharmaceutical preparations.

7 Immunology- Immunity, Definition, Classification, General principles of natural immunity, Phagocytosis, acquired immunity(active and passive) . Antigens, chemical nature of antigens structure and formation of Antibodies, Antigen-Antibody reactions. Bacterial exotoxins and endotoxins. Significance of toxoids in active immunity, Immunization programme, and importance of booster dose.

8 Diagnostic tests : Schick's Test, Elisa test, Western Blot test, Southern Blot PCR Widal, QBC, Mantaux Peripheral smear. Study of malarial parasite.

9 Microbial culture sensitivity Testing: Interpretation of results Principles and methods of different microbiological assays, microbiological assay of Penicillin, Streptomycin and vitamin B_2 and B_{12}. Standardisation of vaccines and sera.

10 Study of infectious diseases: Typhoid, Tuberculosis, Malaria, Cholera, Hepatitis, Meningitis, Syphilis & Gonorrhea and HIV.

2.2 PHARMACEUTICAL MICROBIOLOGY (PRACTICAL)

Practical : 3 Hrs./Week

Title of the Experiment:

1 Study of apparatus used in experimental microbiology*.
2 Sterilisation of glass ware's. Preparation of media and sterilisation.*
3 Staining techniques – Simple staining ; Gram's staining ; Negative staining**
4 Study of motility characters*.
5 Enumeration of micro-organisms (Total and Viable)*
6 Study of the methods of isolation of pure culture.*
7 Bio chemical testing for the identification of micro*-organisms.

8 Cultural sensitivity testing for some micro-organisms.*
9 Sterility testing for powders and liquids.*
10 Determination of minimum inhibitory concentration.*
11 Microbiological assay of antibiotics by cup plate method.*
12 Microbiological assay of vitamins by Turbidometric method**
13 Determination of RWC.**
14 Diagnostic tests for some common diseases, Widal, malarial parasite.**

* Indicate minor experiment & ** indicate major experiment

Assignments:

1 Visit to some pathological laboratories & study the activities and equipment/instruments used and reporting the same.
2. Visit to milk dairies (Pasturization) and microbial laboratories(other sterization methods) & study the activities and equipment/instruments used and reporting the same.
3. Library assignments
   a. Report of recent microbial techniques developed in diagnosing some common diseases.
   b. Latest advancement developed in identifying, cultivating & handling of microorganisms.

Format of the assignment:

1. Minimum & Maximum number of pages.
2. It shall be computer draft copy.
3. Reference(s) shall be included at the end.
4. Name and signature of the student.
5. Assignment can be a combined presentation at the end of the academic year.
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination:

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	**20**	**70**
Duration	**03hrs**	**04hrs**

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

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ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name V.S.S. Manojna Naidu PIN No. 193G1T0022

Certified that this is the bonafide record of practical work done by

Mr. / Ms. V.S.S. Manojna Naidu

a student of Pharm. D II^nd year *with Regd. No.* 193G1T0022

in the Pharmaceutical Microbiology Laboratory *during the year* 2020-2021

No. of Experiments Conducted 20 *No. of Experiments Attended* 20

Signature - Faculty incharge

Signature - Head of the Department
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SURAMPALEM-533 437

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EXAMINER-1

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S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	4/11/20	Introduction Into Microbiology	1-3	
2.	4/11/20	Common Rules and Regulation for safety	4-5	
3.	11/11/20	Study of Apparatus used in experimental Microbiology	6-10	
4.	18/11/20	Sterilisation of Glass ware	11-12	
5.	25/11/20	Preparation and sterilization of Nutrient broth	13-14	
6.	2/12/20	Preparation and Sterilisation of Nutrient Agar.	15-16	
7.	9/12/20	Inoculation of culture into different media	17-18	
8.	16/12/20	Staining techniques	19-20	
9.	28/12/20	Simple staining	21-22	
10.	30/12/20	Gram staining.	23-25	
11.	6/1/21	Motility Of Bacteria	26-26	
12.	20/1/21	Test for sterility For sterile Water for Injection	29-31	
13.	3/2/21	Test for sterility For Solids	32-34	
14.	10/2/21	Study of Methods of Isolation of pure cultures	35-37	
15.	17/2/21	Microbiological assay of Antibiotic by cup plate method	38-40	8/3/21
16.	3/3/21	Microbiological assay of Antibiotic by using Turbidimetric Method	41-43	
17.	10/3/21	Determination of Minimum Inhibitory Concentration of phenol	44-45	
18.	17/3/21	Biochemical Test for Identification of Microorganism - Fermentation of Carbohydrates	46-47	17/3/21

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S.No.	Date	Name of the Experiment	Page No.	Remarks
19	31/3/21	Biochemical testing for Identification of Micro organisam VOGS PROSKAUER Det Test	48-49	
20	15/4/21	Determination of Riedal-Walker Co-Efficient	50-51	

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2.3 PHARMACOGNOSY & PHYTOPHARMACEUTICALS (PRACTICAL)

Practical : 3 Hrs./Week

General Requirements: Laboratory Napkin, Observation Book 150 pages Zero brush, Needle, Blade, Match box.

List of experiments:

1 Introduction of Pharmacognosy laboratory and experiments.
2 Study of cell wall constituents and cell inclusions.
3 Macro, powder and microscopic study of Datura.
4 Macro, powder and microscopic study of Senna.
5 Macro, powder and microscopic study of Cassia.cinnamon.
6 Macro, powder and microscopic study of Cinchona.
7 Macro, powder and microscopic study of Ephedra.
8 Macro, powder and microscopic study of Quassia.
9 Macro, powder and microscopic study of Clove
10 Macro, powder and microscopic study of Fennel.
11 Macro, powder and microscopic study of Coriander.
12 Macro, powder and microscopic study of Isapgol.
13 Macro, powder and microscopic study of Nux vomica.
14 Macro, powder and microscopic study of Rauwolfia.
15 Macro, powder and microscopic study of Liquorice.
16 Macro, powder and microscopic study of Ginger.
17 Macro, powder and microscopic study of Podophyllum.
18 Determination of Iodine value.
19 Determination of Saponification value and unsaponifiable matter.
20 Determination of ester value.
21 Determination of Acid value.
22 Chemical tests for Acacia.
23 Chemical tests for Tragacanth.
24 Chemical tests for Agar.
25 Chemical tests for Starch.
26 Chemical tests for Lipids.(castor oil,sesame oil, shark liver oil,bees wax)
27 Chemical tests for Gelatin.

