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Aditya Nagar, ADB Road, Surampalem – 533437, Kakinada Dist., A.P., INDIA.

B.Pharmacy

BP101T. HUMAN ANATOMY AND PHYSIOLOGY-I (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

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

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the various experiments related to special senses and nervous system.
5. Appreciate coordinated working pattern of different organs of each system

Course Content:

Unit I **10 hours**

- **Introduction to human body**
  Definition and scope of anatomy and physiology, levels of structural organization and body systems, basic life processes, homeostasis, basic anatomical terminology.
- **Cellular level of organization**
  Structure and functions of cell, transport across cell membrane, cell division, cell junctions. General principles of cell communication, intracellular signaling pathway activation by extracellular signal molecule, Forms of intracellular signaling: a) Contact-dependent b) Paracrine c) Synaptic d) Endocrine
- **Tissue level of organization**
  Classification of tissues, structure, location and functions of epithelial, muscular and nervous and connective tissues.

Unit II **10 hours**

- **Integumentary system**
  Structure and functions of skin
- **Skeletal system**
  Divisions of skeletal system, types of bone, salient features and functions of bones of axial and appendicular skeletal system
  Organization of skeletal muscle, physiology of muscle contraction, neuromuscular junction

- **Joints**
  Structural and functional classification, types of joints movements and its articulation

Unit III **10 hours**

- **Body fluids and blood**
- Body fluids, composition and functions of blood, hemopoeisis, formation of hemoglobin, anemia, mechanisms of coagulation, blood grouping, Rh factors, transfusion, its significance and disorders of blood, Reticulo endothelial system.
- **Lymphatic system**

  Lymphatic organs and tissues, lymphatic vessels, lymph circulation and functions of lymphatic system

Unit IV **08 hours**

Peripheral nervous system:
Classification of peripheral nervous system: Structure and functions of sympathetic and parasympathetic nervous system.
Origin and functions of spinal and cranial nerves.

- **Special senses**
  Structure and functions of eye, ear, nose and tongue and their disorders.

Unit V **07 hours**

- **Cardiovascular system**
  Heart – anatomy of heart, blood circulation, blood vessels, structure and functions of artery, vein and capillaries, elements of conduction system of heart and heart beat, its regulation by autonomic nervous system, cardiac output, cardiac cycle. Regulation of blood pressure, pulse, electrocardiogram and disorders of heart.

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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

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Date: 21.06.2024

TO WHOME SO EVER IT MAY CONCERN

This is to certify that Miss. A.Bhavya Sai Sri is a bonafide student of Aditya Pharmacy College. And she has undergone Industrial Training in our organization from 21.05.2024 to 20.06.2024, as a part of partial fulfilment of her Pharmacy course bearing Hall Ticket No 213G1R0003.

During the training period he/she had interacted with has undergone internship programme at our QA& QC Department and acquired basic Knowledge in these areas.

During the aforesaid period, we found her hardworking, sincere and learning attitude.

We wish her all the best in future endeavors.

Thanking You,

SYNAPTICS LABS PVT. LTD.

HR Reddy

For Synaptics Labs Pvt Ltd.

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Phone : 040-29801835/1858, www.synapticslabs.com

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Gajuwaka, Visakhapatnam - 530 026,
Andhra Pradesh, India.

Plant :
Plot No. 28-B, Industrial Park,
Atchutapuram, APIIC, Lalamkoduru (V),
Rambilli (M), Visakhapatnam - 531 011,
Andhra Pradesh, India.

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.

Formulation, Evaluation and Computational Analysis of Anti-Inflammatory gel of *Couroupita guianensis*

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

(2025)

JAWAHARLAL NEHRU TECHNOLOGIAL UNIVERSITY, KAKINADA

Submitted BY

ADDALA MAHESH (Regd. No. 213G1R0001)

AKULA NEELA VENKATA SAI SANDHYA(Regd.No.213G1R0002)

AMBATI BHAVYA SAI SRI(Regd.No.213G1R0003)

ANATHBANDHU DE (Regd.No.213G1R0042)

Under the Guidance of

T. SRI SOWKHYA, M.Pharm., (Ph.D.)

Assistant Professor

Department of Pharmaceutical Chemistry

Aditya Pharmacy College

Surampalem – 533 437

Batch: 2021- 2025

PRINCIPAL
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SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation work entitled **"Formulation, Evaluation and Computational analysis of Anti-Inflammatory gel of *Couroupita guianensis*"** is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of **Bachelor of Pharmacy in Pharmaceutical Chemistry**. This is a Bonafide work carried out by **ADDALA MAHESH** (Regd. No. 213G1R0001), **AKULA NEELA VENKATA SAI SANDHYA** (Regd.No.213G1R0002), **AMBATI BHAVYA SAI SRI** (Regd.No.213G1R0003), **ANATHBANDHU DE** (Regd.No.213G1R0042) under the guidance and supervision of Ms. T SRI SOWKHYA, M.Pharm., (Ph.D.),Pharmaceutical chemistry, Assistant Professor, Aditya Pharmacy College, Surampalem.

Place:Surampalem

Date:

(Internal Examiner)

(External Examiner)

PRINCIPAL
ADITYA PHARMACY COLLEGE
SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation work entitled a study on "**Formulation, Evaluation and Computational analysis of Anti-Inflammatory gel of *Couroupita guianensis*.**" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the Jawaharlal Nehru Technological University, Kakinada for the academic year 2021-2025. The original research work carried out by **ADDALA MAHESH** (Regd. No. 213G1R0001), **AKULA NEELA VENKATA SAI SANDHYA** (Regd.No.213G1R0002), **AMBATI BHAVYA SAI SRI** (Regd.No.213G1R0003), **ANATHBANDHU DE** (Regd.No.213G1R0042) under the direct guidance and supervision of Ms. T SRI SOWKHYA, M.Pharm.,(Ph.D.) Pharmaceutical chemistry, Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

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

Principal & Professor

Aditya Pharmacy College,

Surampalem-533437.

Place: Surampalem

Date:

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Aditya Pharmacy College
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PRINCIPAL
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CERTIFICATE

This is to certify that the dissertation work entitled a study on **"Formulation, Evaluation and Computational analysis of Anti-Inflammatory gel of *Couroupita guianensis.*"** submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the Jawaharlal Nehru Technological University, Kakinada for the academic year 2021-2025. This is a bonafied work carried out by **ADDALA MAHESH** (Regd. No. 213G1R0001), **AKULA NEELA VENKATA SAI SANDHYA** (Regd.No.213G1R0002), **AMBATI BHAVYA SAI SRI** (Regd.No.213G1R0003), **ANATHBANDHU DE** (Regd.No.213G1R0042) under my direct guidance and supervision.

Ms.T.Sri Sowkhya, M.Pharm., (Ph.D.)

Department of Pharmaceutical chemistry,

Assistant Professor.

(Ms.T.Sri Sowkhya)

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

DECLARATION

We hereby declare that the dissertation work entitled **"Formulation, Evaluation and Computational analysis of Anti-Inflammatory gel of *Couroupita guianensis*."** in partial fulfillment of the degree in Bachelor of Pharmacy of the Jawaharlal Nehru Technological University, Kakinada for the academic year 2021-2025, 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.T.SRI SOWKHYA M.Pharm.,(Ph.D.), Pharmaceutical chemistry, Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

A. Mahesh

ADDALA MAHESH

(213G1R0001)

A. N.V.S. Sandhya

AKULA NEELA VENKATA SAI SANDHYA

(213G1R0002)

A. Bhavya Sai Sri

AMBATI BHAVYA SAI SRI

(213G1R0003)

Anathbandhu De

ANATHBANDHU DE

(213G1R0042)

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SUMMARY AND CONCLUSION

Couroupita guianensis, also known as the cannonball tree, is a medicinal plant traditionally used to treat various ailments, including inflammation.The formulation of Couroupita guianensis extract can be done using soxhlation process

- Soxhlet extraction : The dried and powdered plant material of couroupita guinanesis flower is extracted with methanol to obtain the crude extract.
- Couroupita guianensis extract is formulated .The anti-inflammatory activity of Couroupita guianensis extract can be evaluated to the physical properties of gel formulation and phytochemical screening was done
- In phytochemical analysis of herbal extracts, methanolic flower extract of C. guianensis shows the presence of alkaloids, saponins, tannins and flavonoids as shown in Table 6.5 In thin layer chromatography, toluene and ethyl acetate in the ratio of 7:3 was used as mobile phase. Different coloured spots were eluted in the mobile phase and observed in UV chamber.
- In analytical method, the wavelength maxima of methanolic flower extract of C. guianensis (10µg ml.) in pH 7.4 phosphate buffer saline was detected in UV-while spectrophotometer exhibited absorption maxima at 218 nm
- Bioactivity scrores by using online tools BIOVIA & DWIPERL.
- The FTIR spectra of the title compounds displayed characteristic absorption bands observed at 3300-3000 cm^{-1} due to alcohols and phenols, 3000-2000 cm^{-1} due to alkanes, 2000-1500 cm^{-1} due to aldehydes, ketones, carboxylic acids or esters, 1500-1000 cm^{-1} due to alcohols, ethers, esters or carboxylic acids.
- The extract shows anti-inflammatory activity

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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

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

"DEVELOPMENT & EVALUATION OF SULPHATE, PARABEN FREE SHAMPOO MADE WITH NIGELLA SATIVA, FLAX SEEDS, ZIZIPHUS SPINA CHRISTI"

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the degree of Bachelor of Pharmacy (2025)

JAWAHARLAL NEHRU TECHNOLOGIAL UNIVERSITY, KAKINADA

Submitted BY

BHOGIREDDI SRI NAGA VENKATA PRATYUSHA (213G1R0069)

DENDUKURI DURGA PRASAD RAJU (213G1R0070)

DHARANALAKOTA SATYA SYAMALA SRIJA (213G1R0071)

SUBHAMOY TEWARY (213G1R0094)

Under the Guidance of

Miss S. VANGMAYI SWAROOPA, M. Pharm.,

Assistant Professor

Aditya Pharmacy College

Surampalem-533437

2021-2025

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SURAMPALEM-533 437

DECLARATION

The Project embodied in this thesis entitled "DEVELOPMENT & EVALUATION OF A SULPHATE, PARABEN FREE SHAMPOO MADE WITH NIGELLA SATIVA, FLAX SEEDS, ZIZIPHUS SPINA CHRISTI" was carried out in the Department of Pharmaceutical Analysis under the guidance of **Miss S. VANGMAYI SWAROOPA**, 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.

B.S.N.V. Pratyusha

BHOGIREDDI SRINAGA VENKATA PRATYUSHA

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D. Durgaprasad Raju

DENDUKURI DURGA PRASAD RAJU

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D.S.S. Srija

DHARANALAKOTA SATYA SYAMALA SRIJA

(213G1R0071)

Subhamoy Tewari

SUBHAMOY TEWARI

(213G1R0094)

PRINCIPAL
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SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled **"DEVELOPMENT & EVALUATION OF A SULPHATE, PARABEN FREE SHAMPOO MADE WITH NIGELLA SATIVA, FLAX SEEDS, ZIZIPHUS SPINA CHRISTI"** 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

BHOGIREDDI SRI NAGA VENKATA PRATYUSHA (213G1R0069), DENDUKURI DURGA PRASAD RAJU (213G1R0070), DHARANALAKOTA SATYA SYAMALA SRIJA (213G1R0071), SUBHAMOY TEWARY (213G1R0094)

Under my supervision and it has not been previously submitted to any other university or academic institution for any higher degree.

Miss S. VANGMAYI SWAROOPA, M. Pharm,

ASSISTANT PROFESSOR,

Aditya Pharmacy College,

Surampalem-533437.

Place: Surampalem

Date:

External Examiner

Internal Examiner

PRINCIPAL
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SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled "DEVELOPMENT & EVALUATION OF A SULPHATE, PARABEN FREE SHAMPOO MADE WITH NIGELLA SATIVA, FLAX SEEDS, ZIZIPHUS SPINA CHRISTI" 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

BHOGIREDDI SRI NAGA VENKATA PRATYUSHA (213G1R0069), DENDUKURI DURGA PRASAD RAJU (213G1R0070), DHARANALAKOTA SATYA SYAMALA SRIJA (213G1R0071), SUBHAMOY TEWARY (213G1R0094)

They have done this research work under the supervision of **MISS S. VANGMAYI SWAROOPA,** 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

Aditya Pharmacy College

SURAMPALEM-533 437

Aditya Pharmacy College,

Surampalem-533437.

Place: Surampalem

Date:

Internal Examiner 22/5/25

External Examiner

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CHAPTER - 9

SUMMARY AND CONCLUSION

This thesis focuses on the formulation of an herbal shampoo, emphasizing the development of n natural, plant-based solution for hair and scalp care. The study is organized into several chapters, each addressing different aspects of the research process.

Chapter 1: Introduction

This chapter introduces the need for herbal alternatives in hair care, emphasizing the harmful effects of synthetic chemicals in conventional shampoos and the increasing demand for natural products. The objective of the study is to formulate an herbal shampoo that is safe, effective, and sustainable.

Chapter 2: Literature Review

This chapter provides an overview of the existing research on herbal ingredients used in hair care formulations. Various herbs and their properties, such as antimicrobial, anti-inflammatory, and nourishing effects, are discussed. The review includes an examination of previous studies on the efficacy of herbs like flaxseeds, kalonji seeds, soap nuts etc. in promoting scalp health and hair growth.

Chapter 3: Materials and Methods

This chapter details the ingredients selected for the herbal shampoo formulation, including the sources, properties, and benefits of each herb used. The process of shampoo formulation, including extraction techniques, blending ratios, and formulation testing procedures, is outlined. Methods for evaluating the shampoo's effectiveness, safety, and consumer acceptance are also described.

Chapter 4: Formulation and Testing

Here, the actual formulation of the herbal shampoo is discussed. The results of laboratory tests on the shampoo's ability to clean hair, maintain scalp health, and improve hair strength are presented. Various formulations were tested to determine the optimal ratio of ingredients for efficacy and mildness. Consumer testing and feedback on product use are also presented.

Chapter 5: Results and Discussion

This chapter presents the outcomes of the tests conducted on the herbal shampoo, including its cleansing properties, effectiveness in treating common scalp issues like dandruff or dryness, and overall consumer satisfaction. The results indicate that the shampoo is effective and gentle, offering a natural alternative to chemical-based shampoos.

CONCLUSION

The present study aimed to formulate and evaluate an herbal shampoo using natural ingredients like flaxseeds, kalonji seeds, amla, soap nuts etc. the results of the study indicate that the

formulated herbal shampoo possesses good physical and chemical characteristics such as pH, viscosity, foamability, surface tension etc.

The antimicrobial activity of the shampoo was found to be significant, indicating its potential to control scalp infections. The shampoo also showed good cleansing and foaming properties making it suitable for cleaning and maintaining healthy hair

The stability studies conducted on the shampoo indicated that it was stable at different temperatures and conditions, demonstrating its potential for long term use and storage.

Overall, the findings of this study suggest that the formulated herbal shampoo is a promising alternative to synthetic shampoos, offering a natural and effective solution for hair care. The shampoo's antimicrobial, moisturizing, and conditioning properties make it suitable for various hair types and scalp conditions.

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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

"FORMULATION AND EVALUATION OF AN ORAL TRANSFEROSOMAL GEL OF SYZYGIUM CUMINI FOR ENHANCED BIOAVAILABILITY"

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

(2025)

Jawaharlal Nehru Technological University, Kakinada, AP

SUBMITTED BY:

P. Hemanth Kumar (213G1R0054)

P. Sai Sowmya (213G1R0055)

CH. R. V. Rohan Reddy (213G1R0056)

Prem Kumar (213G1R0086)

Under the guidance of,

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

Assoc. Professor

Department of Pharmaceutics

Aditya Pharmacy College, Surampalem-533437

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SURAMPALEM-533 437

DECLARATION

*The Project embodied in this thesis entitled "**Formulation and Evaluation of an Oral Transferosomal Gel of Syzygium Cumini for Enhanced Bioavailability**" 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.*

P. Hemanth Kumar (213G1R0054) P. Hemanth

P. Sai Sowmya (213G1R0055) P. Sowmya.

CH. R. V. Rohan Reddy (213G1R0056) Ch. Rohan Reddy

Prem Kumar (213G1R0086) Prem kumar

PRINCIPAL
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SURAMPALEM-533 437

CERTIFICATE BY THE GUIDE

*I hereby declare that this dissertation entitled "**Formulation and Evaluation of an Oral Transferosomal Gel of Syzygium cumini for Enhanced Bioavailability**", is an original research work carried out by P. Hemanth Kumar (213G1R0054), P. Sai Sowmya (213G1R0055), Ch. R. V. Rohan Reddy (213G1R0056), Prem Kumar (213G1R0086) under my supervision in partial fulfilment of the requirement for the degree of Bachelor of Pharmacy.*

G. Sai devi

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

Assoc. Professor

Department of Pharmaceutics

Aditya Pharmacy College

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

CERTIFICATE

*This is to certify that the dissertation entitled "**Formulation and Evaluation of an Oral Transferosomal Gel of Syzygium Cumini for Enhanced Bioavailability**", 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 **P. Hemanth Kumar (213G1R0054), P. Sai Sowmya (213G1R0055), Ch. R. V. Rohan Reddy (213G1R0056), Prem Kumar (213G1R0086)**) under the supervision of **Mrs. Gowripattapu Sridevi, M.Pharm (ph.D).**, and it has been previously not submitted to and other university of Academic Institution 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

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ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

Summary and Conclusion

Summary:

The study characterized transferosomal formulations for oral gel application. Key findings include:

Vesicle Characteristics:

The particle size (130.6 nm) and zeta potential (-12.4 mV) indicate moderate stability and suitability for transferosomal formulations.

pH and Appearance:

All formulations (F1–F4) maintained a favourable pH (6.8–7.4) and exhibited a transparent gel form.