Scheme of Practical Examination:

	Sessionals	Annual
Identification	04	10
Synopsis	04	10
Major Experiment	07	20
Minor Experiment	03	15
Viva	02	15
Max Marks	20	70
Duration	03hrs	04hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance.

Practicals

Title of the Experiment:

1 Study of agonistic and antagonistic effects of drugs using Guinea-pig ileum preparation.**
2 To study the effects of drugs on intestinal motility using frog's esophagus model*
3 To study the effects of drugs using rat uterus preparation.**
4 To study the anticonvulsant property of drugs (any one model).*
5 To study antihistaminic property of drug using histamine induced anaphylactic reaction in guinea pigs.
6 To study the apomorphine-induced compulsive behaviour (stereotypy) in mice.*
7 To study the muscle relaxant property of diazepam in mice using rotarod apparatus.*
8 To study the antiinflammatory property of indomethacin against carrageenan-induced paw oedema.**
9 To study the anxiolytic effect of diazepam in mice using mirrored-chamber apparatus.**
10 To demonstrate the effect of various drugs on the blood pressure and respiration of anaesthetized dog.
11 To study the effect of anthelmintics on earthworms.
12 To study the taming effect of chlorpromazine.*
13 To study the effects of drugs on vas deferense of the male rat.**
14 To study the effect of drugs on pesticide toxicity using rats as model.
15 To study the effect of drugs on heavy metal toxicity.

** indicate major experiment & * indicate minor experiment

Scheme of Practical Examination:

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	**20**	**70**
Duration	**03hrs**	**04hrs**

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

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ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name G. Sankeerthana PIN No. 193G1T0011

Certified that this is the bonafide record of practical work done by

Mr. / Ms. G. Sankeerthana

a student of 2nd Pharm.d *with Regd. No.* 193G1T0011

in the PHARMACOGNOSY *Laboratory during the year* 2020-2021

No. of Experiments Conducted 24 *No. of Experiments Attended* 24

Signature - Faculty incharge

Signature - Head of the Department

Submitted for the Practical examination held on

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Md. Shareef

EXAMINER-1

EXAMINER-2

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	Name of the Experiment	Page No.	Remarks
2020	INTRODUCTION TO PHARMACOGNOSY LABORATORY AND EXPERIMENTS	1-9	
020	STUDY OF COMPOUND MICROSCOPE	10-14	
020	MACROSCOPY, MICROSCOPY AND POWDERED MICRCOSCOPIC STUDY OF DATURA	15-18	
020	MACROSCOPY, MICROSCOPY AND POWDERED MICRCOSCOPIC STUDY OF RAWOIFIA	19-21	
2020	MACROSCOPY, MICROSCOPY AND POWDERED MICRCOSCOPIC STUDY OF LIQUORICE	22-25	
2020	CHEMICAL TESTS FOR ACACIA	26	
2020	CHEMICAL TESTS FOR STARCH	27-28	
021	MACROSCOPY, MICRCOSCOPY AND POWDERED MICRCOSCOPIC STUDY OF SENNA	29-31	
2021	MACROSCOPY, MICRCOSCOPY AND POWDERED MICROSCOPIC STUDY OF CINCHONA	32-34	
2021	MACROSCOPY, MICROSCOPY AND POWDERED MICROSCOPY OF NUX-VOMICA.	35-36	
2021	MACROSCOPY, MICROSCOPY AND POWDERED MICROSCOPY OF CINNAMON.	37-39	
2021	MACROSCOPY, MICROSCOPY AND POWDERED MICROSCOPY OF CLOVE	40-43	
	MACROSCOPY, MICROSCOPY AND POWDERED		
/2021	CHEMICAL TESTS FOR TRAGACANTH	44-45	
/2021	CHEMICAL TESTS FOR AGAR	46-47	
/2021	MACROSCOPY, MICROSCOPY AND POWDER	48-50	
	MICROSCOPIC STUDY OF EPHEDRA		
2021	MACROSCOPY, MICROSCOPY AND POWDER	51-53	
	MICROSCOPIC STUDY OF FENNEL		
2021	MACROSCOPY, MICROSCOPY AND POWDER	54-56	
	MICROSCOPIC STUDY OF CORIANDER		
2021	MACROSCOPY, MICROSCOPY AND POWDER	57-58	
	MICROSCOPIC STUDY OF PODOPHYLLUM		
7/2021	MACROSCOPY, MICROSCOPY AND POWDER	59-61	
	MICROSCOPIC STUDY OF QUASSIA		
1/2021	MACROSCOPY, MICROSCOPY AND POWDER	62-64	
	MICROSCOPIC STUDY OF GINGER		

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
21.	14/7/2021	MACROSCOPY, MICROSCOPY AND POWDERED MICROSCOPIC STUDY OF ISAPGOL	65-66	
22.	19/7/2021	DETERMINATION OF ACID VALUE OF OILS	67-68	
23.	19/7/2021	DETERMINATION OF SAPONIFICATION OF AND ESTER VALUE OF OILS	69-70	
24.	20/7/2021	TEST FOR LIPIDS	71-72	

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3. **Detailed syllabus and lecture wise schedule :**

Etiopathogenesis and pharmacotherapy of diseases associated with following systems/ diseases

	Title of the topic
1	**Cardiovascular system:** Hypertension, Congestive cardiac failure, Angina Pectoris, Myocardial infarction, , Hyperlipidaemias, Electrophysiology of heart and Arrhythmias
2	**Respiratory system :** Introduction to Pulmonary function test, Asthma, Chronic obstructive airways disease, Drug induced pulmonary diseases **Endocrine system :** Diabetes, Thyroid diseases, Oral contraceptives, Hormone replacement therapy, Osteoporosis
3	**General prescribing guidelines for** a. Paediatric patients b. Geriatric patients c. Pregnancy and breast feeding
4	**Ophthalmology:** Glaucoma, Conjunctivitis- viral & bacterial
5	**Introduction to rational drug use** Definition, Role of pharmacist Essential drug concept Rational drug formulations

2.6 PHARMACOTHERAPEUTICS - I (PRACTICAL)

Practical : 3 Hrs./Week

Practicals :

Hospital postings in various departments designed to complement the lectures by providing practical clinical discussion; attending ward rounds; follow up the progress and changes made in drug therapy in allotted patients; case presentation upon discharge. Students are required to maintain a record of cases presented and the same should be submitted at the end of the course for evaluation. A minimum of 20 cases should be presented and recorded covering most common diseases.