Spreadability & Rheology:

Spreadability increased from F1 (131 g·cm/s) to F4 (183 g·cm/s), while viscosity ranged from 1500 to 2000 cps, confirming pseudoplastic flow.

Entrapment Efficiency:

F4 had the highest entrapment (93.4%), ensuring superior drug retention, whereas F1 had the lowest (68.2%).

Drug Content:

All formulations passed the assay test (90–110%), with F4 showing the highest drug content (101.5%).

***In-vitro* Drug Release:**

F4 demonstrated the highest sustained drug release (99.9% in 300 minutes).

Stability Studies:

After 3 months, all formulations remained stable, with F4 showing the best retention of properties.

BP 106RBT.REMEDIAL BIOLOGY (Theory)

30 Hours

Scope: To learn and understand the components of living world, structure and functional system of plant and animal kingdom.

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

- know the classification and salient features of five kingdoms of life
- understand the basic components of anatomy & physiology of plant
- know understand the basic components of anatomy & physiology animal with special reference to human

UNIT I — 07 Hours

Living world:

- Definition and characters of living organisms
- Diversity in the living world
- Binomial nomenclature
- Five kingdoms of life and basis of classification. Salient features of Monera, Potista, Fungi, Animalia and Plantae, Virus,

Morphology of Flowering plants

- Morphology of different parts of flowering plants – Root, stem, inflorescence, flower, leaf, fruit, seed.
- General Anatomy of Root, stem, leaf of monocotyledons & Dicotylidones.

UNIT II — 07 Hours

Body fluids and circulation

- Composition of blood, blood groups, coagulation of blood
- Composition and functions of lymph
- Human circulatory system
- Structure of human heart and blood vessels
- Cardiac cycle, cardiac output and ECG

Digestion and Absorption

- Human alimentary canal and digestive glands
- Role of digestive enzymes
- Digestion, absorption and assimilation of digested food

Breathing and respiration

- Human respiratory system
- Mechanism of breathing and its regulation
- Exchange of gases, transport of gases and regulation of respiration
- Respiratory volumes

"FORMULATION AND EVALUATION OF OINTMENT LOADED WITH *Syzygium cumini* SEED EXTRACT LIPOSOMES"

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the degree of Bachelor of Pharmacy (2025)

JAWAHARLAL NEHRU TECHNOLOGIAL UNIVERSITY, KAKINADA

Submitted BY

AMBATI.CHAKRA JYOTHI (213G1R0004)

BANDISURI.SAHEEDA BEGAM (213G1R0006)

BEEDAM.ASHA (213G1R0007)

ANKUR ACHERJEE (213G1R0043)

Under the Guidance of

Mrs. KONDAMURI. PUSHPALATHA, M. Pharm., (Ph.D)

Assistant Professor

Aditya Pharmacy College

Surampalem-533437

2021-2025

DECLARATION

We hereby declare that the dissertation work entitled "**FORMULATION AND EVALUATION OF OINTMENT LOADED WITH *Syzygium cumini* SEED EXTRACT LIPOSOMES**"in partial fulfillment of the degree in Bachelor of Pharmacy of the Jawaharlal Nehru Technological University, Kakinada for the academic year 2021-2025, 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 **Mrs. PUSHPALATHA.KONDAMURI**, M. Pharm, (Ph.D) Pharmaceuticis, Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

A. chakra jyothi

AMBATI CHAKRA JYOTHI

(213G1R0004)

B. Saheeda begam.

BANDISURI SAHEEDA BEGAM

(213G1R0006)

B. Asha

BEEDAM ASHA

(213G1R0007)

Ankur Acherjee.

ANKUR ACHERJEE

(213G1R0043)

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled "**FORMULATION AND EVALUATION OF OINTMENT LOADED WITH *Syzygium cumini* SEED EXTRACT LIPOSOMES**" 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 AMBATI CHAKRA JYOTHI (213G1R0004), BANDISURI SAHEEDA BEGAM(213G1R0006), BEEDAM.ASHA(213G1R0007), ANKUR ACHERJEE (213G1R0043).Under my supervision and it has not been previously submitted to any other university or academic institution for any higher degree.

Mrs. PUSHPALATHA. KONDAMURI, M. Pharm., (Ph.D)

ASSISTANT PROFESSOR,

DEPARTMENT OF PHARMACEUTICS.

K. Pushpa latha

PUSHPALATHA. KONDAMURI

PRINCIPAL
ADITYA PHARMACY COLLEGE
SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled "FORMULATION AND EVALUATION OF OINTMENT LOADED WITH *Syzygium cumini* SEED EXTRACT LIPOSOMES" 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 AMBATI CHAKRA JYOTHI (213G1R0004), BANDISURI SAHEEDA BEGAM (213G1R0006), BEEDAM ASHA (213G1R0007), ANKUR ACHERJEE (213G1R0043). They have done this research work under the supervision of **Mrs. PUSHPALATHA. KONDAMURI,** M. Pharm, (Ph.D) 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 & Professor

Aditya Pharmacy College,

Surampalem-533437.

Place: Surampalem

Date:

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PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

PRINCIPAL
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SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled "**FORMULATION AND EVALUATION OF OINTMENT LOADED WITH *Syzygium cumini* SEED EXTRACT LIPOSOMES**" 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 AMBATI.CHAKRA JYOTHI (213G1R0004), BANDISURI.SAHEEDA BEGAM (213G1R0006), BEEDAM.ASHA (213G1R0007), ANKUR ACHERJEE (213G1R0043). They have done this research work under the supervision of **Mrs. PUSHPALATHA. KONDAMURI**, M. Pharm, (Ph.D) and it has not been previously submitted to any other university or academic institution for any higher degree.

Place: Surampalem

Date:

Internal Examiner

External Examiner

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

CONCLUSION

The study successfully demonstrated the preparation and evaluation of ointment containing Syzygium cumini seed extract liposomes , showcasing the potential of liposomal drug delivery systems for enhancing the patient compliance, reduce the dosing frequency, Improve the transdermal penetration. The liposomal formulation exhibited desirable characteristics such as small particle size, good encapsulation efficiency, and a stable release profile. Additionally, the ointment displayed favourable physical properties, including appropriate pH, viscosity, and spreadability, making it suitable for topical applications.

In conclusion, the formulation of liposomal ointments with Syzygium cumini seed extract offers a viable and effective method for delivering the therapeutic benefits of this plant extract, this formulation gave prolonged release of drug and high drug loading and entrapment efficiency

SCOPE OF WORK

Liposomes are versatile, nanoscale lipid vesicles with a wide range of applications in drug delivery. Their unique properties, such as biocompatibility, biodegradability, and the ability to encapsulate both hydrophilic and hydrophobic drugs, have led to significant advancements in targeted, controlled, and effective drug delivery. Liposome 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.

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.

ADITYA
PHARMACY COLLEGE

An AUTONOMOUS Institution

Aditya Nagar, ADB Road, Surampalem. Kakinada Dist., A.P.

Program

B. Pharmacy (Human Anatomy And physiology)

Certified that this is the bonafide record of practical work done by

Mr./Ms. Mandapaka. Vavalakshmi.

with Roll No. 243G1R0045 a student of 1st yr. 1st Semester

in the B. pharmacy course during the Academic Year 2024-2025

No. of Experiments Conducted 15

No. of Experiments Completed 15

Faculty incharge

Principal

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the practical examination held on 25/04/25

Examiner -1

Examiner -2

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ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
1.	8/12/24	Study of Compound Microscope.	1 - 3	A	
2.	23/12/24	Microscopic study of epithelial tissue and connective tissue.	4 - 10	A	
3.	30/12/24	Microscopic Study of muscular and nervous tissue.	11 - 13	A	
4.	6/1/25	Identification of Axial Bone.	14 - 16	A	
5.	6/1/25	Identification of Appendicular Bones.	17 - 19	A	
6.	20/1/25	Determination of bleeding time.	20 - 21	A	
7.	27/1/25	Determination of clotting time.	22 - 23	A	
8.	3/2/25	Determination of human blood group.	24 - 25	A	
9.	3/3/25	Estimation of Haemoglobin content.	26 - 28	A	
10.	10/3/25	Introduction of Haemocyto-metry.	29 - 31	A	
11.	17/3/25	Estimation of RBC count.	32 - 34	A	
12.	17/3/25	Estimation of WBC count.	35 - 38	A	
13.	24/3/25	Determination of heart rate and Pulse rate.	39 - 40	A	
14.	24/3/25	Recording of my Blood Pressure.	41 - 43	A	
15.	7/4/25	Determination of Erythrocyte Sedimentation Rate.	44 - 47	A	

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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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Program

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in the Pharmaceutical analysis-I course during the Academic Year 24-25.

No. of Experiments Conducted 25

No. of Experiments Completed 25

B. Sujitha 04/04/2025

Faculty incharge

Principal

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SURAMPALEM-533 437

Submitted for the practical examination held on 26/04/2025

Examiner -1 26/04/25

Examiner -2 B. Sujitha 26/04/2025

ADITYA PHARMACY COLLEGE SURAMPALEM 533 437

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
I	18/12/24	Introduction	1-2		
II	24/12/24	Introduction of volumetric analysis	3-9		06/2/25
1.	31/12/24	Calibration of volumetric apparatus	10-12	A+ 9/10	6/2/25
2.	7/01/25	Preparation and standardization of 0.1M HCl	13-14	A+ 9/10	6/2/25
3.	07/01/25	Preparation and standardization of 0.1M H_2SO_4	15-16	A+ 9/10	6/2/25
4.	21/01/25	Preparation and standardization of 0.1M NaOH.	17-18	A+ 9/10	6/2/25
5.	21/01/25	Preparation and standardization of 0.1M $KMnO_4$	19-20	A+ 9/10	6/2/25
6.	22/01/25	Preparation and standardization of 0.1M cerric ammonium sulphate	21-22	A+ 9/10	6/2/25
7.	22/01/25	Preparation and standardization of 0.1M of $Na_2S_2O_3$	23-24	A+ 9/10	06/2/25
III	28/1/25	Neutralization titration.	25		06/2/25
8.	28/1/25	Assay of Ammonium Chloride by acid-Base titrations	26-27	A+ 9/10	6/2/25
IV	29/1/25	Non-aqeous titrations	28		06/2/25
9.	29/1/25	Assay of sodium Benzoate	29-31	A+ 9/10	6/2/25
V	4/2/25	Oxidation-Reduction Titrations	32-33		25/3/25
VI	4/2/25	Permanganometry	34		25/3/25
10.	4/2/25	Assay of Hydrogen Peroxide	35-36	A+ 9/10	25/3/25
VII.	5/2/25	Cerriometry	37		25/3/25
11.	5/2/25	Assay of ferrous sulphate	38-39	A+ 9/10	25/3/25
VIII	25/2/25	Iodimetry	40		25/3/25
12.	25/2/25	Assay of sodium thiosulphate	41-42	A+ 9/10	25/3/25
IX.	26/2/25	Iodometry	43		25/3/25
13.	26/2/25	Assay of Copper sulphate	44-46	A+ 9/10	25/3/25

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
X	4/3/25	Precipitation Titration	47		
XI	4/3/25	Argentometric titrations	47		
14.	4/3/25	Assay of sodium chloride (NaCl)	48-50	A+ 9/10	
XII	5/3/25	complexometry	51		
15.	5/3/25	Assay of calcium gluconate	52-54	A+ 9/10	
16.	11/3/25	Assay of Magnesium sulphate	55-57	A+ 9/10	
XIII	12/3/25	Gravimetric analysis	58		
17.	12/3/25	Gravimetric estimation of barium as barium sulphate	59-60	A+ 9/10	
XIV	18/3/25	Potentiometric titrations	61		
18.	18/3/25	Potentiometric titrations of strong acid with strong base	62-63	A+ 9/10	
XV	19/3/25	conductometric Titrations	64		
19.	19/3/25	Calibration of conductivity meter	65-67	A+ 9/10	
20.	19/3/25	conductometric titrations of strong acid with strong base	68-69	A+ 9/10	
XVI	25/3/25	Limit Tests	70-71		
21.	25/3/25	limit test for chlorides.	72-73	A+ 8/10	
22.	25/3/25	limit test for sulphates.	74-75	A+ 9/10	
23.	26/3/25	limit test for Iron.	76-77	A+ 9/10	
24.	26/3/25	limit test for lead.	78-79	A+ 9/10	
25.	1/4/25	limit test for Arsenic	80-81		

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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)

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B.Pharmacy

Certified that this is the bonafide record of practical work done by

Mr./Ms. M.Sri Maha Lakshmi

with Roll No. 243G1R0051 a student of 1st Semester

in the Pharmaceutics course during the Academic Year 24-25

No. of Experiments Conducted 26

No. of Experiments Completed 24

Faculty incharge

Principal

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A. Anand.

Examiner -1

Examiner -2

ADITYA PHARMACY COLLEGE SURAMPALEM 533 437

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ADITYA PHARMACY COLLEGE(A)
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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
*		General procedure for writing experiment	1		
*	19/12/24	Syrups	2-4		
1.	19/12/24	simple syrup	5		
2.	19/12/24	compound ferrous phosphate syrup	7-8		
*		Elixirs	9		
3.	27/12/24	Piperazine citrate elixir	10-11		
4.	27/12/24	Paracetamol - Pediatric elixir	12		
5.	2/12/24	LINCTUS	13		
*	2/12/24	Terapin hydrate linctus	14		
6.	2/12/24	Iodine throat paint	15-16		
*	23/1/25	Solutions	17-18		
7.	23/1/25	Strong solution of Ammonium Acetate	19-20		
8.	23/1/25	cresol with soap soln	21-22		
9.	23/1/25	Aqueous Iodine solution	23-24		
*	30/1/25	Suspensions	25-26		
10.	30/1/25	calamine lotion	27-28		
11.	30/1/25	Magnesium hydroxide mix	29-31		
12.	30/1/25	Aluminium hydroxide gel (or) suspensions	32-33		
*	6/2/25	Emulsions	34-35		
13.	6/2/25	Liquid paraffin	36-37		
14.	6/2/25	Turpentine liniment	38-39		
	27/2/25	Powders	40-41		
15.	27/2/25	ORS powder	42-43		
16.	27/2/25	Diclofenac sodium effervescent granules	44-45		
17.	27/2/25	zinc oxide starch	46-		

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
		Dusting powder	47		
18.	27/2/25	Divided powders	47		
*	6/3/25	suppositories	48		
19.	6/3/25	Glycero-Gelatin Suppository	49-50		
20.21 *	20/3/25	cocoa-butter, zinc oxide suppo. Semi solids	51-52 53-54		
22.	20/3/25	Sulphur Ointment	55-56 57-58		
23	20/3/25	Non staining Iodine ointment with methyl salicylate	59-60		
24	20/3/25	carbapol gel	61-62		
*	27/3/25	Gargles & mouth washes	63-		
25.	27/3/25	Iodine gargle	64		
26.	27/3/25	chlorohexidine mouthwash	65-66		

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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

ADITYA
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Program

B. Pharmacy

Certified that this is the bonafide record of practical work done by

Mr./Ms. M. Sri Maha Lakshmi

with Roll No. 243G1R0051 a student of 1st Semester

in the Inorganic chemistry course during the Academic Year. 2024-25

No. of Experiments Conducted 20

No. of Experiments Completed 20

Faculty incharge

Principal
PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the practical examination held on .....

Examiner -1

Examiner -2

ADITYA PHARMACY COLLEGE SURAMPALEM 533 437

INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
1.	30/12/24	Introduction of Inorganic chemistry	1-4		
2.	30/12/24	Preparation of Boric acid	5-6		
3.	4/1/25	Preparation of Potassium alum	7-8		
4.	18/1/25	Preparation of ferrous sulphate	9-10		
5.	25/1/25	Limit test for chlorides	11-12		
6.	1/2/25	Limit test for sulphates	13-14		
7	1/2/25	Limit test for Iron	15-16		
8.	8/2/25	Limit test for heavy metals	17-18		
9.	14/2/25	Limit test for lead	19-20		
10.	14/2/25	Limit test for Arsenic	21-22		
11.	15/2/25	Modified limit test for chlorides	23-25		
~~12~~		sulphates using potass -ium permanganate			
12.	22/2/25	Modified limit test for chloride & sulphates $NaHCO_3$	26-27		
13	22/2/25	swelling power of bentonite	28-29		
14	15/3/25	Neutralization capacity of aluminium hydroxidegel	30-31		
15	15/3/25	Presence of Iodate in potassium Iodide	32		
16	18/3/25	Test for identity of ferrous sulphate	33-35		
17	22/3/25	Test for identity of copper sulphate	36-37		
18	22/3/25	Test for identity of calicium gluconate	38-40		

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
19.	29/3/25	Test for identity of sodium bicarbonate	41-42		
20.	29/3/25	Test for identity of magnesium hydroxide	43-44		
21.	1/4/25	Test for identity of Barium sulphate	45		
22.	1/4/25	Test for identity of potassium chloride	46-47		

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BP111P.COMMUNICATION SKILLS (Practical)

2 Hours / week

Thefollowing learning modules are to be conducted using wordsworth® English language lab software

Basic communication covering the following topics

Meeting People

Asking Questions

Making Friends

What did you do?