Assignments :

Students are required to submit written assignments on the topics given to them. Topics allotted should cover recent developments in drug therapy of various diseases. A minimum of THREE assignments [1500 – 2000 words] should be submitted for evaluation.

Format of the assignment:

1. Minimum & Maximum number of pages.
2. Reference(s) shall be included at the end.
3. Assignment can be a combined presentation at the end of the academic year.
4. It shall be computer draft copy.
5. Name and signature of the student.
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination:

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	**20**	**70**
Duration	**03hrs**	**04hrs**

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

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ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

me V.S.S. Manojna Naidu PIN No. 193G1T0022

Certified that this is the bonafide record of practical work done by

Mr. / Ms. Vanarasi Sri Satya Manojna Naidu

student of IInd Pharm.D *with Regd. No.* 193G1T0022

the Pharmacotherapeutics-I *Laboratory during the year* 2020-2021

No. of Experiments Conducted 19 *No. of Experiments Attended* 19

Signature - Faculty incharge

Signature - Head of the Department

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EXAMINER-2

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Pointer

Date	Name of the Experiment	Page No.	Remarks
	Cardiovascular System	1-48	
1/11/20	Hypertension	1-5	
1/11/20	Congestive Cardiac Failure	6-10	
8/11/20	Caronary Artery Disease with Unstable Angina	10-15	
25/11/20	Caronary Artery Disease with deft Ventricular dysfunction (unstable Angina).	16-21	
2/12/20	Acute MI with Severe LV dysfunction	22-27	
9/12/20	MI with pleural effusion	28-33	
16/12/20	Dyslipidemia	34-38	
23/12/20	Arrythmia	39-42	
30/12/20	Dilated Cardiac Myopathy	43-48	
	Respiratory System	49-68	
6/1/21	Asthama	49-53	
20/1/21	Acute Asthama	54-59	
3/2/21	COPD-1	60-63	

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Pointer

Date	Name of the Experiment	Page No.	Remarks
10/2/21	COPD-2	64-68	
	Endocrine System	69-96	
17/2/21	Type 1 Diabetes Mellitus	69-75	
24/2/21	Type 2 Diabetes Mellitus	76-82	
5/3/21	Hypothyroidism	83-87	
10/3/21	Hyperthyroidism	88-92	
17/3/21	Osteoporosis.	93-96	
	Ophthalmology	97-101	
24/3/21	Glaucoma.	97-101	

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3.1 PHARMACOLOGY – II (PRACTICAL)

Practical : 3 Hrs./Week

List of Experiments:

1. Study of laboratory animals and their handling (a. Frogs, b. Mice, c. Rats, d. Guinea pigs, e. Rabbits).
2. Study of physiological salt solutions used in experimental pharmacology.
3. Study of laboratory appliances used in experimental pharmacology.
4. Study of use of anesthetics in laboratory animals.
5. To record the dose response curve of Ach using isolated ileum/rectus abdominis muscle preparation.
6. To carry out bioassay of Ach using isolated ileum/rectus abdominis muscle preparation by interpolation method.
7. To carry out bioassay of Ach using isolated ileum/rectus abdominis muscle preparation by three point method.
8. To record the dose response curve of Histamine using isolated guinea-pig ileum preparation.
9. Study of agonistic and antagonistic effects of drugs using isolated guinea-pig ileum preparation.
10. To carry out bioassay of Histamine using isolated guinea-pig ileum preparation by interpolation method.
11. To carry out bioassay of Histamine using guinea-pig ileum preparation by three point method.
12. To study the routes of administration of drugs in animals (Rats, Mice, Rabbits).
13. Study of theory, principle, procedure involved and interpretation of given results for the following experiments:
    a) Analgesic property of drug using analgesiometer.
    b) Antiinflammatory effect of drugs using rat-paw edema method.
    c) Anticonvulsant activity of drugs using maximal electroshock and pentylene tetrazole methods.
    d) Antidepressant activity of drugs using pole climbing apparatus and pentobarbitone induced sleeping time methods.
    e) Locomotor activity evaluation of drugs using actophotometer and rotorod.
    f) Cardiotonic activity of drugs using isolated frog heart and mammalian heart preparations.

Scheme of Practical Examination:

	Sessionals	Annual
Identification	02	10
Synopsis	04	10
Major Experiment (Bioassay)	08	30
Minor Experiment (Interpretation of given Graph or simulated experiment)	04	10
Viva	02	10
Max Marks	20	70
Duration	3hrs	4hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Pharmacology - II

Name Ch. Lakshmi Renuka PIN No. 183G1T0006

Certified that this is the bonafide record of practical work done by

Mr. / Ms. Ch. Lakshmi Renuka

a student of III Pharma. D *with Regd. No.* 183G1T0006

in the Pharmacology - II *Laboratory during the year* 2020-21

No. of Experiments Conducted 4 *No. of Experiments Attended* 4

Signature - Faculty incharge *Signature - Head of the Department*

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7/8/21
EXAMINER-2

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	10/11/20	Introduction	1	
2.	04/11/20	study of laboratory animals and their handling	2-6	
3.	1/12/20	study of physiological salt solutions used in pharmacology experiments	7-8	
4.	8/12/20	Study of Appliances used in experimental pharmacology.	9-11	
5.	15/12/20	Dose response curve of Ach on frogs rectus abdominal muscle preparation	12-13	
6.	22/12/20	Potentiation of Ach by neostigmine on frog's rectus abdominal muscle	14-15	
7.	29/12/20	Inhibition of Ach by lignocaine on frog's rectus abdominal muscle.	16-17	
8.	5/1/21	Complete inhibition of Ach response by bancuronium of frog's rectus abdominal muscle	18-19	
9.	19/1/21	Bioassay of Ach by matching method using frog's rectus abdominal muscle preparation.	20-21	
10.	2/2/21	Bioassay of Ach by interpotation method by using frog rectus abdominus muscle preparation	22.23	
11.	9/2/21	Bioassay of Ach by two point method by using frog rectus abdominus muscle preparation	24-25	
12.	16/2/21	Bioassay of Ach by three point method by using frog rectus abdominus muscle preparation	26-28	

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S.No.	Date	Name of the Experiment	Page No.	Remarks
13.	23/2/21	Evaluation of muscle relaxant property of diazepam using Rotarod apparatus	29-30	
14.	2/3/21	Evaluation of CNS depressant activity of chlorpromazine using Actophotometer.	31-32	
15.	9/3/21	Analgesic effect of pentazocin on mice using Eddy's hot plate method.	33-34.	