Do's and Dont's

Pronunciations covering the following topics

Pronunciation (Consonant Sounds)

Pronunciation and Nouns

Pronunciation (Vowel Sounds)

Advanced Learning

Listening Comprehension / Direct and Indirect Speech

Figures of Speech

Effective Communication

Writing Skills

Effective Writing

Interview Handling Skills

E-Mail etiquette

Presentation Skills

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Recommended Books: (Latest Edition)

1. Basic communication skills for Technology, Andreja. J. Ruther Ford, 2nd Edition, Pearson Education, 2011
2. Communication skills, Sanjay Kumar, Pushpalata, 1st Edition, Oxford Press, 2011
3. Organizational Behaviour, Stephen .P. Robbins, 1st Edition, Pearson, 2013
4. Brilliant- Communication skills, Gill Hasson, 1st Edition, Pearson Life, 2011
5. The Ace of Soft Skills: Attitude, Communication and Etiquette for success, Gopala Swamy Ramesh, 5th Edition, Pearson, 2013
6. Developing your influencing skills, Deborah Dalley, Lois Burton, Margaret, Green hall, 1st Edition Universe of Learning LTD, 2010
7. Communication skills for professionals, Konar nira, 2nd Edition, New arrivals – PHI, 2011
8. Personality development and soft skills, Barun K Mitra, 1st Edition, Oxford Press, 2011
9. Soft skill for everyone, Butter Field, 1st Edition, Cengage Learning india pvt.ltd, 2011
10. Soft skills and professional communication, Francis Peters SJ, 1st Edition, Mc Graw Hill Education, 2011
11. Effective communication, John Adair, 4th Edition, Pan Mac Millan,2009
12. Bringing out the best in people, Aubrey Daniels, 2nd Edition, Mc Graw Hill, 1999

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ADITYA
PHARMACY COLLEGE

ADB Road, Surampalem. Kakinada.Dist., (A.P.)

Department of

Communication skills

Name: A. Sri jeharika PIN No. 23 3 G 1 R 0 0 0 3

Certified that this is the bonafide record of practical work done by

Mr./Ms. Alli. Sri jeharika

a student of I-I B.pharmacy *with Regd. No.* 233G1R0003

in the communication skills *Laboratory during the year* 2023-24

No. of Experiments Conducted 08 No. of Experiments Attended 8

Signature - Faculty Incharge

Signature-Head of the Department

Submitted for the practical examination held on .....

Examiner-1

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Examiner-2

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1	14/12/23	Practice - 01 Greetings, Introduction and Taking leave and Making Contact	01-09	Bj
2	28/12/23	Practice - 02 Giving information and asking for information	10-16	Bj
3	11/1/23	Practice - 03 Phonetics	17-27	Bj
4	11/2/23	Practice - 04 Group discussion	28-37	Bj
5	15/2/24	Practice - 05 Presentation skills	38-40	Bj
6	29/2/24	Practice - 06 Interview skills	41-44	Bj
7	14/3/24	Practice - 07 Resume writing and Cover letter.	45-48	Bj
8	21/3/24	Practice - 08 Email writing	49-50	Bj

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BP112RBP.REMEDIAL BIOLOGY (Practical)

30 Hours

1. Introduction to experiments in biology
   a) Study of Microscope
   b) Section cutting techniques
   c) Mounting and staining
   d) Permanent slide preparation
2. Study of cell and its inclusions
3. Study of Stem, Root, Leaf, seed, fruit, flower and their modifications
4. Detailed study of frog by using computer models
5. Microscopic study and identification of tissues pertinent to Stem, Root Leaf, seed, fruit and flower
6. Identification of bones
7. Determination of blood group
8. Determination of blood pressure
9. Determination of tidal volume

Reference Books

1. Practical human anatomy and physiology. by S.R.Kale and R.R.Kale.
2. A Manual of pharmaceutical biology practical by S.B.Gokhale, C.K.Kokate and S.P.Shriwastava.
3. Biology practical manual according to National core curriculum .Biology forum of Karnataka. Prof .M.J.H.Shafi

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Aditya Nagar, ADB Road, Surampalem. Kakinada Dist., A.P.

Program

Remedial Biology

Certified that this is the bonafide record of practical work done by

Mr./Ms. M.Vijaya Naga Vinodhini

with Roll No. 24361R0060 a student of I Semester

in the B.PHARM course during the Academic Year 2024-25

No. of Experiments Conducted 11

No. of Experiments Completed 10

Faculty incharge

Principal

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

Submitted for the practical examination held on 28/04/25

Examiner -1

Examiner -2

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
1	20-12-24	Study of Microscope	1-6		
2	27-12-24	Study of Section cutting, mounting and Staining and slide	7-11		
3	3-01-25	Study of Cell inclusions	12-15		
4	10-01-25	Study of Modification of root	16-18		
5	24-01-25	Study of Modification of Stem	19-21		
6	24-01-25	Study of Modification of leaves	22-23		
7	31-03-25	Study of Plant tissues	24-26		
8	5-03-25	Microscope study of transverse Section of dicot stem	27-28		
9	12-03-25	Microscope study of transverse section of monocot stem	29-30		
10	19-03-25	Microscope study of transverse of section of dicot root	31-32		
11	26-03-25	Microscope study of transverse section of monocot root	33-35		

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BP 201T. HUMAN ANATOMY AND PHYSIOLOGY-II (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

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

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.
5. Appreciate coordinated working pattern of different organs of each system
6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

Course Content:

Unit I **10 hours**

- **Nervous system**

Organization of nervous system, neuron, neuroglia, classification and properties of nerve fibre, electrophysiology, action potential, nerve impulse, receptors, synapse, neurotransmitters.

Central nervous system: Meninges, ventricles of brain and cerebrospinal fluid.structure and functions of brain (cerebrum, brain stem, cerebellum), spinal cord (gross structure, functions of afferent and efferent nerve tracts,reflex activity)

Unit II **06 hours**

- **Digestive system**

Anatomy of GI Tract with special reference to anatomy and functions of stomach, (Acid production in the stomach, regulation of acid production through parasympathetic nervous system, pepsin role in protein digestion) small intestine

ADITYA PHARMACY COLLEGE (A), SURAMPALEM

PHYTOCHEMICAL EVALUATION OF INVITRO ANTICOAGULANT ACTIVITY OF SARACA ASOCA

Dissertation submitted to

JAWAHARLAL NEHRUTECHNOLOGICAL UNIVERSITY-KAKINADA

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

BACHELOR OF PHARMACY

BY

PAMPANA SNEHALATHA (213G1R0051)

PITHANI MONIKA (213G1R0052)

PONNADA SUPRIYA (213G1R0053)

KOUSHIK SASMAL (213G1R0084)

Under the guidance of

Mrs. TSALIKI GOWTHAMI

M.Pharm, Pharmacology

Assistant Professor

Department of Pharmacology

Aditya Pharmacy College (A), Surampalem-533437, Andhra Pradesh, India

Batch: 2021-2025

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SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE

(Affiliated to PCI, AICTE & JNTUK)

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

DECLARATION

We hereby declare that the dissertation work entitled "PHYTOCHEMICAL EVALUATION OF INVITRO ANTICOAGULANT ACTIVITY OF *SARACA ASOCA*" in partial fulfillment of the degree in bachelor of pharmacy of the JNTU, Kakinada for the academic year 2024-2025, was carried out by us in library and Pharmacology and Pharmacognosy laboratories of Aditya Pharmacy College, Surampalem, Andhra Pradesh under the valuable & efficient guidance and supervision of Mrs. TSALIKI GOWTHAMI, M.Pharm, Assistant Professor, Department of Pharmacology, Aditya pharmacy college, Surampalem, AndhraPradesh . We also declare that the matter embodied in this dissertation is a genuine work, and has not been submitted at any other University.

PAMPANA SNEHALATHA P. Snehalatha

PITHANI MONIKA P. Monika

PONNADA SUPRIYA P. Supriya

KOUSHIK SASMAL Koushik Sasmal

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE

(Affiliated to PCI, AICTE & JNTUK)

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

CERTIFICATE BY THE SUPERVISOR

This is to certify that the dissertation work entitled "PHYTOCHEMICAL EVALUATION OF INVITRO ANTICOAGULANT ACTIVITY OF *SARACA ASOCA* submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNTU-Kakinada for the academic year 2024-2025. This is a bonafide work carried out by PAMPANA SNEHALATHA (Reg. No. 213G1R0051), PITHANI MONIKA (Reg. No. 213G1R0052), PONNADA SUPRIYA (Reg. No. 213G1R0053), and KOUSHIK SASMAL (Reg. No 213G1R0084) under my guidance and supervision. In our opinion, this work embodies substantial quality and meets the standards prescribed by the University for the Award of the degree of **Bachelor of Pharmacy**.

Mrs. TSALIKI GOWTHAMI
M. Pharm (Pharmacology)
Assistant Professor
Department of Pharmacology
Aditya Pharmacy College
Surampalem-533437

PRINCIPAL
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SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE

(Affiliated to PCI, AICTE & JNTUK)

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

CERTIFICATE BY THE PRINCIPAL

This is to certify that the dissertation work entitled "PHYTOCHEMICAL EVALUATION OF INVITRO ANTICOAGULANT ACTIVITY OF *SARACA* ASOCA" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNTU-Kakinada for the academic year 2024-2025. This is a bonafide work carried out by PAMPANA SNEHALATHA (Reg. No. 213G1R0051), PITHANI MONIKA (Reg. No. 213G1R0052), PONNADA SUPRIYA (Reg. No. 213G1R0053), and KOUSHIK SASMAL (Reg. No 213G1R0084) under the guidance and supervision of Mrs. TSALIKI GOWTHAMI, M. Pharm, Assistant Professor, Department of Pharmacology, Aditya Pharmacy College (A), Surampalem, Andhra Pradesh.

Date:
Place:

Dr. D. Sathis Kumar
M. Pharm, Ph. D.
Professor & Principal
Aditya Pharmacy College (A)
Surampalem-533437

PRINCIPAL
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SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE (A), SURAMPALEM

ADITYA PHARMACY COLLEGE (A)

(Affiliated to PCI, AICTE & JNTUK)

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

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "PHYTOCHEMICAL EVALUATION OF INVITRO ANTICOAGULANT ACTIVITY OF *SARACA ASOCA*" was submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNTU-Kakinada for the academic year 2024-2025. This is a bonafide work carried out by PAMPANA SNEHALATHA (Reg. No. 213G1R0051), PITHANI MONIKA (Reg. No. 213G1R0052), PONNADA SUPRIYA (Reg. No. 213G1R0053), and KOUSHIK SASMAL (Reg. No 213G1R0084) under the esteemed guidance and supervision of Mrs. TSALIKI GOWTHAMI M.Pharm, Assistant Professor, Department of Pharmacology, Aditya Pharmacy College (A), Surampalem, Andhra Pradesh.

Date:

Place: Surampalem

(Internal Examiner)

(External Examiner)

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CONCLUSION

In this study we evaluated phytochemical screening and invitro anticoagulant activity of ethanolic extract of Saraca asoca Bark. The ethanolic extract of the plant showed significant activity when compared to other extracts like aqueous extract at higher concentrations. From the experiment carried out it has been found that extract may be useful as an anticoagulant due to its safety and cost effectiveness. So, further studies like compound isolation, purification, characterization are to be usage as an anticoagulant.

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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

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ADITYA PHARMACY COLLEGE(A)
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FORMULATION OF NIMESULIDE BY USING NATURAL AND SYNTHETIC SUPERDINTEGRANTS

Is a Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

BACHELOR OF PHARMACY (2021-2025) By,

CHINTA ALEKHYA (Regd. No. 213G1R00011)

CHINTA JAYA SIVA SWAROOP (Regd.No.213G1R0012)

CHIRRA MARGREAT HELEENA (Regd.No.213G1R0013)

BIRESWAR DHABAL (Regd.No.213G1R0045)

Under the guidance of

Mrs. VALLABHAREDDY PRASANNA SAI SREE, M.Pharm

Assistant Professor

Department of Pharmaceutics

Aditya Pharmacy College Surampalem-533437

Batch: 2021- 2025

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SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE

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JNTUK
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AUTONOMOUS

DECLARATION

We hereby declare that the dissertation work entitled "**Formulation of Nimesulide using natural and synthetic superdisintegrants**" in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2021-2025, 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 Mrs..V. Prasanna Sai Sree M.Pharm., Pharmaceutical chemistry, Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

CHINTAALEKHYA

(213G1R0011)

CHINTAJAYA SIVA SWAROOP

(213G1R0012)

CHIRRA MARGREAT HELEENA

(213G1R0013)

BIRESWAR DHABAL

(213G1R0045)

ADITYA PHARMACY COLLEGE(A)
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AUTONOMOUS

Mrs. V. Prasanna sai sree, M.Pharm ,

Department of Pharmaceutics, Assistant

Professor.

CERTIFICATE

This is to certify that the dissertation work entitled a study on "FORMULATION OF NIMESULIDE USING NATURAL AND SYNTHETIC SUPERDISINTEGRANTS" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2021 -2025. This is a bonafied work carried out by CHINTA ALEKHYA (Regd.No. 213G1R00011), CHINTA JAYA SIVA SWAROOP (Regd.No.213G1R0012), CHIRRA MARGREAT HELEENA (Regd.No.213G1R0038), BIRESWAR DHABAL (Regd.No.213G1R0045) under my direct guidance and supervision.

V. Prasanna Sai Sree

(Mrs. V. Prasanna Sai Sree)

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AUTONOMOUS

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

Principal & Professor.

CERTIFICATE

This is to certify that the dissertation work entitled a study on "**FORMULATION OF NIMESULIDE USING NATURAL AND SYNTHETIC SUPERDISINTEGRANTS**" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2021-2025. The original research carried out by **CHINTA ALEKHYA** (Regd. No. 213G1R0011), **CHINTA JAYA SIVA SWAROOP** (Regd.No.213G1R0012), **CHIRRA MARGREAT HELEENA** (Regd.No.213G1R0013), **BIRESWAR DHABAL** (Regd.No.213G1R0045) under the direct guidance and supervision of Ms. V PRASANNA SAI SREE, M.Pharm., Pharmaceutics, Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

(PRINCIPAL)

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AUTONOMOUS

CERTIFICATE

This is to certify that the dissertation work entitled **"FORMULATION OF NIMESULIDE USING NATURAL AND SYNTHETIC SUPERDISINTEGRANTS"** is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Bachelor of Pharmacy in Pharmaceuties. This is a bonafied work carried out by **CHINTA ALEKHYA** (Regd. No. 213G1R0011), **CHINTA JAYA SIVA SWAROOP** (Regd.No.213G1R0012), **CHIRRA MARGREAT HELEENA** (Regd.No.213G1R0013), **BIRESWAR DHABAL** (Regd.No.213G1R0045) under the guidance and supervision of Mrs.V.PRASANNA SAI SREE, M.Pharm., Pharmaceuties, Assistant Professor, Aditya Pharmacy College, Surampalem.

Place: Surampalem

Date:

Principal

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

(Internal Examiner)

(External Examiner)

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9. SUMMARY AND CONCLUSION

From the experimental data, it can be concluded that

- The approach of the present study was to make a comparative evaluation of drug release profile between natural super disintegrant (banana flower powder) & synthetic super disintegrant (Crospovidone sodium).
- Super Disintegrant action of banana flower powder (natural) is faster than Crospovidone sodium (synthetic).
- Fast disintegrating tablets of nimesulide were prepared and evaluated. In the present study 4 formulations were prepared. Two formulations with natural super disintegrant and other two formulations with synthetic super disintegrant.
- Standard curve of nimesulide was determined by plotting absorbance V/s concentration at 257 nm and it follows the Beer's law. The R^2 is 0.999 respectively.
- Preformulation studies of Nimesulide were performed, the FT-IR analysis revealed that the natural super disintegrant banana flower powder used was compatible with Nimesulide. The correlation value is 0.095.
- The approach of the present study was to make a comparative evaluation of drug release profile between natural super disintegrant (banana flower powder) & synthetic super disintegrant (Crospovidone sodium).
- Disintegrant action of banana flower powder 25mg (natural) is faster than Crospovidone sodium (synthetic).

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SUMMARY AND CONCLUSION

- Fast dissoving tablets of nimesulide were prepared and evaluated. In the present study 4 formulations were prepared. Two formulations with natural super disintegrant and other two formulations with synthetic super disintegrant.
- Standard curve of nimesulide was determined in pH- 7.4 phosphate buffer by plotting absorbance V/s concentration at 257 nm and it follows the Beer's law. The R^2 is 0.999 respectively.
- Angle of repose was less than 25° and Carr's index values were less than 20 for the formulations of all the batches indicating excellent to fair flowability and compressibility. Hausner's ratio was less than 1.256 for all the batches indicating good flow properties. The pre and post compression studies shown that the formulation is suitable for Fast dissolving tablets.
- Nimesulide fast dissolving tablets can be formulated using direct compression technique. The in vitro studies have shown for **F4** that this is a potential drug delivery system for nimesulide with considerably good stability and release profile.