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- **Fluorimetric Analysis:** Theory, luminescence, factors affecting fluorescence, quenching. Instrumentation, Applications, fluorescent indicators, study of pharmaceutically important compounds estimated by fluorimetry.

b. **Flame Photometry:** Theory, nebulisation, flame and flame temperature, interferences, flame spectrometric techniques and instrumentation and pharmaceutical applications.

c. **Atomic Absorption Spectrometry:** Introduction, Theory, types of electrodes, instrumentation and applications.

d. **Atomic Emission Spectroscopy:** Spectroscopic sources, atomic emission spectrometers, photographic and photoelectric detection.

e. **NMR & ESR (introduction only):** Introduction, theoretical aspects and applications.

f. **Mass Spectroscopy: (Introduction only)** – Fragmentation, types of ions produced mass spectrum and applications.

g. **Polarimetry: (Introduction only)** – Introduction to optical rotatory dispersion, circular dichroism, polarimeter.

h. **X-RAY Diffraction: (Introduction only)** – Theory, reciprocal lattice concept, diffraction patterns and applications.

i. **Thermal Analysis:** Introduction, instrumentation, applications, and DSC and DTA.

3.2 PHARMACEUTICAL ANALYSIS (PRACTICAL)

Practical : 3 Hrs./Week

List of Experiments:

1. Separation and identification of Amino Acids by Paper Chromatography.
2. Separation and identification of Sulpha drugs by TLC technique.
3. Effect of pH and solvent on the UV spectrum of given compound.
4. Comparison of the UV spectrum of a compound with that of its derivatives.
5. Determination of dissociation constant of indicators using UV-Visible spectroscopy.
6. Conductometric titration of mixture of acids with a strong base.
7. Potentiometric titration of a acid with a strong base.
8. Estimation of drugs by Fluorimetric technique.
9. Study of quenching effect in fluorimetry.
10. Colourimetric estimation of Supha drugs using BMR reagent.

11. Simultaneous estimation of two drugs present in given formulation.
12. Assay of Salicylic Acid by colourimetry.
13. Determination of Chlorides and Sulphates in Calcium gluconate by Nepheloturbidimetric Method.
14. Determination of Na/K by Flame Photometry.
15. Determination of pKa using pH meter.
16. Determination of specific rotation.
17. Comparison of the IR spectrum of a compound with that of its derivatives.
18. Demonstration of HPLC.
19. Demonstration of HPTLC.
20. Demonstration of GC-MS.
21. Demonstration of DSC.
22. Interpretation of NMR spectra of any one compound.

Reference Books:

1. Text Book of Pharm. Analysis by Higuchi. T and Hasen. E. B., New York Inter Science Publishers.
2. Quantitative Pharma. Analysis by Jenkins, The Blakiston division, New York.
3. Quantitative Drug Analysis, by Garrot. D, Chapman & Hall Ltd., London.
4. Undergraduate Instrumental Analysis by James. E., CBS Publishers.
5. Instrumental Analysis by Willard and Merritt, EWP, East West Press Ltd., Delhi/Madras.
6. Pharm Analysis by Skoog and West, Sounders Manipal College Publishing.
7. Text Book of Chemical Analysis, by A.I.Vogel, ELBS with Macmillan press, Hampshire.
8. Textbook of Pharm. Analysis by K.A.Connors, John Wiley & Sons, New York, Brisbane, Singapore.
9. Textbook of Pharm. Analysis (Practical) by Beckett & Stenlake, CBS Publishers, Delhi.
10. Textbook of Drug Analysis by P.D. Sethi., CBS Publishers, Delhi.
11. Spectroscopy by Silverstein, John & Wiley & Sons. Inc., Canada & Singapore.
12. How to practise GMP-A Plan for total quality control by P.P. Sharma, Vandana Publications, Agra.
13. The Science & Practice of Pharmacy by Remington Vol-I & II, Mack Publishing Co. Pennsylvania.
14. TLC by Stahl, Spring Verlay.
15. Text Book of Pharm. Chemistry by Chatten, CBS Publications.
16. Spectroscopy by William Kemp, ELBS with Macmillan Press, Hampshire.
17. I.P.-1996, The Controller of Publications, New Delhi.
18. BPC- Dept. of Health, U.K. for HMSO.
19. USP - Mack Publishing Co., Easton, PA.
20. The Extra Pharmacopoeia -- The Pharm. Press, London.

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

PHARMACEUTICAL ANALYSIS

Name Y. HEMALATHA PIN No. 183G1T0023

Certified that this is the bonafide record of practical work done by

Mr. / Ms. Y. Hema latha

a student of III-pharm-D *with Regd. No.* 183G1T0023

in the pharmaceutical Analysis *Laboratory during the year* 2020-2021

No. of Experiments Conducted 23 *No. of Experiments Attended* 23

B. Sujiyo 05/03/2021

Signature - Faculty incharge

Signature - Head of the Department

PRINCIPAL
Aditya Pharmacy College
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Submitted for the Practical examination held on .....

B. Sujiyo 05/03/2021

EXAMINER-1

EXAMINER-2

WIKAS, NLR

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1	9/11/2020	Seperation and Identification of Amino acids by Ascending paper chromatography	1	
2	16/11/2020	Identification of Aminoacids by Radial paper Chromatography	4	
3	23/11/2020	preparation of Thin layered chromatographic plate	7	05/08/2021
4	30/11/2020	Identification of Sulphanamide by Thin layered chromatography	9	
	7/12/2020	Introduction to UV-Visible Spectroscopy.	11	
5	14/12/2020	Determination of Absorption Maxima of KMnO4	17	
6.	21/12/2020	Estimation of Salicylic acid by Calibration Curve by Colorimetry	19	05/08/2021
7	28/12/2020	Assay of paracetamol.	21	
8.	11/01/2021	Effect of pH and absorbance Spectrum of Sulphonilamide.	23	
9.	4/01/2021	Assay of paracetamol tablets by using chemical derivatization method.	25	
10	01/02/2021	Assay of paracetamol by using direct compression method by Colorimetry	27	05/08/2021
11.		Calibration of potentiometer.	29	
12.	08/02/2021	potentiometric titration of strong acid with Strong base.	30	
13.	8/02/21	calibration of conductivity meter.	31	
14.	22/2/21	Conductimetric titration of strong acid Vs Strong base	33	05/08/2021
15.	1/03/21	determination of pka of Aspirin by pH meter.	34	