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

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 brothers medical publishers, New Delhi.
7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brothers 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:

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
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Aditya Nagar, ADB Road, Surampalem. Kakinada Dist., A.P.

Program

B.Pharmacy

Certified that this is the bonafide record of practical work done by

Mr./Ms. P. Harshini

with Roll No. 243G1R0065 a student of I-II Semester

in the ~~Human anatomy & physiology~~ -gy- II course during the Academic Year 2024-2025

No. of Experiments Conducted 15

No. of Experiments Completed 15

Faculty incharge

Principal

Submitted for the practical examination held on 22/9/25

Examiner -1

Examiner -2

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SURAMPALEM-533 437

INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
1.	6/6/25	To Study the Integumentary and special senses using Specimen models	1-6		
2.	13/6/25	To Study the Nervous System using chart models	7-11		
3.	20/6/25	To Study the Endocrine System using specimen models	12-15		
4.	1/7/25	To Demonstrate the functions of olfactory nerve	16-17		
5.	4/7/25	To Examine the different types of taste.	18-19		
6.	11/7/25	To Demonstrate the visual activity	20-21		
7.	15/7/25	To Demonstrate the Reflex activity	22-24		
8.	18/7/25	Recording of Body temperature	25-26		
9.	25/7/25	To Demonstrate positive & negative feedback Mechanism	27-29		
10.	1/8/25	Determination of Tidal volume and vital capacity	30-31		
11.	8/8/25	Recording of Basal Mass Index	32		
12.	12/8/25	To Study the digestive Respiratory, Cardiovascular Reproductive system with charts.	33-36		
13.	19/8/25	Study of family planning devices and pregnancy Diagnosis test.	37-40		

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SURAMPALEM-533 437

INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
14.	22/8/25	Determination of total Blood Count by cell analysis	41-42		
15.	29/8/25	permanent Slides of vital organs and gonads.	45-48		

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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 Ahluwalia/Chatwal.

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PHARMACY COLLEGE

An AUTONOMOUS Institution

Aditya Nagar, ADB Road, Surampalem. Kakinada Dist., A.P.

Program

B. Pharmacy

Certified that this is the bonafide record of practical work done by

Mr./Ms. M. Ganga bhavani

with Roll No. 246361R0055 a student of 1st B.pharm 1 Semester

in the Ph. organic chemistry-1 course during the Academic Year 24-25

No. of Experiments Conducted 16

No. of Experiments Completed 16

Faculty incharge

Principal

PRINCIPAL
ADITYA PHARMACY COLLEGE(A),

Submitted for the practical examination held on .....

Examiner -1

Examiner -2

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
*	5/6/25	Lab safety precautions	1		
*	5/6/25	Labaratory rules.	2-3		
*2	5/6/25	purification of organic compound.	4-11		
2.	12/6/25	Determination of melting point.	12-14		
3.	26/6/25	Determination of boiling point.	15-17		
*	3/7/25	Systematic procedure for organic compound Analysis.	18-32		
4.	3/7/25	systematic Analysis of unknown organic compound Sample-01	33-36		
5.	10/7/25	systematic Analysis of unknown organic compound sample-02	37-39		
6.	17/7/25	systematic Analysis of unknown organic compound Sample. 03.	40-43		
7.	17/7/25	Systematic Analysis of unknown organic compound sample-04.	44-47		
8.	24/7/25	systematic Analysis of unknown organic compound Sample-05.	48-50		
9.	24/7/25	systematic Analysis of unknown organic compound Sample-06.	51-53		

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SURAMPALEM
533 437

INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
10.	24/7/25	systematic Analysis of unknown organic compound Sample-07.	54-57		
11.	31/7/25	Preparation of Acetanilide from Aniline.	58		
12.	7/8/25	preparation of dibenzylidene acetone from benzaldehyde and Acetone	59-60		
13.	14/8/25	preparation of picric acid from phenol.	61-62		
15.	21/8/25	preparation of metadi nitro benzene from nitro benzene.	64-65		
16.	2/8/25	preparation of benzylalcohol from benzaldehyde	66-68		
16	4/9/25	preparation of benzoic acid from benzanilide.	63		
17.	11/9/25	Construction of molecular models.	69-72		

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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.

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Program

B.pharmacy

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Mr./Ms. Manupati. Greeshma

with Roll No. 243G1R0047 a student of B.pharmacy-I-II Semester

in the Bio-Chemistry course during the Academic Year 2024-2025

No. of Experiments Conducted 11

No. of Experiments Completed 11

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Examiner -2

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
01.	03/06/25	Introduction to carbohydrates.	01-02	A	3/6/25
		Systemic procedure for Qualitative analysis of given carbohydrates Sample.	03-04	A	10/6/25
a.	10/06/25	Qualitative Analysis for unknown Sample -1	05-08	A	
b.	10/06/25	Qualitative Analysis for unknown Sample - 2	09-12	A	10/6/25
c.	17/06/25	Qualitative Analysis for unknown Sample - 3	13-16	A	17/6/25
d.	17/06/25	Qualitative Analysis for unknown Sample - 4	17-20	A+	17/6/25
e.	24/06/25	Qualitative Analysis for unknown Sample - 5	21-23	A	24/6/25
f.	24/06/25	Qualitative Analysis for unknown Sample - 6	24-26	A+	24/6/25
02		Systematic procedure for qualitative Analysis for given protein Sample			
	01/07/25		27-30	A	1/7/25
a.	01/07/25	Qualitative Analysis for unknown protein Sample-1	31-33	A	1/7/25
b.	08/7/25	Qualitative Analysis for unknown protein sample-2	34-36	A+	8/7/25
03		Detection of abnormal			
	15/07/25	constituents present in urine Sample	37-38	A	15/7/25
a.	15/7/25	Determination of abnormal constituents in sample-A	39-40	A	15/7/25
b.	22/7/25	Determination of abnormal	41-42	A	22/7/25

INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
		Constituents in sample -B			
C.	29/07/25	Determination of abnormal constituents in sample-C	43-44	A	29/7/25
04.	05/8/25	Estimation of glucose by calorimeter by using DNSA [Dinitrosalicylic Acid]	45-46	A	5/8/25
05.	06/8/25	Qualitative Determination of creatine in serum	47-48	A+	6/8/25
06.	12/08/25	Qualitative estimation of cholestrol in serum.	49-	A	12/08/25
07.	19/08/25	preparation of buffer solution and measurement of PH.	50-51	A+	Vijay 20/8/25
08.	20/08/25	To demonstrate the study of Enzymatic hydrolysis of starch.	52-53	A	Vijay 2/9/25
09.	02/09/25	Study the Effect of temperature (or) salivary amylase activity.	54	A	Vijay 3/9/25
10.	03/09/25	Study the Effect of the Substrate concentration on salivary amylase activity.	55	A	Vijay 9/9/25
11.	09/09/25	Study of Salivary amylase.	56-57	A	Vijay 9/9/25

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BP210P. COMPUTER APPLICATIONS IN PHARMACY (Practical)

1. Design a questionnaire using a word processing package to gather information about a particular disease.
2. Create a HTML web page to show personal information.
3. Retrieve the information of a drug and its adverse effects using online tools
4. Creating mailing labels Using Label Wizard , generating label in MS WORD
5. Create a database in MS Access to store the patient information with the required fields Using access
6. Design a form in MS Access to view, add, delete and modify the patient record in the database
7. Generating report and printing the report from patient database
8. Creating invoice table using – MS Access
9. Drug information storage and retrieval using MS Access
10. Creating and working with queries in MS Access
11. Exporting Tables, Queries, Forms and Reports to web pages
12. Exporting Tables, Queries, Forms and Reports to XML pages

Recommended books (Latest edition):

1. Computer Application in Pharmacy – William E.Fassett –Lea and Febiger, 600 South Washington Square, USA, (215) 922-1330.
2. Computer Application in Pharmaceutical Research and Development –Sean Ekins – Wiley-Interscience, A John Willey and Sons, INC., Publication, USA
3. Bioinformatics (Concept, Skills and Applications) – S.C.Rastogi-CBS Publishers and Distributors, 4596/1- A, 11 Darya Gani, New Delhi – 110 002(INDIA)
4. Microsoft office Access - 2003, Application Development Using VBA, SQL Server, DAP and Infopath – Cary N.Prague – Wiley Dreamtech India (P) Ltd., 4435/7, Ansari Road, Daryagani, New Delhi - 110002

ADITYA
PHARMACY COLLEGE

ADB Road, Surampalem. Kakinada.Dist., (A.P.)

Department of
Computer Applications

Name: .....

PIN No. 2 3 3 G 1 R 0 0 8 L

Certified that this is the bonafide record of practical work done by

Mr. / Ms. Santanu Mahapatra

a student of B-Pharmacy *with Regd. No.* 233G1R008L

in the Computer Application *Laboratory during the year* 2023-24

No. of Experiments Conducted 14

No. of Experiments Attended 14

Signature - Faculty incharge

Signature-Head of the Department

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SURAMPALEM-533 437

Submitted for the practical examination held on 26/9/24

Examiner-1

Examiner-2

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Pointer

Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
11.	02/08/24	Explaining Database to Web Page.	22	✓
12.	09/08/24	Exporting Database to XML Pages.	23	✓
13.	09/08/24	Generation of Students Mark List.	24-25	✓
14.	16/08/24	Creating Power Point Presentation.	26-27	✓

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BP301T. PHARMACEUTICAL ORGANIC CHEMISTRY –II (Theory)

45 Hours

Scope: This subject deals with general methods of preparation and reactions of some organic compounds. Reactivity of organic compounds are also studied here. The syllabus emphasizes on mechanisms and orientation of reactions. Chemistry of fats and oils are also included in the syllabus.

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. prepare organic compounds

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 **10 Hours**

- **Benzene and its derivatives**
  - **A.** Analytical, synthetic and other evidences in the derivation of structure of benzene, Orbital picture, resonance in benzene, aromatic characters, Huckel's rule
  - **B.** Reactions of benzene - nitration, sulphonation, halogenation-reactivity, Friedelcrafts alkylation- reactivity, limitations, Friedelcrafts acylation.
  - **C.** Substituents, effect of substituents on reactivity and orientation of mono substituted benzene compounds towards electrophilic substitution reaction
  - **D.** Structure and uses of DDT, Saccharin, BHC and Chloramine

UNIT II **10 Hours**

- **Phenols*** - Acidity of phenols, effect of substituents on acidity, qualitative tests, Structure and uses of phenol, cresols, resorcinol, naphthols
- **Aromatic Amines*** - Basicity of amines, effect of substituents on basicity, and synthetic uses of aryl diazonium salts
- **Aromatic Acids*** –Acidity, effect of substituents on acidity and important reactions of benzoic acid.

UNIT III

10 Hours

- **Fats and Oils**

a. Fatty acids – reactions.

b. Hydrolysis, Hydrogenation, Saponification and Rancidity of oils, Drying oils.

c. Analytical constants – Acid value, Saponification value, Ester value, Iodine value, Acetyl value, Reichert Meissl (RM) value – significance and principle involved in their determination.

UNIT IV **08 Hours**

- **Polynuclear hydrocarbons:**

a. Synthesis, reactions

b. Structure and medicinal uses of Naphthalene, Phenanthrene, Anthracene, Diphenylmethane, Triphenylmethane and their derivatives

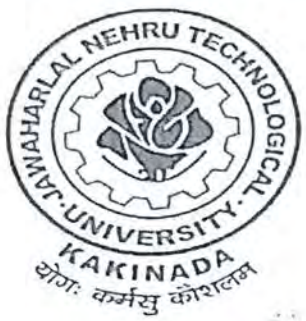
UNIT V **07 Hours**

- **Cyclo alkanes***

Stabilities – Baeyer's strain theory, limitation of Baeyer's strain theory, Coulson and Moffitt's modification, Sachse Mohr's theory (Theory of strainless rings), reactions of cyclopropane and cyclobutane only

SYNTHESIS AND CYCLIZATION OF CHALCONES AND ITS DOCKING

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



BACHELOR OF PHARMACY

(2021-2025)

Submitted by

SINGAMPALLI SAI MOUNIKA	(213G1R0081)
ULLI LIKHITHA SATISH	(213G1R0082)
VEERNALA HARINI TEJA SRI	(213G1R0083)
MEGHANA ENIMIREDDY	(213G1R0085)

Under the guidance of

SHAIK.RAFI M.pharm

Associate Professor

ADITYA PHARMACY COLLEGE

SURAMPALEM- 533437

PRINCIPAL
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SURAMPALEM-533 437

DECLARATION

The project embodied in this thesis "**SYNTHESIS AND CYCLIZATION OF CHALCONES AND ITS DOCKING**" 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.

SINGAMPALLI SAI MOUNIKA	(213G1R0081)	S. Sai Mounika
ULLI LIKHITHA SATISH	(213G1R0082)	U. Likhitha Satish
VEERNALA HARINI TEJA SRI	(213G1R0083)	V. Harini Teja Sri
MEGHANA ENIMIREDDY	(213G1R0085)	E. Meghana

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation work entitled "**SYNTHESIS AND CYCLIZATION OF CHALCONES AND ITS DOCKING**" 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 SINGAMPALLI SAI MOUNIKA (213G1R0081), ULLI LIKHITHA SATISH (213G1R0082), VEERNALA HARINI TEJA SRI (213G1R0083), MEGHANA ENIMIREDDY (213G1R0085). This bonafied project work was carried out under the direct guidance and supervision of,

Mr.SHAIK.RAFI ,(M.Pharm)

Associate professor

Aditya Pharmacy College

Surampalem

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CERTIFICATE

This is to certify that the dissertation work entitled **"SYNTHESIS AND CYCLIZATION OF CHALCONES AND ITS DOCKING"** 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 SINGAMPALLI SAI MOUNIKA (213G1R0081), ULLI LIKHITHA SATISH (213G1R0082), VEERNALA HARINI TEJA SRI (213G1R0083), MEGHANA ENIMIREDDY (213G1R0085). 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:

(principal

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

Aditya Pharmacy college

Surampalem

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
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CERTIFICATE

This is to certify that the dissertation entitled **"SYNTHESIS AND CYCLIZATION OF CHALCONES AND ITS DOCKING"** 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 SINGAMPALLI SAI MOUNIKA (213G1R0081), ULLI LIKHITHA SATISH (213G1R0082), VEERNALA HARINI TEJA SRI (213G1R0083), MEGHANA ENIMIREDDY (213G1R0085). 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

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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 tested compounds have antibacterial activity by autodocking studies proven by docking score -6.83.

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.

ISOLATION AND CHARACTERIZATION OF PHYLLOPLANE BACTERIA FROM PAPAYA PLANT FOR THE BIO CONTROL OF POSTHARVEST DISEASE IN PAPAYA

Dissertation Submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

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

of BACHELOR OF PHARMACY

SUBMITTED BY

S. SIVAMANI (213G1R0060)

SK.FAISAL IQBAL (213G1R0061)

S.S.AKANKSHA (213G1R0062)

SHIVANI KUMARI (213G1R0091)

Under the guidance of

DR.S.NAGESWARA RAO, M. Pharma, Ph.D

Professor

Department of Pharmacology

Aditya Pharmacy College, Surampalem, Andhra Pradesh, India-533437

Batch: 2021-2025

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

DECLARATION

We hereby declare that the dissertation work entitled "ISOLATION AND CHARACTERIZATION OF PHYLLOPLANE BACTERIA FROM PAPAYA PLANT FOR THE BIO CONTROL OF POSTHARVEST DISEASE IN PAPAYA" in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2021 - 2025,was carried out by us in library and laboratories of Aditya Pharmacy College, Surampalem, Andhra Pradesh under the valuable and efficient guidance and supervision of , DR. S.NAGESWARA. RAO M.Pharm, Ph.D., Professor, Department of Pharmacology, Aditya pharmacy college, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

S.SIVAMANI (213G1R0060) S. Sivamani

SK.FAISAL IQBAL (213G1R0061) SK. Faisal Iqbal

S.S.AKANKSHA (213G1R0062) S.S. Akanksha

SHIVANI KUMARI. (213G1R0091) Shivani Kumari

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(Affiliated to PCI, AICTE & JNTUK)

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

CERTIFICATE BY THE SUPERVISOR

This is to certify that the dissertation work entitled a study on "ISOLATION AND CHARACTERIZATION OF PHYLLOPLANE BACTERIA FROM PAPAYA PLANT FOR THE BIO-CONTROL OF POSTHARVEST DISEASE IN PAPAYA" submitted in Partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2021-2025. This is a bona fide work carried out by S. SIVAMANI (21361R0060), SK.FAISAL IQBAL (21361R0061), S.S AKANKSHA (21361R0062) SHIVANI KUMARI (21361R0091) under the direct guidance and supervision.

SIGNATURE: S.Nageswara Rao 17/03/25

Dr.S.NAGESWARA RAO, M.Pharm, Ph.D.,

Professor

Dept of Pharmacology

Aditya Pharmacy College

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CERTIFICATE

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SIGNATURE:

Dr. D. Sathis kumar M.Pharm, Ph.D.,

Professor and Principal

Aditya Pharmacy College

Surampalem

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ADITYA PHARMACY COLLEGE

(Affiliated to PCI, AICTE & JNTUK)

Surampalem-533437 E.G. District, Andhra Pradesh

CERTIFICATE

To certify that the dissertation work entitled a study on "ISOLATION AND CHARACTERIZATION OF PHYLLOPLANE BACTERIA FROM PAPAYA PLANT FOR THE BIO CONTROL OF POST-HARVEST DISEASE IN PAPAYA" Submitted in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2021-2025. This is a bonafide work carried out by S.SIVAMANI (213G1R0060), SK.FAISAL IQBAL(213G1R0061), S.S.AKANKSHA(213G1R0062), SHIVANI KUMARI (213G1R0091) under the direct guidance and super vision of DR.S.NAGESWARA RAO, M. Pharma, Ph.D., Professor, Department of Pharmacology, Aditya pharmacy college, Surampalem, Andhra Pradesh.

External Examiner:

Internal Examiner:

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CHAPTER-8

CONCLUSION

8.1 CONCLUSION:

From the studies conducted it is observed that bacterial isolates from the phylloplane have the ability to control fungal pathogen growth in papaya fruits. Out of 20 isolates studied, it can be concluded that IS 6 and IS 7 had maximum inhibitory activity and increased shelf life of the papaya fruits. These two isolates were found to be Gram positive rods with endospores and Gram-negative rods, respectively. The maximum inhibition was seen against Fusarium. By the Dual assay test, it was revealed that maximum antagonistic ability was revealed by IS – 6 and IS – 7. The papaya fruits treated with IS – 6 and are – 7 showed better shelf life and appeared fresh. The isolates were morphologically and biochemically characterized and identified as Bacillus and Pseudomonas respectively. Thus it can be concluded that Bacillus and Pseudomonas obtained from the phylloplane of the papaya plant act as potential biocontrol agents against various post-harvest diseases of papaya.

7.2 FUTURE SCOPE

* Pathogenicity testing of the potential biocontrol agents • Mode of action of the biocontrol agents

* Mode of action of the biocontrol agents

* Formulation studies

* Field studies

BP305P. PHARMACEUTICAL ORGANIC CHEMISTRY -II (Practical)

4 Hrs/week

I Experiments involving laboratory techniques

- Recrystallization
- 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
An AUTONOMOUS Institution

Aditya Nagar, ADB Road, Surampalem. Kakinada Dist., A.P.

Program

Pharmaceutical Organic Chemistry - II

Certified that this is the bonafide record of practical work done by

Mr./Ms. P. Sujini

with Roll No. 233G1R0070 a student of II/I B. Pharmacy Semester

in the P.O.C - II course during the Academic Year 2024-2025

No. of Experiments Conducted 13

No. of Experiments Completed 13

Faculty incharge

Principal

PRINCIPAL
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SURAMPALEM-533 437

Submitted for the practical examination held on .....

Examiner -1

Examiner -2

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ADITYA PHARMACY COLLEGE(A)
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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
	01/10/24	Introduction	1-6		
1.	15/10/24	Preparation of Phenyl Azo-Beta naphthol	7-8		
2.	22/10/24	Preparation of Benzil from Benzoin	9-10		
3.	29/10/24	Preparation of Benzoic acid from Ethyl benzoate	11-12		
4.	05/11/24	Determination of saponification.	13-14		
5.	12/11/24	Determination of Acid value	15-16		
6.	19/11/24	Preparation of Para iodo Benzoic acid	17-18		
7.	26/11/24	Preparation of cinnamic acid from Benzaldehyde	19-20		
8.	03/11/24	Preparation of 2,4,6-Tri bromo Aniline	21-22		
9.	10/12/24	Preparation of metadi-nitrobenzene	23-24		

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
10.	17/12/24	Preparation of Benzoic acid from Benzyl chloride	25-26		
11.	24/12/24	Preparation of Acetanilide from Aniline	27-28		
12.	31/12/24	Preparation of Dibenzylidene Acetone from Benzaldehyde	29-30		
13.	7/1/25	Determination of iodine value.	31-33		

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BP306P. PHYSICAL PHARMACEUTICS – I (Practical)

4 Hrs/week

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 by 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-1 to 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

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Program

Physical Pharmaceutics -I

Certified that this is the bonafide record of practical work done by

Mr./Ms. P. Sujini

with Roll No. 233G1R0070 a student of II/I B. Pharmacy Semester

in the Physical pharmaceutics-I course during the Academic Year 2024-2025

No. of Experiments Conducted 12

No. of Experiments Completed 11

K. Pushpalatha
Faculty incharge

Principal

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

Submitted for the practical examination held on .....

Examiner -1

K. Pushpalatha
Examiner -2

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ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
1.	4/10/24	Determination of Solubility of drug at room temperature.	1-2		
2.	18/10/24	Determination of Pka value by half Neutralization Method.	3-5		
3.	25/10/24	Determination of partition co-efficient of Benzoic acid in Benzene and water.	6-7		
4.	8/11/24	Determination of partition co-efficient of iodine in CCl_4 and water.	8-9		
5.	15/11/24	Determination of Surface tension of given Liquid by using drop Count Method.	10-12		
6.	22/11/24	Determination of Surface tension of given Liquid by using drop weight Method.	13-15		
7.	29/11/24 6/12/24	Determination of percentage composition of NaCl in a Solution using phenol water system by CST.	16-18		
8.	13/12/24	Determination of critical Miscellar concentration (cmc)	19-22		

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ADITYA PHARMACY COLLEGE(A)
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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
		of Surfactants			
9.	20/12/24 27/12/24	Determination of freundlich's and langmuir constants using activated charcoal.	23-26		
10.	3/1/25	Determination of HLB number of a Surfactant by saponification Method.	27-31		
11.	10/1/25 24/1/25	Determination of stability constant and donor acceptor ratio of PABA - caffeine complex by Solubility Method.	32-35		
12.	31/1/25 7/2/25	Determination of stability constant and donor acceptor ratio of cupric - glycine complex by PH titration Method.	36-39		

ADITYA PHARMACY COLLEGE SURAMPALEM 533 437

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
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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

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Aditya Nagar, ADB Road, Surampalem. Kakinada Dist., A.P.

Program

B. PHARMACY

Certified that this is the bonafide record of practical work done by

Mr./Ms. MUSKAN BANJARE

with Roll No. 233G1R0061 a student of Aditya Pharmacy College Semester

in the Ph. Microbiology course during the Academic Year 2024-2025

No. of Experiments Conducted 17

No. of Experiments Completed 17

Faculty incharge

Principal

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
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22/02/2025

Examiner -1

22/2/25

Examiner -2

ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
		INTRODUCTION.	01-06		
1.	30/09/24	Study of apparatus and equipments used in pharmaceutical microbiology	07-14		
2.	14/10/24	Preparation and sterilization of Nutrient broth.	15-16		
3.	14/10/24	Preparation and sterilization of Nutrient Agar.	17-18		
4.	21/10/24	Culture Transfer Techniques.	19-22		
5.	28/10/24	Techniques for solution of pure culture from mixed culture.	23-26		
6.	04/11/24	Preparation of bacterial smear.	27-28		
7.	11/11/24	Simple staining.	29-30		
8.	18/11/24	Gram staining	31-32		
9.	25/11/24	Acid fast staining	33-34		
10.	09/12/24	IMVIC test.	35-36		
11.	16/12/24	Microscopic Examination of living bacteria by hanging Drop Method.	37-40		
12.	23/12/24	Sterilization by autoclave and test for sterility.	41		
13.	30/12/24	Sterilization by dry heat and test for sterility.	42-43		
14.	06/01/25	Test for sterility of surgical dressing.	44-45		
15.	20/01/25	Microbial assay of Tobramycine by Turbidom-	46-47		

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
		-etric Method.			
16.	27/01/25	Microbial Assay of Amikacin by cup plate method.	48-49		
17.	03/02/25	Viable Count.	50-51		

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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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Aditya Nagar, ADB Road, Surampalem. Kakinada Dist., A.P.

Program

Pharmaceutical Engineering [Pharmaceutics]

Certified that this is the bonafide record of practical work done by

Mr./Ms. DANDUPROLU . CHARMILA

with Roll No. 233G1RD025 a student of II Semester

in the Pharmaceutical Engineering course during the Academic Year 2024-25

No. of Experiments Conducted 17

No. of Experiments Completed 15

Faculty incharge

Principal

PRINCIPAL
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Submitted for the practical examination held on 17/2/25

Examiner -1

Examiner -2

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
I.	30/9/24	Introduction	1-4		
1.	14/10/24	Determination of Radiation Constant of Iron	5-6		
2.	14/10/24	Determination of Radiation Constant of Brass.	7-8		
3.	14/10/24	Determination of Radiation Constant of Unpainted Glass	9-10.		
4.	14/10/24	Determination of Radiation Constant of Painted Glass.	11-13		
5.	21/10/24	Construction of Drying rate Curve of Calcium Carbonate	14-16		
6.	21/10/24	Construction of Drying rate Curve of Starch.	17-19		
7.	4/11/24	Determination of Absolute and Relative Humidity by dew point method.	20-21		
8.	11/11/24	Evaluation of factors affecting Rate of evaporation.	22-24		
9.	18/11/24	Determination of Crystallization of KNO_3 by Shock Cooling technique.	25-28		
10	9/12/24	Particle size distribution of a Powder by Seiving method.	29-33		
11	9/12/24	Determination of Size Reduction.	34-35		
12.	16/12/24	Determination of overall heat transfer Co-effident.	36-38		
13.	23/12/24	Evaluation of Various factors Affecting rate of filtration	39-43		

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ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
		on $CaCO_3$ suspension.			
14.	30/12/24	Determination of efficiency of steam distillation using Turpentine oil	44-46		
15.	6/1/25	Determination of Mixing index of blender for salicylic acid and Lactose.	47-48		
16		Demonstration of Pharmaceutical Equipment.			
	20/1/25	Colloid mill.	49-50		
	20/1/25	Planetary mixer.	51-52		
	20/1/25	Fluidized bed dryer	53-54		
	20/1/25	Freeze dryer	55-58		
17	27/1/25	Ball mill (or) pebble mill	59-60		
	27/1/25	Multiple effect evaporator	61-63		
		Demonstration of pharmaceutical Equipment.			
	27/1/25	Rotatory Tablet machine.	64-66		
	27/1/25	Fluidized Bed Coater	67-69		
	27/1/25	Fluid energy mill (or) Jet mill	70-71		
	27/1/25	Dehumidifier.	72-74		

ADITYA PHARMACY COLLEGE SURAMPALEM 533 437

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

BP401T. PHARMACEUTICAL ORGANIC CHEMISTRY –III (Theory)

45 Hours

Scope: This subject imparts knowledge on stereo-chemical aspects of organic compounds and organic reactions, important named reactions, chemistry of important hetero cyclic compounds. It also emphasizes on medicinal and other uses of organic compounds.

Objectives: At the end of the course, the student shall be able to

1. understand the methods of preparation and properties of organic compounds
2. explain the stereo chemical aspects of organic compounds and stereo chemical reactions
3. know the medicinal uses and other applications of organic compounds

Course Content:

Note: To emphasize on definition, types, mechanisms, examples, uses/applications

UNIT-I **10 Hours**

Stereo isomerism

Optical isomerism –

Optical activity, enantiomerism, diastereoisomerism, meso compounds

Elements of symmetry, chiral and achiral molecules

DL system of nomenclature of optical isomers, sequence rules, RS system of nomenclature of optical isomers

Reactions of chiral molecules

Racemic modification and resolution of racemic mixture.

Asymmetric synthesis: partial and absolute

UNIT-II **10 Hours**

Geometrical isomerism

Nomenclature of geometrical isomers (Cis Trans, EZ, Syn Anti systems)

Methods of determination of configuration of geometrical isomers.

Conformational isomerism in Ethane, n-Butane and Cyclohexane.

Stereo isomerism in biphenyl compounds (Atropisomerism) and conditions for optical activity.

Stereospecific and stereoselective reactions

UNIT-III **10 Hours**

SYNTHESIS, CHARACTERIZATION AND ANTI BACTERIAL ACTIVITY OF SOME 1,3,4-THIADIAZOLE DERIVATIVES

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

BACHELOR OF PHARMACY

(2021-2025)

Submitted by

BERAKA SUCHITRA (213G1R0076)

MALLIPATI SUMIITRA (213G1R0077)

NARENDRAVARAPU PHANI SAI RAM (213G1R0078)

RAJANA NAMITHA DURGA SAI (213G1R0079)

ROUTHU SAIKUMAR (213G1ROO80)

Under the guidance of

Mr. K. JAKRAIH (M. Pharm)

Assistant Professor,

Department of Pharmaceutical Chemistry

ADITYA PHARMACY COLLEGE

Approved by AICTE & PCI - New Delhi, Affiliated to JNTUK, Kakinada,

Recognised by UGC Under section 2 (f),

Aditya Nagar, ADB Road, Surampalem E. G.Dt.,-533 437

DECLARATION

The project embodied in this thesis work entitled **"SYNTHESIS,CHARACTERIZATION AND ANTI BACTERIAL ACTIVITY OF SOME 1,3,4 THIADIAZOLES"** was carried out in the department of Pharmaceutical Organic Chemistry under the guidance of Mr.K. JAKRAIAH 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.

B. Suchitra

BERAKA SUCHITRA (213G1R0076)

M. Sumitra

MALLIPATI SUMITRA (213G1R0077)

N. PhaniSairam

NAREDRAVARAPU PHAI SAIRAM (21G1R0078)

R. Namitha

RAJANA NAMITHA DURGA SAI (213G1R0079)

P. Sai Ram

ROUTHU SAI KUMAR (213G1R0080)

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ADITYA PHARMACY COLLEGE
SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation work entitled "SYNTHESIS,CHARECTARIZATION AND ANTIBACTERIAL ACTIVITY OF SOME 1,3,4-THIADIAZOLE DERIVATIVES" 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 BERAKA SUCHITRA(213G1R0076), MALLIPATI SUMITRA (213G1R0077), NARENDRAVARAPU PHANI SAI RAM (213G1R0078), RAJANA NAMITHA DURGA SAI (213G1R0079), ROUTHU SAIKUMAR (213G1ROO80). This bonafied project work was carried out under the direct guidance and supervision of.

15/03/25

Mr. Kotta. Jakraiah
M.Pharm
Assistant Professor
Aditya Pharmacy College
Surampalem

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CERTIFICATE

This is to certify that the dissertation work entitled "SYNTHESIS,CHARECTARIZATION AND ANTIBACTERIAL ACTIVITY OF SOME 1,3,4-THIADIAZOLE DERIVATIVES" 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 BERAKA SUCHITRA(213G1R0076), MALLIPATI SUMITRA (213G1R0077), NARENDRAVARAPU PHANI SAI RAM (213G1R0078), RAJANA NAMITHA DURGA SAI (213G1R0079), ROUTHU SAIKUMAR (213G1ROO80).They have done this research work under the supervision of Mr KOTTA. JAKRAIAH, M.Pharm and it has not been submitted to any other universiy or academic institution for any higher degree.

Place: Surampalem
Date:

Signature

Dr. D. Sathis Kumar, M.Pharm, Ph.D
Principal& Professor
Aditya Pharmacy College
Surampalem

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-5

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-5

CERTIFICATE

This is to certify that the dissertation work entitled "SYNTHESIS,CHARECTARIZATION AND ANTIBACTERIAL ACTIVITY OF SOME 1,3,4-THIADIAZOLE DERIVATIVES"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 **BERAKA SUCHITRA(213G1R0076), MALLIPATI SUMIITRA (213G1R0077), NARENDRAVARAPU PHANI SAI RAM (213G1R0078), RAJANA NAMITHA DURGA SAI (213G1R0079), ROUTHU SAIKUMAR (213G1ROO80)**. They have done this research work under the supervision of Mr KOTTA JAKRAIAH, 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

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

SUMMERY& CONCLUSION

The following conclusion has been drawn from the results of these investigations.

1. Three derivatives of 2- Amino, 5- Aryl- 1,3,4- Thiadiazole were synthesised from series of chemical reactions.
2. The synthesised compounds were charectarized by melting point, molecular weight, % Yield and % Nitrogen
3. The second compound which is labelled as B exhibited significant anti bacterial activity against *S. aureus* and *E. coli* with zone of inhibition 9 mm and 8 mm at 100 µg/ml respectively.
4. The promising results gave us scope for further work in this area

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.

CERTIFICATE

This is to certify that the dissertation entitled **"PHYTOCHEMICAL PROFILING AND ANTIMICROBIAL PROPERTIES OF PIPER BETEL LEAF AND ITS FORMULATION USING ANALYTICAL TECHNIQUES"** 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

EDUBILLI GUNAVANTH [213G1R0072], KOLA GEETHIKA SRI DEVI ISWARYA [213G1R0073], SATHI SUDEEPA REDDY [213G1R0074], YANAMADALA PRANEETHA [213G1R0075]

They have done this research work under the supervision of **MISS. BALLA.SUJITA,** 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

Aditya Pharmacy College
SURAMPALEM-533 437

Aditya Pharmacy College,

Surampalem-533437.