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SURAMPALEM-533

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
17	15/03/21	Determination of Quinine Sulphate by using Flaurometry.	36	
18	22/03/21	Estimation of Sulphate ions by using Nephlometer and turbidometer.	38	25/08/20
19	22/03/21	Determination of Na^+ and K^+ concentration in unknown Sample using flame photometry.	41	
20	23/03/21	Interpretation of IR-Spectra.	43	
21	5/4/2021	Operation of HPLC Standard operation procedure.	45	
22	12/04/2021	Standard operating procedure for Gas chromatography.	47	
23.	16/04/21	Identification of metronidazole in a given Sample using Ascending paper chromatography	49	05/08/20

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4 **Oncology:** Basic principles of Cancer therapy, General introduction to cancer chemotherapeutic agents, Chemotherapy of breast cancer, leukemia. Management of chemotherapy nausea and emesis

5 **Dermatology:** Psoriasis. Scabies. Eczema. Impetigo

3.3 PHARMACOTHERAPEUTICS – II (PRACTICAL)

Practical : 3 Hrs./Week

Practicals :

Hospital postings in various departments designed to complement the lectures by providing practical clinical discussion; attending ward rounds; follow up the progress and changes made in drug therapy in allotted patients; case presentation upon discharge. Students are required to maintain a record of cases presented and the same should be submitted at the end of the course for evaluation.

The student shall be trained to understand the principle and practice involved in selection of drug therapy including clinical discussion.

A minimum of 20 cases should be presented and recorded covering most common diseases.

Assignments :

Students are required to submit written assignments on the topics given to them. Topics allotted should cover recent developments in drug therapy of various diseases. A minimum of THREE assignments [1500 – 2000 words] should be submitted for evaluation.

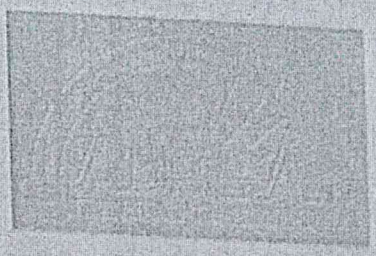
Format of the assignment :

1. Minimum & Maximum number of pages.
2. Reference(s) shall be included at the end.
3. Assignment can be a combined presentation at the end of the academic year.
4. It shall be computer draft copy.
5. Name and signature of the student.
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination :

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	**20**	**70**
Duration	**03hrs**	**04hrs**

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

PHARMACOTHERAPUTICS-II

Name Y. HEMA LATHA PIN No. 1 8 3 G 1 T 0 0 2 3

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Mr. / Ms. Y. Hemalatha

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in the pharmacotherapeutics-II *Laboratory during the year* 2020-2021.

No. of Experiments Conducted 20 No. of Experiments Attended 20

6/8/21

Signature - Faculty incharge

Signature - Head of the Department

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SURAMPALEM-533 437

Submitted for the Practical Examination held on .....

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SURAMPALEM-533 437

EXAMINER-1 7/12/21

EXAMINER-2

Pointer

Date	Name of the Experiment	Page No.	Remarks
1/2020	Introduction to SOAP format	1	
11/2020	Case Study on Bacterial Meningitis	4	
11/2020	Case Study on Tuberculosis	11	
12/2020	Case Study on Malaria.	19	
12/2020	Case Study on Urinary Tract Infection	26	
12/2020	Case Study on Lower Respiratory Tract Infection	33	
12/2020	Case Study on Acute Gastroenteritis	41	
01/2021	Case Study on Septicemia	50	
/2021	Case Study on HIV	57	
01/2021	Case Study on pneumonia	64	
02/2021	Case Study on Bronchitis	72	
02/2021	Case Study on Rheumatoid Arthritis	79	
02/21	Case Study on Osteoarthritis	86	
02/21	Case Study on Gout	92	
03/21	Case Study on Spondylitis	99	
03/21	Case Study on Acute Renal Failure	106	
3/2021	Case Study on Renal Calculi	112	
03/21	Case Study on Chronic kidney Disease	122	
/2021	Case Study on psoriasis	129	
4/2021	Case Study on Scabies	136	
07/2021	Case Study on Chronic Eczema.	142	

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3.5 MEDICINAL CHEMISTRY (PRACTICAL)

Practical : 3 Hrs./Week

1. Assays of important drugs from the course content.
2. Preparation of medicinally important compounds or intermediates required for synthesis of drugs.
3. Monograph analysis of important drugs.
4. Determination of partition coefficients, dissociation constants and molar refractivity of compounds for QSAR analysis.

Reference Books:

a. Wilson and Gisvold's Text book of Organic, Medicinal and Pharmaceutical Chemistry, Lippincott-Raven Publishers-New York, Philadelphia.
b. William.O.Foye, Principles of Medicinal Chemistry, B.I. Waverly Pvt. Ltd., New Delhi.
c. Burgers, Medicinal Chemistry, M.E.,Welly Med.Chemistry M.E. Walffed Johnwilley and Sons, Wiley-interscience Publication, New York, Toranto.
d. A Text Book of Medicinal Chemistry Vol. I and II by Surendra N. Pandeya, S.G. Publisher, 6, Dildayal Nagar, Varanasi -10.
e. Indian Pharmacopoeia 1985 and 1996. The Controller of Publications, Civil Lines, Delhi - 54.
f. Current Index of Medical Specialities (CIMS) and MIMS India, MIMS, A.E. Morgan Publications (I) Pvt. Ltd, New Delhi-19.
g. Organic Drug Synthesis-Ledniser Mitzsher Vol. I and II.
h. Pharmaceutical Chemistry drug Synthesis Vol. I and II by H. J. Roth and A. Kleemann.
i. The Science and Practice of Pharmacy Vol. 1 and 2, Remington, MACK Publishing Company, Easton, Pennsylvania.

PRINCIPAL Adarsa Pharmacy College SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name ALEENA ROY PIN No. 183G1T0001

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Mr. / Ms. ALEENA ROY

a student of III. PHARM. D *with Regd. No.* 183G1T0001

in the MEDICINAL CHEMISTRY *Laboratory during the year* 2020-2021

No. of Experiments Conducted 09 No. of Experiments Attended 09

Signature - Faculty incharge

PRINCIPAL
Aditya College of Pharmacy
SURAMPALEM-533437

Signature - Head of the Department

Submitted for the Practical examination held on .....