Place: Surampalem

Date:

Internal Examiner

PRINCIPAL
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External Examiner

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the degree of Bachelor of Pharmacy (2025)

JAWAHARLAL NEHRU TECHNOLOGIAL UNIVERSITY, KAKINADA

Submitted BY

EDUBILLI GUNAVANTH [213G1R0072]

KOLA GEETHIKA SRI DEVI ISWARYA [213G1R0073]

SATHI SUDEEPA REDDY [213G1R0074]

YANAMADALA PRANEETHA [213G1R0075]

Under the Guidance of

Miss BALLA. SUJIYA, M.Pharm,

Assistant Professor

Aditya Pharmacy College

Surampalem-533437

2021-2025

PRINCIPAL
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SURAMPALEM-533 437

DECLARATION

The Project embodied in this thesis entitled **"PHYTOCHEMICAL PROFILING AND ANTIMICROBIAL PROPERTIES OF PIPER BETEL LEAF AND ITS FORMULATION USING ANALYTICAL TECHNIQUES"** 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.

E.Gunavanth

EDUBILLI GUNAVANTH
[213G1R0072]

K.G.S. Iswarya

KOLA GEETHIKA SRI DEVI ISWARYA
[213G1R0073]

S. Sudeepa reddy

SATHI SUDEEPA REDDY
[213G1R0074]

Y. Praneetha.

YANAMADALA PRANEETHA
[213G1R0075]

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CERTIFICATE

This is to certify that the dissertation entitled **"PHYTOCHEMICAL PROFILING AND ANTIMICROBIAL PROPERTIES OF PIPER BETEL LEAF AND ITS FORMULATION USING ANALYTICAL TECHNIQUES"** 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

EDUBILLI GUNAVANTH [213G1R0072], KOLA GEETHIKA SRI DEVI ISWARYA [213G1R0073], SATHI SUDEEPA REDDY [213G1R0074], YANAMADALA PRANEETHA [213G1R0075]

Under my supervision and it has not been previously submitted to any other university or academic institution for any higher degree.

B. Sujiya

Miss. BALLA. SUJIYA, M. Pharm,

ASSISTANT PROFESSOR,

Aditya Pharmacy College,

Surampalem-533437.

Place: Surampalem

Date:

Internal Examiner

External Examiner

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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, Spectroscopical analysis are readily available and affordable.

SUMMARIZED TABLE:

TAB LE 1.35: Summarized Table for Leaf Extract

PARAMETER	RESULTS		
	PHENOLS	FLAVONOIDS	FORMULATION
Wavelength(nm)	550nm	430nm	550nm
Linearity Range	10 – 50 µg / ml	10 – 50 µg / ml	10 – 50 µg / ml
Regression Equation	0.9991	0.9995	0.9992
Slope (m)	0.01475	0.0113	0.01079
Intercept (c)	0.00147	0.0013	0.0111
LOD	0.228µg/ml	0.145µg/ml	0.225µg/ml
LOQ	1.45µg/ml	1.25µg/ml	1.41µg/ml

FT – IR ANALYSIS

FT- IR Analysis was performed and the produced IR Spectra was compared with standard IR spectra and the functional groups were determined through IR Interpretation.

ZETA POTENTIAL ANALYSIS WITH POLY DISPERSIVE INDEX (PDI)

CONCLUSION:

The **dynamic light scattering (DLS) analysis** revealed that the formulated **Piper betel leaf phytosomes** exhibited a **particle size of 143.3 nm**. This size falls within the optimal range for **nanophytosomal drug delivery systems**, indicating good **Nano formulation stability** and potential for enhanced bioavailability. A particle size below 200 nm is desirable as it ensures better cellular uptake, increased surface area, and improved solubility of bioactive

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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.

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FORMULATION AND EVALUATION OF ANTI-INFLAMMATORY CREAM USING *Aegle marmelos*

Dissertation Submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the Degree of Bachelor of pharmacy (2025)

Jawaharlal Nehru Technological University, Kakinada, A.P

SUBMITTED BY

KORAMATI HARIKA (Regd. No. 213G1R0032)

KOTA HEPSIBA (Regd.No.213G1R0033)

MADAVARAPU RAMALAKSHMI (Regd.No.213G1R0034)

MADDALA HARI CHANDANA SRI LAVANYA (Regd.No.213G1R0035)

Under the guidance of

K. SUDHA RANI, M. PHARM

Assistant Professor

ADITYA PHARMACY COLLEGE, SURAMPALEM, ANDHRA PRADESH, (533437)

(2021- 2025)

PRINCIPAL
ADITYA PHARMACY COLLEGE(A),
SURAMPALEM-533 437

DECLARATION

The Project embodied in this thesis entitled "**FORMULATION AND EVALUATION OF ANTI-INFLAMMATORY CREAM USING** *Aegle marmelos*" was carried out in the Department of Pharmaceutical Analysis under the guidance of **Miss K. SUDHA RANI**, 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.

K. Harika

KORAMATI HARIKA

(213G1R0032)

K. Hepsiba

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M. Ramalakshmi

MADAVARAPU RAMALAKSHMI

(213G1R0034)

M. H. C. S. Lavanya

MADDALA HARI CHANDANA SRI LAVANYA

(213G1R0035)

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SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled **"FORMULATION AND EVALUATION OF ANTI-INFLAMMATORY CREAM USING *Aegle marmelos*"** 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 KORAMATI HARIKA (Regd.No.213G1R0032), KOTA HEPSIBA (Regd.No.213G1R0033), MADAVARAPU RAMALAKSHMI (Regd.No.213G1R0034), MADDALA HARI CHANDANA SRI LAVANYA (Regd.No.213G1R0035) Under my supervision and it has not been previously submitted to any other university or academic institution for any higher degree.

Miss K. SUDHA RANI, M. Pharm,

DEPARTMENT OF PHARMACOLOGY,

ASSISTANT PROFESSOR

(Miss.K.Sudha Rani)

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CERTIFICATE

This is to certify that the dissertation work entitled a study on **"FORMULATION AND EVALUATION OF ANTI-INFLAMMATORY CREAM USING *Aegle marmelos*"** 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 **KORAMATI HARIKA** (Regd.No. 213G1R0032), **KOTA HEPSIBA** (Regd.No.213G1R0033), **MADAVARAPU RAMALAKSHMI** (Regd.No.213G1R0034), **MADDALA HARI CHANDANA SRI LAVANYA** (Regd.No.213G1R0035). They have done this research work under the supervision of **MISS K. SUDHA RANI,** 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& Professor

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Place: Surampalem

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CERTIFICATE

This is to certify that the dissertation work entitled "**FORMULATION AND EVALUATION OF ANTI-INFLAMMATORY CREAM USING *Aegle marmelos***"is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of **Bachelor of Pharmacy** is a record of original research work carried out by KORAMATI HARIKA(Regd. No. 213G1R0032), KOTA HEPSIBA (Regd.No.213G1R0033), MADAVARAPU RAMALAKSHMI (Regd.No.213G1R0034), MADDALA HARI CHANDANA SRI LAVANYA(Regd.No.213G1R0035).They have done this research work under the supervision of **MISS K. SUDHA RANI,** M. Pharm and it has not been previously submitted to any other university or academic institution for any higher degree.

Place:Surampalem

Date:

Internal examiner

External examiner

PRINCIPAL

DISCUSSION

The present study aimed to evaluate the anti-inflammatory properties of the ethanolic extract of bael fruit (aegle marmelos) and its topical formulation in the form of a cream. The results obtained from the phytochemical screening, in-vitro anti-inflammatory assays, and cream evaluation provide strong evidence supporting the potential of bael as a natural anti-inflammatory agent.

Phytochemical composition and extraction efficiency: the qualitative phytochemical screening confirmed the presence of flavonoids, alkaloids, tannins, saponins, and other bioactive compounds in the bael extract. These secondary metabolites are well-documented for their anti-inflammatory, antioxidant, and antimicrobial properties. The soxhlet extraction method effectively isolated these compounds, with ethanol proving to be a suitable solvent for maximum yield and bioactive component retention. The presence of flavonoids and tannins is particularly significant, as these compounds are known to inhibit inflammatory mediators and stabilize cell membranes.

In-vitro anti-inflammatory activity: the protein denaturation assay demonstrated that the bael extract effectively inhibits heat induced protein denaturation, a common mechanism in inflammation. The extract's inhibitory potential was found to be dose-dependent, and at higher concentrations, its activity was comparable to standard anti-inflammatory drugs like diclofenac sodium. This suggests that bael extract can modulate protein stability, preventing inflammatory responses.

Similarly, the membrane stabilization assay indicated that the extract effectively reduced hypotonicity-induced hemolysis, preventing red blood cell lysis. This highlights its protective role against cellular damage during inflammation. The ability of bael extract to prevent hemolysis supports its potential in managing inflammatory conditions where cell membrane integrity is compromised.

Formulation and evaluation of bael cream: the formulated bael cream exhibited desirable physicochemical properties, including an optimal ph (5.5–6.5), smooth texture, and good spreadability. The non-greasy nature and good absorption rate suggest its suitability for topical application. Stability studies indicated that the cream retained its consistency and efficacy over different temperature conditions, further proving its robustness as a topical formulation. The irritation test revealed no significant adverse reactions, suggesting that the cream is safe for use on the skin. The spectrophotometric analysis confirmed the presence of active constituents in appropriate concentrations, validating the formulation process and ensuring therapeutic effectiveness.

Comparison with standard treatments: the anti-inflammatory effects of bael extract were comparable to synthetic drugs, emphasizing its potential as a natural alternative with fewer side effects. While synthetic anti-inflammatory drugs such as nsaids and corticosteroids provide quick relief, they are often associated with side effects like gastric irritation and systemic toxicity. In

contrast, herbal formulations like bael cream offer a safer alternative, especially for prolonged use in managing chronic inflammatory conditions.

Limitations and future prospects: although the study successfully demonstrated the anti-inflammatory potential of bael fruit extract and its formulated cream, there are limitations to consider. The study was confined to in-vitro assays, and further in-vivo studies are necessary to evaluate the extract's efficacy in living systems. Additionally, clinical trials should be conducted to assess the cream's effectiveness in human subjects and to determine any potential long-term effects.

Future research should also focus on optimizing the formulation to enhance drug delivery, absorption, and bioavailability. Incorporating advanced nanotechnology-based approaches, such as nano-emulsions or liposomal formulations, could further improve the therapeutic efficacy of bael-based topical products.

CONCLUSION

overall, the findings of this study confirm that bael fruit extract exhibits significant anti inflammatory activity and can be effectively incorporated into a stable and safe cream formulation. With further research and clinical validation, bael-based formulations hold great promise as natural, effective, and safe alternatives to conventional anti-inflammatory treatments.the present study highlights the significant anti-inflammatory potential of the ethanolic extract of bael fruit (aegle marmelos) and its formulated cream. The bioactive compounds identified in the extract, such as flavonoids, alkaloids, and tannins, contribute to its pharmacological activity. The in-vitro evaluations, including protein denaturation and membrane stabilization assays, confirmed its efficacy in reducing inflammation, comparable to standard anti-inflammatory drugs.

Additionally, the formulated bael cream demonstrated desirable physicochemical properties, including stability, ph balance, spreadability, and skin compatibility, making it a promising candidate for topical anti-inflammatory treatment. The absence of irritation and good absorption further validate its potential as a natural alternative for inflammatory skin conditions.

Future studies should focus on in-vivo evaluations, clinical trials, and advanced formulation techniques to enhance the therapeutic application of bael extract. With further research, bael-based formulations could serve as effective, natural, and accessible treatments for inflammatory disorders.

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

FORMULATION AND EVALUATION OF POLYHERBAL ANTI-AGING FACE SERUM

Dissertation submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

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

BACHELOR OF PHARMACY

BY

BONDU MOTHER THERESSA (213G1R0008)

CHIKATI BALAJI (213G1R0009)

CHINNI MALLESWARI (213G1R0010)

BINOY DAS (213G1R0044)

Under the guidance of

Mrs. G.Prasanthi, M.Pharm., (Ph.D)

Associate professor

Department of pharmacology

Aditya pharmacy college, Surampalem, Andhra pradesh, India -533437

Batch: 2021-2025

PRINCIPAL
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DECLARATION

We hereby declare that the dissertation work entitled "FORMULATION AND EVALUATION OF POLYHERBAL ANTI-AGING FACE SERUM" in partial fulfillment of the degree in bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2021-2025, was carried out by us in library and laboratories of Aditya Pharmacy College, Surampalem, Andhra pradesh under the valuable and efficient guidance and supervision of G.Prasanthi, M.Pharm., (Ph.D), department of Pharmacology, Aditya Pharmacy College, Surampalem, Andhara Pradesh. We also declare that the matter embodied in if is a genuine work.

BONDU MOTHER THERESSA (213G1R0008) B.M.Theressa

CHIKATI BALAJI (213G1R0009) Ch Balaji

CHINNI MALLESWARI (213G1R0010) Ch.V.V.Malleswari

BINOY DAS (213G1R0044) Binoy Das

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

G.Prasanthi, M.Pharm., (Ph.D)

CERTIFICATE BY THE SUPERVISOR

This is to certify that the dissertation work entitled on **"FORMULATION AND EVALUATION OF POLYHERBAL ANTI-AGING FACE SERUM"** submitted in partial fulfillment of the degree in bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2021-2025. This is a bonafide work carrieed out by **BONDU MOTHER THERESSA (213G1R0008), CHIKATI BALAJI (213G1R0009), CHINNI MALLESWARI (213G1R0010), BINOY DAS (213G1R0044)** under the direct guidance and supervision.

SIGNATURE

G.Prasanthi, M.Pharm., (Ph.D)
Associate professor,
Department of Pharmacology,
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Surampalem.

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

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Date: 25/03/2025

Place : Surampalem

SIGNATURE

Dr. D. Sathis kumar, M.Pharm., Ph.D
Professor and Principal
Aditya pharmacy college,
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Surampalem -533437, E.G.District,Andhra pradesh

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(Internal examiner)

(External examiner)

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CONCLUSION:

The polyherbal face serum developed in this study offers a natural, effective and safe solution for anti-oxidant and anti-inflammatory effects. And gives the good anti-aging effect to the face by reducing the fine lines and wrinkles.

The synergistic blend of herbs provides a comprehensive approach to addressing various skin concerns, making it an attractive option for those seeking for natural and effective skin care solution.

Invitro evaluation of face serum shows the improvement in skin elasticity, and brightness by reducing the fine lines and wrinkles. the serum was also safe to the skin with no side effects.

The results of this study suggest that the polyherbal face serum formulated in this study could be a potential natural and effective solution for anti-aging and skin brightening.

FUTURE SCOPE:

Exploration of new herbal extracts:

Investigate the potential of other herbal extracts, to enhance the efficacy and stability of the serum.

Development of targeted formulation:

Creta targeted formulations for specific skin concerns such as acne, hyperpigmentation, and aging using a combination of herbal extracts and other ingredients.

Clinical trials and safety studies:

Conduct stability and shelf-life studies to determine the optimal storage conditions of the polyherbal face serum

Development of sustainable and ecofriendly packaging:

Explore the use of sustainable and ecofriendly packaging such as bio plastics, to reduce the environmental impact of the product.

Investigation of synergistic effect:

Investigates the synergistic effects of combining the herbal extracts with other natural ingredients to enhance the efficacy of the serum.

Development of personalized skin care products:

Use advanced technologies such as AI and machine learning, to develop personalized skin care products tailored to individual skin type.

Development of combination products:

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Develop combination products that integrate the polyherbal face serum with other skin care products, such as moisturizers and sunscreen to provide the comprehensive skin care solution

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**

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.

ADITYA
PHARMACY COLLEGE

An AUTONOMOUS Institution

Aditya Nagar, ADB Road, Surampalem. Kakinada Dist., A.P.

Program

B. pharmacy

Certified that this is the bonafide record of practical work done by

Mr./Ms. M.V.D.L. Nagalakshmi

with Roll No. 233G1R0052 a student of IV Semester

in the Medicinal chemistry - I course during the Academic Year 2024-25

No. of Experiments Conducted 14

No. of Experiments Completed 11

T. Sai Sandhya
Faculty incharge 01/07/25

Principal

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SURAMPALEM-533 437

Submitted for the practical examination held on 15/07/25

15/07/2025
Examiner -1

T. Sai Sandhya 15/7/25
Examiner -2

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
01	13/03/25	preparation of Benzibriazole	01-02	A+	Sri
02	20/3/25	preparation of Benzimidazole	03-04	A+	Sri
03.	27/3/25	preparation of Benzocaine	05-06	A+	Sri
04.	10/4/25	preparation of phenytoin	07-08	A+	Sri
05.	17/4/25	preparation of 2,3 Diphenyl Quinoxaline	09-10	A+	Sri
06.	01/05/25	preparation of phenothiazine	11-12	B+	Sri
07.	08/05/25	preparation of Barbiturate	13-14	B+	Sri
08.	15/5/25	Synthesis of 1,3 pyrazole	15-16	A+	Sri
09.	05/06/25	Assay of Atropine	17-18	A+	Sri
10.	05/06/25	Assay of Ibuprofen	19-20	A+	Sri
11.	12/06/25	Assay of Aspirin	21-22	A+	Sri
12.	12/06/25	Assay of chlorpromazine	23-24	A+	Sri
13.	26/06/25	Assay of Furasemide	25-26	A+	Sri
14.	26/06/25	Determination of partition coefficient of benzoic acid	27-29	A+	Sri

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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.