8/2/21

EXAMINER-1

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EXAMINER-2

Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	17/4/20	Synthesis of benzocaine	1-2	P
2.	24/11/20	Preparation of 7-OH -4 methyl Coumarin	3-4	
3.	4/12/20	Preparation of Benzimidazole	5-6	
4.	11/12/20	Preparation of Benzitriazole	7-8	
5.	18/12/20	Synthesis of Benzilic acid	9-10	
6.	25/12/20	Assay of Ascorbic acid	11-12	P
7.	1/1/21	Assay of Sulphonamide	13-14	
8.	8/1/21	Assay of Isoniazid	15-16	
9.	15/1/21	Assay of Metronidazole	17-18	
10.	15/1/21	Assay of Diclofenac Sodium	19-20	
11.	29/1/21	Assay of chloroquine phosphate	21-22	P
12.	5/2/21	Assay of Dapsone	23-24	
13.	12/2/21	Assay of Benzocaine	25-26	
14.	19/2/21	Preparation of Fluorescein	27-28	
15.	5/3/21	Preparation of 5,5 diphenyl hydantoin	29-30	
16.	12/3/21	Preparation of 2,3 diphenyl quinoxaline	31-32	P
17.	19/3/21	Identification of Sulphanilamide	33	
18.	28/3/21	Identification of metronidazole	34	
19.	16/4/21	Identification Ascorbic acid	35	
20.	23/4/21	Identification of Isoniazid	36	
21.	23/4/21	Identification of Benzocaine	37	
22.	23/4/21	QSAR Studies	38-41	

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3.6 PHARMACEUTICAL FORMULATIONS (PRACTICAL)

Practical : 3 Hrs./Week

List of Experiments :

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)**

Scheme of Practical Examination :

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	20	70
Duration	03hrs	04hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name ALEENA ROY PIN No. 183G1T0001

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Mr. / Ms. ALEENA ROY

student of III YR PHARM-D *with Regd. No.* 183G1T0001

in the FORMULATIONS *Laboratory during the year* 2020-21

No. of Experiments Conducted 20 *No. of Experiments Attended* 20

Signature - Faculty incharge 22/4/2021

Signature - Head of the Department

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the Practical examination held on .....

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

K. Keerthi Sai 10/8/21.
EXAMINER-1

EXAMINER-2

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Aditya Pharmacy College
SURAMPALEM-533 437

Pointer

Date	Name of the Experiment	Page No.	Remarks
5.11.20	Introduction	1-3	
12.11.20	Formulation of paracetamol tablets by wet granulation	4-6	19/11/20
19.11.20	Formulations of Diclofenac sodium tablets by direct compression	7-9	26/11/20
26.11.20	Formulations of Soluble acetyl salicylic acid tablets	10-12	31/12/20
3.12.20	Formulations of Chewable laxative tablet	13-14	10/12/20
	Introduction to Parenterals	15-16	
10.12.20	Formulation of Ascorbic acid Inj	17	17/12/20
17.12.20	Formulation of Ca. Gluconate Inj.	18	31/12/20
31.12.20	Formulation of Dextrose & Nacl Injection	19	
7.1.21	Formulation of Sodium chloride inj	20	21/1/21
21.1.21	Evaluation of formulated pcm tablets	21-23	
28.1.21	Formulation and filling of hard gelatin capsules.	24-26	4/2/21
4.2.21	Formulation of pcm syrp & evaluation	27-29	11/2/21
11.2.21	Formulation of Al(OH)3 gel Suspension	30-31	
18.2.21	Formulation of salicylic acid and benzoic acid ointment	32-33	25/2/21
25.2.21	Formulation of diclofenac sodium gel, Evaluation by assay.	34-35	4/3/21
4.3.21	Preparation of vanishing cream	38	11/3/21
11.3.21	Preparation of cold cream	39	
18.3.21	Preparation of lipstick	40-41	25/3/21
25.3.21	Preparation of liquid shampoo	42	1/4/21
1.4.21	Preparation of tooth paste	43	
8.4.21	Preparation of tooth powder	44	22/4/21

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4.1 PHARMACOTHERAPEUTICS – III (PRACTICAL)

ıctical : 3 Hrs./Week

Practicals:
Hospital postings for a period of at least 50 hours is required to understand the principles and practice involved in ward round participation and clinical discussion on selection of drug therapy. Students are required to maintain a record of 15 cases observed in the ward and the same should be submitted at the end of the course for evaluation. Each student should present at least two medical cases they have observed and followed in the wards.

Etiopathogenesis and pharmacotherapy of diseases associated with following systems/ diseases:

Title of the topic

1. **Gastrointestinal system:** Peptic ulcer disease, Gastro Esophageal Reflux Disease, Inflammatory bowel disease, Liver disorders - Alcoholic liver disease, Viral hepatitis including jaundice, and Drug induced liver disorders.
2. **Haematological system:** Anaemias, Venous thromboembolism, Drug induced blood disorders.
3. **Nervous system:** Epilepsy, Parkinsonism, Stroke, Alzheimer's disease,
4. **Psychiatry disorders:** Schizophrenia, Affective disorders, Anxiety disorders, Sleep disorders, Obsessive Compulsive disorders
5. Pain management including Pain pathways, neuralgias, headaches.
6. Evidence Based Medicine

Assignments:
Students are required to submit written assignments on the topics given to them. Topics allotted should cover recent developments in drug therapy of various diseases. A minimum of THREE assignments [1500 – 2000 words] should be submitted for evaluation.

Format of the assignment:

1. Minimum & Maximum number of pages
2. Reference(s) shall be included at the end.
3. Assignment can be a combined presentation at the end of the academic year
4. It shall be computer draft copy
5. Name and signature of the student
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination :

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	20	70
Duration	03hrs	04hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

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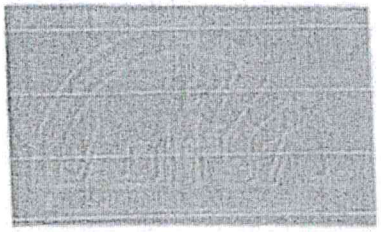

ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

: Nallaparaju Lalitha Sanjana PIN No. 1 7 3 G 1 T 0 0 1 1

Certified that this is the bonafide record of practical work done by

./Ms. NALLA PARAJU LALITHA SANJANA

tudent of IV PHARM·D *with Regd. No.* 173G1T0011

he PHARMACOTHERAPEUTICS - III *Laboratory during the year* 2020 - 2021

of Experiments Conducted 15 No. of Experiments Attended 15

gnature - Faculty incharge Signature - Head of the Department

Submitted for the Practical examination held on .....