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Program

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Certified that this is the bonafide record of practical work done by

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with Roll No. 233G1R0054 a student of IV Semester

in the Physical Pharmaceutics-II course during the Academic Year 2024-25

No. of Experiments Conducted 12

No. of Experiments Completed 12

K. Rushyalatha
Faculty incharge

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Submitted for the practical examination held on 14/07/2025

Examiner -1

K. Rushyalatha
Examiner -2

ADITYA PHARMACY COLLEGE SURAMPALEM 533 437

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
01	10/03/25	Determination of particle size and particle size distribution by using Sieving method	01-04		
02	21/03/25	Determination of particle size and particle size distribution in suspension by microscopic method	05-07		
03	28/03/25	Estimation of True density of Zinc oxide powder.	08-09		
04	28/03/25	Estimation of Bulk density and Percentage porosity.	10-11		
05	04/04/25	Effect of Lubricant on flow properties of given granules.	12-13		
06	11/04/25	Determination of Viscosity by using ostwald's viscometer.	14-15		
07	09/05/25	Determination of Sedimentation volume of suspension using Single suspending agent	16-18		

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
08	16/05/25	Determination of sedimentation volume with effect of different suspending agent.	19-21	✓ (C)	
09	06/06/25	Determination of reaction rate constant of pseudo first order reaction for acid Hydrolysis of Esters.	22-24	✓ (B)	
10	13/06/25	Determination of reaction rate Constant of second order reaction of Alkaline Hydrolysis of Ethyl acetate	25-26	✓ (IT)	
11	20/06/25	Determination of viscosity by Brookfield method.	27-30	✓ (A)	
12.	20/06/25	Accelerated stability testing based on Arrhenius principle.	31-33	✓ (A)	

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BP 408 P.PHARMACOLOGY-I (Practical)

4Hrs/Week

1. Introduction to experimental pharmacology.
2. Commonly used instruments in experimental pharmacology.
3. Study of common laboratory animals.
4. Maintenance of laboratory animals as per CPCSEA guidelines.
5. Common laboratory techniques. Blood withdrawal, serum and plasma separation, anesthetics and euthanasia used for animal studies.
6. Study of different routes of drugs administration in mice/rats.
7. Study of effect of hepatic microsomal enzyme inducers on the phenobarbitone sleeping time in mice.
8. Effect of drugs on ciliary motility of frog oesophagus
9. Effect of drugs on rabbit eye.
10. Effects of skeletal muscle relaxants using rota-rod apparatus.
11. Effect of drugs on locomotor activity using actophotometer.
12. Anticonvulsant effect of drugs by MES and PTZ method.
13. Study of stereotype and anti-catatonic activity of drugs on rats/mice.
14. Study of anxiolytic activity of drugs using rats/mice.
15. Study of local anesthetics by different 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

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PHARMACY COLLEGE
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Aditya Nagar, ADB Road, Surampalem. Kakinada Dist., A.P.

Program

PHARMACOLOGY - I

Certified that this is the bonafide record of practical work done by

Mr./Ms. T. Jotsna

with Roll No. 233G1R0096 a student of 2-2 Semester

in the Pharmacology - I course during the Academic Year 2024-25

No. of Experiments Conducted	15	No. of Experiments Completed	15

Faculty incharge 25/6/25

Principal

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

Submitted for the practical examination held on .....

Examiner -1

Examiner -2

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
1.	12/3/2025	Introduction to experimental pharmacology	1		
2	12/3/2025	Commonly used instruments in experimental pharmacology	2-6		
3	19/3/2025	Study of common laboratory animals	7-13		
4	26/3/2025	Maintenance of laboratory animals as per CPCSEA guidelines	14-18		
5	2/4/2025	Common laboratory techniques	19-23		
6	9/4/2025	Study of different routes of drug administration in mices/ rats	24-28		
7	16/4/2025	Study of effect of hepatic microsomal enzymes inducers on the phenobarbitone sleeping time in mice	29-30		
8	16/4/2025	Effect of drug on ciliary motility of frog oesophagus.	31-32		
9.	7/5/2025	Effect of various drugs on rabbit eye (Mydriatic and Miotic effect)	33-34		

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
10	7/5/2025	Skeletal muscle relaxant property of Diazepam using Rota-rod apparatus	35-36		
11	14/5/2025	Evalution of CNS depressant activity of Chlorpromazine on locomotar activity of mice using Actophotometer	37-38		
12	4/6/2025	Anticonvulsant effect of drugs by MES and PTZ method	39-42		
13	11/6/2025	Study of Stereotype and Anti-catatonic activity of drugs on rats / mice	43-44		
14	18/6/2025	Study of Anxiolytic activity of drugs using rats / mice	45-46		
15	25/6/2025	Evalution of local anaesthetic activity by different methods	47-48		

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BP408P. 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
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Program

B. pharmacy

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Examiner -2

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
1.	10/3/25	Analysis of Crude drugs by Chemical Tests.			
A.	10/3/25	Chemical Tests for Tragacanth	1-3		
B.	17/3/25	Chemical Tests for Acacia.	4-6		
C.	24/3/25	Chemical Tests for Starch.	7-8		
D.	31/3/25	Chemical Tests for Honey.	9-11		
E.	4/4/25	Chemical Tests for Agar.	12-14		
F.	7/4/25	Chemical Tests for Gelatin.	15-16		
G.	11/4/25	Chemical Tests for Castor oil.	17		
2.	14/4/25	Determination of Swelling factors.	18-19		
3.	18/4/25	Determination of foaming Index.	20-21		
4.	21/4/25	Determination of Moisture Content.	22-23		
5.	25/4/25	Determination of Total Ash Content.	24-25		

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
6.	28/4/25	Determination of Extractive Value of Crude drugs	26-28		
7.	2/5/25	Determination of stomatal Number & stomatal Index of Datura Leaf.	29-31		
8.	5/5/25	Determination of Vein-islets & Vein-termination numbers of Datura leaf.	32-33		
9.	12/5/25	Determination of Size of Starch Grains by Using Eye piece micrometer.	34-36		
10.	2/6/25	Determination of Length & width of Cinchona fibres.	37-39		
11.	9/6/25	Determination of Number of starch grains by Lycopodium Spore method.	40-42		

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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,

A Thesis Report on

FORMULATION AND CHARACTERIZATION OF EMTRICITABINE AND TENOFOVIR DISOPROXIL FUMARATE SOLID LIPID NANOPARTICLES

Thesis submitted to

Jawaharlal Nehru Technological University, Kakinada, A.P

In the partial fulfillment for the award of the degree of

Bachelor of Pharmacy

T. SRI AMRUTHA VARSHINI (213G1R0066)

T. PRASANNA (213G1R0067)

T. JSRVD NAGALAKSHMI (213G1R0068)

S. MONDAL (213G1R0093)

Under the Esteemed Guidance of

Mr. G. Ramakrishna M. Pharm., (Ph.D.)

Assistant Professor, Department of Pharmaceutics

ADITYA PHARMACY COLLEGE

(Affiliated to Jawaharlal Nehru Technological University, Kakinada)

APPROVED BY AICTE & PCI

Surampalem-533437, E.G.Dt., A.P

2021-2025

PRINCIPAL
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DECLARATION

We hereby declare that the research work embodied in this thesis entitled "FORMULATION AND CHARACTERIZATION OF EMTRICITABINE AND TENOFOVIR DISOPROXIL FUMARATE SOLID LIPID NANOPARTICLES" was carried out by us in the Department of Pharmaceutics, Aditya Pharmacy College, Surampalem, affiliated to JNTU, Kakinada, India, under the supervision of **Mr.G.Ramakrishna.,M.Pharm (Ph.D) Assistant Professor of Pharmaceutics, Aditya Pharmacy College, Surampalem.** The extent and source of information derived from the existing literature have been indicated throughout the thesis at appropriate places. The work is original and has not been submitted in partial or full for any diploma or degree of this or any other University.

T. SRI AMRUTHA VARSHINI (213G1R0066), T.S.A.Varshini

T. PRASANNA (213G1R0067), T.Prasanna

T. JSRVD NAGALAKSHMI (213G1R0068), T.J.S.R.V.D.Nagalakshmi

S. MONDAL (213G1R0093). S.Mondal

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CERTIFICATE

This is to certify that the investigation described on this thesis entitled "FORMULATION AND CHARACTERIZATION OF EMTRICITABINE AND TENOFOVIR DISOPROXIL FUMARATE SOLID LIPID NANOPARTICLES" is submitted by T. Sri Amrutha Varshini (213G1R0066), T. Prasanna (213G1R0067), T. JSRVD Nagalakshmi (213GIROO68) and S. Mondal (213G1R0093) of **ADITYA PHARMACY COLLEGE, SURAMPALEM**, affiliated to JNTU University, Kakinada for the partial fulfillment of degree of Bachelor of Pharmacy. The report embedded in this thesis was carried out under the guidance of- G.R.Krishna(Ph.D) Department of Pharmaceutics of ADITYA PHARMACY COLLEGE, SURAMPALEM.

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SIGNATURE:

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Mr. G. Ramakrishna M.Pharm.,(Ph.D)
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INTERNAL EXAMINER

EXTERNAL EXAMINER

ADITYA PHARMACY COLLEGE
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APPROVED BY AICTE & PCI

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CONCLUSION AND FUTURE SCOPE

6.1 SUMMARY OF FINDINGS

- Preformulation (FTIR Analysis):

  The FTIR spectrum confirmed the presence of key functional groups (–OH, –NH, C=O, C-O-C, and P-O), indicating that the molecular integrity of EMT and TDF is maintained without any significant degradation. Hydrogen bonding is also evident, which supports the stability of the formulation.

- Optimization of SLN Formulation:

  The optimized particle size of 167.5 nm enhances bioavailability, cellular uptake, and circulation time, making the formulation suitable for both oral and intravenous delivery. A zeta potential of –20.3 mV suggests moderate stability with minimal aggregation, although further improvement in surfactant concentration could boost stability. An entrapment efficiency of 80% confirms effective drug encapsulation and supports sustained release, which is beneficial for antiretroviral therapy.

- In Vitro Drug Release Studies:

  The drug release profile shows a gradual, controlled release of EMT and TDF over 120 minutes, preventing burst release and ensuring consistent therapeutic levels, which can improve patient compliance.

- Morphology and Surface Characterization (SEM Analysis):

  SEM images reveal smooth-surfaced nanoparticles with some aggregation, indicating effective drug dispersion within the lipid matrix. However, slight aggregation suggests that further optimization (e.g., adjusting homogenization parameters or increasing stabilizer levels) may be needed.

  Final Conclusion:

  The SLN formulation for EMT and TDF shows promising characteristics—including optimized particle size, high drug entrapment, controlled release, and stable morphology—that support its potential for effective antiretroviral therapy. Minor adjustments in processing parameters could further enhance formulation stability and performance.

6.2 CONCLUSION:

The SLN formulation for Emtricitabine (EMT) and Tenofovir Disoproxil Fumarate (TDF) demonstrates considerable promise for antiretroviral therapy. FTIR analysis confirms that the key functional groups remain intact, ensuring molecular integrity and stability. The optimized small particle size of 167.5 nm enhances bioavailability, cellular uptake, and circulation time, while a zeta potential of –20.3 mV provides moderate stability. An entrapment efficiency of 80% supports sustained drug release and reduced dosing frequency. Although SEM analysis indicates slight aggregation, minor optimizations can further improve dispersion and overall performance, underscoring the formulation's potential for effective targeted drug delivery. Encouraging results warrant further preclinical evaluation.

6.3 FUTURE PROSPECTS FOR SLN's RESEARCH:

Based on these SLN studies, future prospects include further optimization and scaling up of the formulation process. Refining homogenization parameters and exploring additional stabilizers could reduce aggregation, thereby enhancing particle uniformity and bioavailability. Additionally, in vivo studies are warranted to evaluate pharmacokinetics, biodistribution, and therapeutic efficacy, paving the way for clinical translation in antiretroviral therapy. There is also potential to modify the SLNs with targeting ligands for site-specific drug delivery, reducing systemic toxicity. Finally, investigating alternative lipid matrices and surfactant systems may lead to improved stability and extended shelf-life, ultimately contributing to more effective and patient-friendly HIV treatment regimens.

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

FORMULATION AND ANTIMICROBIAL ACTIVITY OF VITAMIN-E SOAP FROM WASTE COOKING OIL

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfilment of the requirements for the degree of Bachelor of Pharmacy (2025)

JAWAHARLAL NEHRU TECHNOLOGIAL UNIVERSITY, KAKINADA

Submitted BY

GOPI NAGA SAI SANDEEP (213G1R0096)

PATHIKA HARITHA (213G1R0097)

VISWANADUNI UDAY (213G1R0098)

MATTE LAKSHMI LAVANYA (223G5R0001)

Under the Guidance of

Dr. P.S.S. SAI KIRAN M. Pharm. Ph.D.,

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2021-2025

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfilment of the requirements for the degree of Bachelor of Pharmacy (2025)

JAWAHARLAL NEHRU TECHNOLOGIAL UNIVERSITY, KAKINADA

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2021-2025

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DECLARATION

The Project embodied in this thesis entitled "FORMULATION AND ANTIMICROBIAL ACTIVITY OF VITAMIN-E SOAP FROM WASTE COOKING OIL" was carried out in the Department of Pharmaceutics under the guidance of **Dr.P.S.S.SAI KIRAN** 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.

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CERTIFICATE

This is to certify that the dissertation entitled "**FORMULATION AND ANTIMICROBIAL ACTIVITY OF VITAMIN-E SOAP FROM WASTE COOKING OIL**" was submitted to the Jawaharlal Nehru Technological 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

GOPI NAGA SAI SANDEEP (213G1R0096), PATHIKA HARITHA (213G1R0097), VISWANADUNI UDAY (213G1R0098), MATTE LAKSHMI LAVAYANA (223G5R0001).

Under my supervision and it has not been previously submitted to any other university or academic institution for any higher degree.

Dr.P.S.S.SAI KIRAN, M. Pharm.Ph.D.,

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Aditya Pharmacy College,

Surampalem-533437.

Place: Surampalem

Date: 15-03-25

External Examiner

Internal Examiner

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CERTIFICATE

This is to certify that the dissertation entitled "FORMULATION AND ANTIMICROBIAL ACTIVITY OF VITAMIN-E SOAP FROM WASTE COOKING OIL" was submitted to the Jawaharlal Nehru Technological 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

GOPI NAGA SAI SANDEEP (213G1R0096), PATHIKA HARITHA (213G1R0097), VISWANADUNI UDAY (213G1R0098), MATTE LAKSHMI LAVAYANA (223G5R0001).

They have done this research work under the supervision of **Dr.P.S.S.SAI KIRAN** M.Pharm,Ph.D 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,

Aditya Pharmacy College

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Aditya Pharmacy College
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Place: Surampalem

Date:

Internal Examiner

External Examiner

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CHAPTER-6

CONCLUSION

The formulation and evaluation of α-tocopherol-based antimicrobial soap demonstrated promising results as a natural alternative to conventional antibacterial soaps. The successful saponification process using waste cooking oil and the incorporation of α-tocopherol resulted in a stable soap formulation with beneficial skin properties. The antimicrobial efficacy tests indicated that the soap exhibited significant inhibitory effects against both Gram-positive and Gram-negative bacteria, particularly Staphylococcus aureus and Streptococcus sp., which showed the highest susceptibility.

The soap's antimicrobial mechanism, likely influenced by α-tocopherol's membrane disruption, biofilm inhibition, and antioxidant properties, contributed to its effectiveness. The results further highlight α-tocopherol's potential as an active ingredient in personal care products due to its multifunctional benefits, including antimicrobial activity and skin nourishment.

However, challenges such as formulation stability, regulatory approvals, and cost-effectiveness must be addressed for commercial viability. Future studies could explore optimizing the concentration of α-tocopherol, incorporating synergistic natural antimicrobials, and conducting clinical trials to validate its safety and long-term effectiveness.

Overall, this research supports the development of sustainable, eco-friendly, and effective antimicrobial soap formulations, emphasizing the potential of natural compounds like α-tocopherol in combating microbial resistance while promoting skin health.

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.

ARCH PHARMALABS LIMITED

Survey No. 323,Gundlamachnoor Village, Hathnoora Mandal, Ismailkhanpet,
Sangareddy Dist. - 502 296, Telanagana, India.
Phone : 099484 88240 / 241 / 242

Date: 21/06/2024

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Ms. AKULA NEELA VENKATA SAI SANDHYA**, Roll No **213G1R0002** is a Bonafide student of **ADITYA PHARMACY COLLEGE**, E.G. District, Andhra Pradesh, had undergone industrial training in our organization from 21-05-2024 to 21-06-2024 as a part of partial fulfilment of the B.Pharmacy course.

During the training period she had interacted with all Production, Quality control and R&D Departments and acquired basic knowledge in these areas.

During the aforesaid period we found her to be sincere, hard working and having a learning attitude.

For Arch Pharmalabs Limited,

ARCH PHARMALABS LIMITED HYDERABAD

JSS Rao

General Manager – HR & Admin

ADITYA PHARMACY COLLEGE SURAMPALEM 533 437

PRINCIPAL
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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

PHYTOCHEMICAL CHARACTERIZATION, FORMULATION AND ASSESSMENT OF ANTIOXIDANT & ANTIMICROBIAL ACTIVITY OF "*ALLIUM CEPA*" LOTION

A Dissertation Submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

Fulfilments of the requirements for the Award of the degree of

BACHELOR OF PHARMACY

By

DOKKADI KEERTHANA SRUJANI (213G1R0017)

GADA VANDANA (213G1R0018)

GAMIDI SAI TEJASWINI (213G1R0019)

MAYANK MISHRA (213G1R0050)

Under the esteemed guidance of:

Dr. G. Sowjanya,
B.Pharm, M. Tech (Biotech), Ph.D.