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SURAMPALEM 533 437

EXAMINER-1 EXAMINER-2

Pointer

Date	Name of the Experiment	Page No.	Remarks
21.01.2021	INTRODUCTION TO SOAP FORMAT	1-2	
21.01.2021	CASE STUDY ON PEPTIC ULCER DISEASE	3-7	
04.02.2021	CASE STUDY ON GASTRO ESOPHAGAL REFLUX DISEASE	8-12	
11.02.2021	CASE STUDY ON GASTRO INTESTINAL OBSTRUCTION	13-17	
11.02.2021	CASE STUDY ON ALCOHOLIC LIVER DISEASE	18-22	
18.02.2021	CASE STUDY ON VIRAL HEPATITIS	23-29	
25.02.2021	CASE STUDY ON JAUNDICE	30-34	
04.03.2021	CASE STUDY ON PANCREATITIS	35-39	
08.03.2021	CASE STUDY ON CHOLEATHIASIS	40-43	
19.03.2021	CASE STUDY ON ANEMIA	44-48	
25.03.2021	CASE STUDY ON DEEP VEIN THROMBOSIS	49-53	
01.04.2021	CASE STUDY ON SEIZURES	54-58	
15.04.2021	CASE STUDY ON CEREBRO VASCULAR ACCIDENT WITH STROKE	59-63	
15.04.2021	CASE STUDY ON SCHIZOPRENIA	64-68	
22.04.2021	CASE STUDY ON MANIA	69-73	
29.04.2021	CASE STUDY ON HEAD ACHE	74-78	

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5 **Hospital pharmacy services**

a) Procurement & warehousing of drugs and Pharmaceuticals
b) Inventory control
   Definition, various methods of Inventory Control
   ABC, VED, EOQ, Lead time, safety stock
c) Drug distribution in the hospital
   i) Individual prescription method
   ii) Floor stock method
   iii) Unit dose drug distribution method
d) Distribution of Narcotic and other controlled substances
e) Central sterile supply services – Role of pharmacist

6 **Manufacture of Pharmaceutical preparations**

a) Sterile formulations – large and small volume parenterals
b) Manufacture of Ointments, Liquids, and creams
c) Manufacturing of Tablets, granules, capsules, and powders
d) Total parenteral nutrition

7 **Continuing professional development programs**
Education and training

8 **Radio Pharmaceuticals – Handling and packaging**

9 **Professional Relations and practices of hospital pharmacist**

4.2 HOSPITAL PHARMACY (PRACTICAL)

Practical : 3 Hrs./Week

1. Assessment of drug interactions in the given prescriptions
2. Manufacture of parenteral formulations, powders.
3. Drug information queries.
4. Inventory control

List of Assignments:

1. Design and Management of Hospital pharmacy department for a 300 bedded hospital.
2. Pharmacy and Therapeutics committee – Organization, functions, and limitations.
3. Development of a hospital formulary for 300 bedded teaching hospital
4. Preparation of ABC analysis of drugs sold in one month from the pharmacy.
5. Different phases of clinical trials with elements to be evaluated.
6. Various sources of drug information and systematic approach to provide unbiased drug information.
7. Evaluation of prescriptions generated in hospital for drug interactions and find out the suitable management.

Special requirements:

1. Each college should sign MoU with nearby local hospital having minimum 150 beds for providing necessary training to the students' on hospital pharmacy activities.
2. Well equipped with various resources of drug information.

Scheme of Practical Examination:

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	**20**	**70**
Duration	**03hrs**	**04hrs**

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

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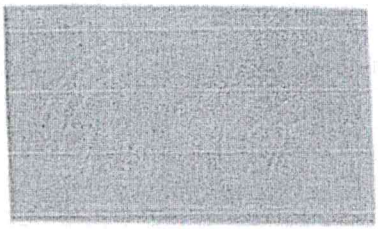
SURAMPALEM-533 437



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name GUDALA PREETHI SHARON PIN No. 1 7 3 9 1 T 0 0 0 5

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Mr. / Ms. GUDALA PREETHI SHARON

a student of IV PHARM D *with Regd. No.* 173911T0005

in the Hospital Pharmacy *Laboratory during the year* 2020-2021

No. of Experiments Conducted 23

No. of Experiments Attended 23

Signature - Faculty incharge

Signature - Head of the Department

Submitted for the Practical examination held on .....

EXAMINER-1

PRINCIPAL
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SURAMPALEM 533 437

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Aditya Pharmacy College

EXAMINER-2

Pointer

Date	Name of the Experiment	Page No.	Remarks
	Introduction to Hospital Pharmacy	01-02	Typed
	Introduction to Drug Interactions	03-07	Typed
09/11/2020	Drug interaction - I	08-10	Typed
16/11/2020	DI - 2	11-13	Typed
23/11/2020	DI - 3	14-16	Typed
30/11/2020	DI - 4	17	Typed
7/12/2020	DI - 5	18-20	Typed
14/12/2020	DI - 6	21-22	Typed
14/12/2020	DI - 7	23-24	Typed
21/12/2020	ME - 1	25	Typed
28/12/2020	ME - 2	26	Typed
4/1/2021	ME - 3	27	Typed
4/1/2021	ME - 4	28	Typed
	Introduction to Parenterals	29-31	Typed
11/1/2021	Preparation of DNS	32-33	Typed
18/1/2021	Preparation of Ringer's lactate	34-35	Typed
	Introduction to Powders	36-38	Typed
8/2/2021	Preparation of ORS Powder	39-40	Typed
15/2/2021	Preparation of Medicated Dusting Powder	41-42	Typed
	Introduction to Drug Information Queries	43-47	Typed
22/2/2021	DIQ - 1	48-51	Typed
01/3/2021	DIQ - 2	52-55	Typed
08/3/2021	DIQ - 3	56-59	Typed
	Introduction to Inventory Control	60-65	Typed
15/3/2021	ABC Analysis - 1	66-67	Typed
22/3/2021	ABC Analysis - 2	68-69	Typed
19/4/2021	EOQ - 1	70-71	Typed
26/4/2021	EOQ - 2	72	Typed

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4.3 CLINICAL PHARMACY (PRACTICAL)

Practical : 3 Hrs./Week

Students are expected to perform 15 practicals in the following areas covering the topics dealt in theory class.

a. Answering drug information questions (4 Nos)
b. Patient medication counselling (4 Nos)
c. Case studies related to laboratory investigations (4 Nos)
d. Patient medication history interview (3 Nos)

Assignment:

Students are expected to submit THREE written assignments (1500 – 2000 words) on the topics given to them covering the following areas dealt in theory class.

Drug information, Patient medication history interview, Patient medication counselling, Critical appraisal of recently published articles in the biomedical literature which deals with a drug or therapeutic issue.

Format of the assignment:

1. Minimum & Maximum number of pages.
2. Reference(s) shall be included at the end.
3. Assignment can be a combined presentation at the end of the academic year.
4. It shall be computer draft copy.
5. Name and signature of the student.
6. Time allocated for presentation may be 8+2 Min.

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2018

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ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Clinical pharmacy

Name ..... P. Divya ..... PIN No. 1 7 3 6 1 T 0 0 1 3

Certified that this is the bonafide record of practical work done by

Mr. / Ms. ..... P. Divya .....

a student of IV th Pharm-D ..... *with Regd. No.* ..... 1736 1T0013 .....

in the ..... Clinical pharmacy ..... *Laboratory during the year* ..... 2020-21 .....

No. of Experiments Conducted 25 *No. of Experiments Attended* 25

Signature - Faculty incharge

Signature - Head of the Department

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Submitted for the Practical examination held on .....

EXAMINER-1

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EXAMINER-2

S.no	Date	Name of the experiment	Page no	Remarks
1	19/11/2020	INTRODUCTION TO DRUG INFORMATION QUERY		
2	19/11/2020	Drug information query-1		
3	26/11/2020	Drug Information query-2		
4	3/12/2020	Drug information query-3		
5	10/12/2020	Drug information query-4		
6	10/12/2020	Drug information query-5		
7	24/12/2020	INTRODUCTION TO PATIENT COUNSELLING		
8	3/1/2021	CASE STUDY-1		
9	7/1/2021	CASE STUDY-2		
10	25/01/2021	CASE STUDY-3		
11	4/02/2021	CASE STUDY-4		
12	11/02/2021	CASE STUDY-5		
13	20/2/2021	INTRO TO MEDICATION HISTORY INTERVIEW		
14	25/2/2021	MEDICATION HISTORY INTERVIEW-1		
15	4/3/2021	MEDICATION HISTORY INTERVIEW-2		
16	11/3/2021	MEDICATION HISTORY INTERVIEW-3		
17	18/3/2021	MEDICATION HISTORY INTERVEEW-4		
18	25/3/2021	MEDICATION HISTORY INTERVIEW-5		
19	10/4/2021	INTRO TO LABORATORY DATA INTERPRETATION		
20	01/4/2021	CASE STUDY-1		
21	15/4/2021	CASE STUDY-2		
22	22/4/2021	CASE STUDY-3		
23	29/4/2021	CASE STUDY-4		
24	6/5/2021	CASE STUDY-5		

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4.5 BIOPHARMACEUTICS AND PHARMACOKINETICS (PRACTICAL)

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.

References:

a. Biopharmaceutics and Clinical Pharmacokinetics by, Milo Gibaldi
b. Remington's Pharmaceutical Sciences, By Mack Publishing Company, Pennsylvnia.
c. Pharmacokinetics: By Milo Glbaldi Donald, R. Mercel Dekker Inc.
d. Hand Book of Clinical Pharmacokinetics, By Milo Gibaldi and Laurie Prescott by ADIS Health Science Press.
e. Biopharmaceutics and Pharmacokinetics; By Robert F Notari
f. Biopharmaceutics; By Swarbrick
g. Bio pharmaceutics and Pharmacokinetics-A Treatise, By D. M. Brahmankar and Sunil B.Jaiswal, Vallabh Prakashan Pitampura, Delhi
h. Cilincal Pharmacokinetics, Concepts and Applications: By Malcolm Rowland and Thomas, N. Tozen, Lea and Febrger, Philadelphia, 1995.
i. Dissolution, Bioavailability and Bioequivalence, By Abdou H.M, Mack, Publishing Company, Pennsylvania 1989.
j. Biopharmaceutics and Clinical Pharmacokinetics-An introduction 4th edition Revised and expanded by Rebort F Notari Marcel Dekker Inn, New York and Basel, 1987.
k. Encyclopedia of Pharmaceutical Technology. Vol 13, James Swarbrick, James, C. Roylan, Marcel Dekker Inc. New York 1996.

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DEPARTMENT OF

Biopharmaceutics and Pharmacokinetics

Name Kanuri Jyothi PIN No. 17 3G 1T 0007

Certified that this is the bonafide record of practical work done by

Mr. / Ms. Kanuri Jyothi

a student of IV th pharm-D *with Regd. No.* 173G1T0007

in the Biopharmaceutics & PK *Laboratory during the year* 2020-21

No. of Experiments Conducted 15 *No. of Experiments Attended* 15

Signature - Faculty incharge

Signature - Head of the Department

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Submitted for the Practical examination held on .....

EXAMINER-1

EXAMINER-2

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
I	4/11/2020	Introduction	1-3	
1.	11/11/2020	Evaluation of dissolution rate of Commerical brand of paracetamol tablets as per IP/BP/USP	4-8	
2.	18/11/2020	Evaluation of hypothetical dissolution of two brands of paracetamol tablets	9-11	
3.	25/11/2020	Effect of binder on dissolution of Paracetamol	12-15	
4.	25/01/2021	Effect of disintegrant on dissolution rate of Paracetamol	16-19	
5.	27/1/2021	Effect of diluents on dissolution rate of Paracetamol	20-23	
6.	3/02/2021	Study of protein binding of Nimesulide using semi-Permeable membrane	24-27	
7.	10/2/2021	Study of protein binding of paracetamol by using Semi-Permeable membrane	28-31	
8.	17/2/2021	Evaluation of Marketed Sodium/Sustained release diclofenac Sodium tablet	32-35	
II	24/2/2021	Introduction To Pharmacokinetics	36-37	
9.	3/3/2021	Estimation of different pharmacokinetics parameters by Enlarging one Compartment open model I.V bolus data	38-40	
10.	10/3/2021	Determination of Mean Residence Time	41-42	
11.	10/3/2021	Analysis of pharmacokinetic data after extravascular Administration (one Compartment open model)	43-47	
12.	17/3/2021	Determination of absorption rate constant by Wagner-Nelson Method	48-50	

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
13.	24/3/2021	Determination of Elimination rate Constant by rate of Excretion method	51-53	
14.	31/3/2021	Estimation of pharmacokinetic parameter of one compartment open model by Sigma minus - method	54-59	
15.	3/4/2021	Calculation of pharmacokinetic parameters	60	

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