Associate Professor

Aditya Pharmacy College,

Surampalem, -533437

Batch: 2021-2025

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

DECLARATION

We hereby declare that the dissertation work entitled "**FORMULATION AND EVALU- TION OF HERBAL LOTION**" in partial Fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2021-2025, was carried out by us in library and laboratories of Aditya Pharmacy College, Surampalem, Andhra Pradesh under the valuable and efficient guidance and supervision of supervision of Dr. G. Sowjanya, B. Pharm, M. Tech (Biotech), Ph.D., Department of Pharmaceutics, Associate Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in if is a genuine work.

D. Keerthana

DOKKADI KEERTHANA SRUJANI (213G1R0017)

G. Vandana

GADA VANDANA (213G1R0018)

G. Sai Tejaswini

GAMIDI SAI TEJASWINI (213G1R0019)

Mayank Mishra

MAYANK MISHRA (213G1R0050)

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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.

CERTIFICATE

This is to certify that the dissertation work entitled on "PHYTOCHEMICAL CHARACTERIZATION, FORMULATION AND ASSESSMENT OF ANTIOXIDANT & ANTIMICROBIAL ACTIVITY OF *Allium cepa* LOTION" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2021-2025. This is a Bonafide work carried out by **DOKKADI KEERTHANA SRUJANI (213G1R0017), GADA VANDANA (213G1R0018), GAMIDI SAI TEJASWINI (213G1R0019), MAYANK MISHRA (213G1R0050)** under direct guidance and supervision of Dr. G. Sowjanya, B. Pharm, M. Tech (Biotech), Ph.D., Department of Pharmaceutics, Associate Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

Date: 25/3/2025
Place: Surampalem

15/03/25

SIGNATURE

Dr. G. Sowjanya,

B. Pharm, M. Tech (Biotech), Ph.D.

Associate Professor,

Aditya Pharmacy College,

Surampalem, Andhra Pradesh

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Date: 25/3/2025

Place: Surampalem

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SIGNATURE

Dr. D. Sathis Kumar,
M. Pharm, Ph.D
Professor and principal,
Aditya Pharmacy College,
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(Internal examiner)

(External examiner)

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Summery and conclusions

1. Allium cepa was chosen for this study due to its rich phytochemical profile, economical cost, and easy availability.
2. Allium cepa were collected , peeled ,shade dried, powdered and then subjected to solvent extraction
3. The powdered onion was subjected to solvent extraction using ethanol, ethyl acetate, and water, with 1g of onion powder mixed with 50ml of each solvent and reflexed for 2 hours.
4. Ethanol is preferred over ethyl acetate and water for phytochemical extraction due to its superior ability to extract a wide range of bioactive compounds.

   Ethanol > Ethyl acetate > Water
5. The analysis of Allium cepa revealed the presence of various phytochemicals, including flavonoids, phenolic acids, and saponins, with a significant amount of quercetin (25.6 mg/g).
6. The final stages of developing the onion lotion involve physicochemical evaluation, stability studies, safety and skin irritation tests, and efficacy testing.
7. A standard curve for gallic acid was established with concentrations ranging from 0-20 µg/ml, showing a corresponding increase in absorbance from 0.000 to 1.228.
8. The sample showed increasing absorbance values (0.00-0.63) corresponding to increasing concentrations (0-10 µg/ml).
9. The hydroalcoholic extracts of Allium cepa exhibited antibacterial activity against E. coli and S. aureus, with zone of inhibition ranging from 10-13 mm for two bacteria at concentrations of 150-200 µg/ml.
10. The sample concentrations of 200, 400, 600, 800, and 1000 µg/mL exhibited percentage inhibitions of 65%, 67%, 70%, 72%, and 73%, respectively, which closely correlated with the standard.

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

ADB Road, Surampalem. Kakinada.Dist., (A.P.)

Department of

INDUSTRIAL PHARMACY-I

Name: T.SWATHI REVATHI NAGA LAKSHMI PIN No. 223G1R00A8

Certified that this is the bonafide record of practical work done by

Mr./Ms. TEKI SWATHI REVATHI NAGA LAKSHMI

a student of B.PHARMACY 3rd year *with Regd. No.* 223G1R00A8

in the INDUSTRIAL PHARMACY *Laboratory during the year* 2024-2025

No. of Experiments Conducted 15 No. of Experiments Attended 15

Signature - Faculty incharge

Signature-Head 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
	1/8/24	Introduction to pharmaceutical Formulation.	1-4	
1.	1/8/24	Formulation of paracetamol tablet by wet granulation method.	5-7	
2.	1/8/24	Formulation of Soluble Acetyl Salicylic acid tablets.	8-10	
3.	9/8/24	Evaluation of formulated paracetamol tablets.	11-15	
4.	9/8/24	Evaluation of formulated Acetyl Salicylic acid tablets.	16-20	
5	16/8/24	Evaluation of marketed paracetamol tablets.	21-25	
6.	30/8/24	preparation and Evaluation of tetracycline capsules.	26-30	
7.	6/9/24	Evaluation of marketed loperamide capsules.	31-32	
	27/9/24	Parenteral preparations	33-35	
8.	27/9/24	Formulation of Ascorbic acid injection	36-39	

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
9.	27/9/24	Formulation of calcium gluconate injection.	40-43	Phe
10.	3/10/24	Preparation and Evaluation of chloramphenicol eye ointment.	44-45	Phe
11.	17/10/24	Preparation and Evaluation of pilocarpine eye drops	46-48	Phe
	24/10/24	Introduction to cosmetics	49-51	Phe
12.	24/10/24	Preparation of cold cream.	52	Phe
13.	24/10/24	preparation of vanishing cream	53	Phe
14.	24/10/24	Film coating of prepared tablets	54-59	Phe
15.	7/11/24	Evaluation of Glass container	60-62	Phe

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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
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Pharmacology II

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Mr./Ms. K. Prasanna

a student of 3rd B-pharm *with Regd. No.* 223G1R0053

in the Pharmacology *Laboratory during the year* 2024-25

No. of Experiments Conducted 15 No. of Experiments Attended 15

Signature - Faculty incharge

Signature-Head of the Department

Submitted for the practical examination held on .....

Examiner-1

Examiner-2

Aditya Pharmacy College
SURAMPALEM-533 437

Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	26/7/24	Introduction to invitro pharmacology and physiological Salt solutions	1-6	A
2.	2/8/24	Effect of drugs on Isolated frog Heart	7-10	A
3.	9/8/24	Effect of various drugs on blood pressure & Heart rate of dog.	11-14	A
4.	16/8/24	Study of Diuretics activity of drugs on using rat [or] mice.	15-16	A
5.	23/8/24	Dose response of Acetyl choline on frog rectus abdominal muscle	17-19	A
6.	30/8/24	Effect of physostigmine & Atropine on DRC of Acetylcholine using frog's rectus Abdominus muscle & Rat's ileum.	20-22	A
7.	6/9/24	Bioassay of Histamine using Guinea pig ileum by matching method.	23-24	A
8.	13/9/24	Bioassay of oxytocin using Rat uterine horn by Interpolation method	25-27	A

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
9.	20/9/24	Bioassay of serotonin using Rat fundus by three point Bioassay.	28-30	A
10.	27/9/24	Bioassay of Acetylcholine using rat ileum/colon by four point Bioassay.	31-33	A
11.	4/10/24	Determination of PA_2 value of Prazocin using Rat's Anococcygeus muscle by schilde's pot method.	34-36	A
12.	18/10/24	Determination of PD_2 value using Guinea pig ileum.	37-39	A
13.	20/10/24	Effect of spasmogens and spasmolytics use in rapid jejenum	40-42	A
14.	8/11/24	Anti-inflammatory of drug using carragenan induce paw oedema model.	43-45	A
15.	8/11/24	Analgesis activity of drug using central and peripheral methods.	46-47	A

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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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Name: N.Bhavya sri PIN No. 223G1R0071

Certified that this is the bonafide record of practical work done by

Mr./Ms. N.Bhavya sri

a student of 3rd B.Pharmacy *with Regd. No.* 223G1R0071

in the Pharmacognosy & Phytochemistry *Laboratory during the year* 2024-25

No. of Experiments Conducted 20 No. of Experiments Attended 19

12/11/2024

Signature - Faculty incharge Signature-Head of the Department

Aditya Pharmacy College SURAMPALEM

Submitted for the practical examination held on .....

16/12/24 16/12/24

Examiner-1 Examiner-2

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Pointer

Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
11.	02/09/24	Isolation and detection of Sennosides from Senna.	39 - 40	2/9/24
12.	09/09/24	Seperation of sugars by paper chromatography.	41 - 44	23/9/24
13.	23/09/24	TLC of Herbal Extract.	45 - 47	07/10/24
14.	30/09/24	Distillation of volatile oils.	48 - 49	07/10/24
15.	14/10/24	Detection of Phytoconstituents by TLC.	50 - 52	21/10/24
•		Detection and analysis of Crude drugs by chemical tests:		
16.	21/10/24	chemical tests for Asafoetida.	53	
17.	21/10/24	chemical tests for Benzoin.	54	
18.	28/10/24	chemical tests for Colophony.	55	11/11/24
19.	28/10/24	chemical tests for Aloe.	56-57	
20.	04/11/24	chemical tests for Myrrh.	58	

ADITYA PHARMACY COLLEGE SURAMPALEM 533 437

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

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 managen ent 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

"FORMULATION AND EVALUATION OF CASHEW APPLE EXTRACT ELIXER FOR PERIPHERAL NEUROPATHY MANAGEMENT"

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillments of the requirements for the degree of Bachelor of Pharmacy (2025)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

Submitted BY

YASWANTH SAMPATIRAO (213G1R0059)

RELANGI LALI MUTYA NANDINI (213G1R0057)

SANJOY KUNDU (213G1R0088)

Under the Guidance of

Mr. DASARI NAGASEN, M. Pharm., (Ph. D)

Assistant professor

Aditya Pharmacy College

Surampalem - 533437

2021-2025

PRINCIPAL
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SURAMPALEM-533 437

DECLARATION

The project embodied in this thesis entitled **"FORMULATION AND EVALUATION OF CASHEW APPLE EXTRACT ELIXER FOR PERIPHERAL NEUROPATHY MANAGEMENT"** was carried out in the department of Pharmaceutical Technology under the guidance of **Mr. DASARI NAGASEN,** 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.

R. L. M. Nandini

RELANGI LALI MUTYA NANDINI

(213G1R0057)

S. Yaswanth

YASWANTH SAMPATIRAO

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S. Kundu

SANJOY KUNDU

(213G1R0088)

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled "FORMULATION AND EVALUATION OF CASHEW APPLE EXTRACT ELIXER FOR PERIPHERAL NEUROPATHY MANAGEMENT" 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 YASWANTH SAMPATIRAO (213G1R0059), RELANGI LALI MUTYA NANDINI (213G1R0057), SANJOY KUNDU (213G1R0088).

Under my supervision and it has not been previously submitted to any other university or academic institution for any higher degree.

Mr. DASARI NAGASEN, M. Pharm., (Ph. D)

ASST. PROFESSOR,

Aditya Pharmacy College,

Surampalem -533437.

Place: Surampalem

Date:

Internal Examiner

External Examiner

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ADITYA PHARMACY COLLEGE(A)
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CERTIFICATE

This is to certify that the dissertation **entitled "FORMULATION AND EVALUATION OF CASHEW APPLE EXTRACT ELIXER FOR PERIPHERAL NEUROPATHY MANAGEMENT"** 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 YASWANTH SAMPATIRAO (213G1R0059) RELANGI LALI MUTYA NANDINI (213G1R0057) SANJOY KUNDU (213G1R0088)

They have done this research work under the supervision of **Mr. DASARI NAGASEN,** M. Pharm., (Ph. D) 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,
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PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Place: Surampalem

Date:

Internal Examiner 7/5/23

External Examiner

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9. SUMMARY AND CONCLUSION

Peripheral neuropathy is a debilitating condition characterized by nerve damage that leads to symptoms such as pain, numbness, and tingling, particularly in diabetic patients. Current treatments primarily focus on symptom management, with limited efficacy and potential side effects. In this study, we explored the potential of cashew apple (Anacardium occidentale) extract as a therapeutic agent for peripheral neuropathy, leveraging its rich phytochemical composition, neuroprotective, antioxidant, and anti-inflammatory properties.

The primary objective of this research was to develop an elixir formulation incorporating cashew apple extract and evaluate its potential against peripheral neuropathy. The study involved the following steps:

1. **Phytochemical Analysis of Cashew Apple Extract**
   - The qualitative screening revealed the presence of flavonoids, phenolics, tannins, saponins, carotenoids, and steroidal glycosides, which are known for their antioxidant, anti-inflammatory, and neuroprotective effects.
   - TLC, UV-Vis spectrophotometry, and FTIR analyses confirmed the presence of key bioactive compounds that contribute to the therapeutic potential of the extract.
2. **Formulation and Development of the Elixir**
   - The cashew apple extract was incorporated into an elixir formulation, optimized for stability, bioavailability, and patient acceptability.
   - The formulation included appropriate excipients to enhance solubility, palatability, and absorption, ensuring effective delivery of bioactive compounds.
3. **Preclinical Evaluation Against Peripheral Neuropathy**
   - The elixir was tested in animal models of peripheral neuropathy (induced in rats) to assess its therapeutic potential.
   - Behavioral assessments such as thermal hyperalgesia, mechanical allodynia, and motor function tests were conducted to evaluate nerve function improvement.
   - Histopathological analysis of sciatic nerve tissue indicated potential neuroprotective and regenerative effects, supporting the efficacy of the formulated elixir.

The findings of this study suggest that cashew apple extract-based elixir holds significant promise as a natural therapeutic agent for peripheral neuropathy. The phytochemical analysis confirmed the presence of potent bioactive compounds that contribute to its neuroprotective, antioxidant, and anti-inflammatory activities. The formulated elixir demonstrated potential efficacy in alleviating neuropathic symptoms by improving nerve function, reducing oxidative stress, and promoting nerve regeneration.

This study provides preliminary evidence supporting the use of cashew apple extract in neuropathic pain management. However, further pharmacokinetic, toxicological, and clinical studies are required to validate its safety and efficacy in human subjects.

Future Perspectives

- Advanced pharmacological evaluations to establish the mechanism of action of cashew apple extract in peripheral nerve regeneration.
- Optimization of the elixir formulation for improved stability, bioavailability, and controlled drug release.
- Clinical trials to assess its therapeutic efficacy and safety in patients with diabetic peripheral neuropathy.
- Combination therapies with existing treatments to enhance effectiveness and reduce dependency on conventional drugs.

This study highlights the potential of cashew apple extract as a novel, natural treatment for peripheral neuropathy, paving the way for its integration into herbal and pharmaceutical formulations for neuroprotective therapy.

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: Hypercium, kava-kava, Ginkobiloba, Ginseng, Garlic, Pepper & Ephedra.

UNIT-III **10 Hours**

Herbal Cosmetics

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SURAMPALEM-533 437

Formulation and Assessment of Solid Perfume for Aromatherapy by using Natural Herbs

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the requirements for the degree of Bachelor of Pharmacy (2025)

JAWAHARLAL NEHRU TECHNOLOGIAL UNIVERSITY, KAKINADA

Submitted BY

Saladi jahnavi naga chamantha (213G1R0087)

Sathi . Rupa Sri Sai mahalaxmi (213G1R0089)

Shaik Basheerunnisa (213G1R0090)

Suvvana devi (213G1R0095)

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2021-2025

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SURAMPALEM-533 437

Formulation and Assessment of Solid Perfume for Aromatherapy by using Natural Herbs

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SURAMPALEM-533 437

DECLARATION

The Project embodied in this thesis entitled "**Formulation and Assessment of Solid Perfume for Aromatherapy by using Natural Herbs**"was carried out in the Department of Pharmaceutical Analysis under the guidance of **Mrs. MATTA SARIKA,** 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.

Saladi jahnavi naga chamantha (213G1R0087) S. Jahnavi

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Suvvana devi (213G1R0095)

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SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled"**Formulation and Assessment of Solid Perfume for Aromatherapy by using Natural Herbs**"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

SALADI JAHNAVI NAGA CHAMANTHA (213G1R0087), SATHI. RUPA SRI SAI MAHALAXMI (213G1R0089), SHAIK BASHEERUNNISA (213G1R0090), SUVVANA DEVI (213G1R0095).

Under my supervision and it has not been previously submitted to any other university or academic institution for any higher degree.

Mrs. MATTA SARIKA, M. Pharm, (ph.D)

ASSISTANT PROFESSOR,

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Surampalem-533437.

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ADITYA PHARMACY COLLEGE
SURAMPALEM-533 437

Place: Surampalem

Date:

External Examiner

Internal Examine

CERTIFICATE

This is to certify that the dissertation entitled "**Formulation and Assessment of Solid Perfume for Aromatherapy by using Natural Herbs**" 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

SALADI JAHNAVI NAGA CHAMANTHA (213G1R0087), SATHI. RUPA SRI SAI MAHALAXMI (213G1R0089), SHAIK BASHEERUNNISA (213G1R0090), SUVVANA DEVI (213G1R0095).

They have done this research work under the supervision of **Mrs. MATTA SARIKA, M. Pharm, (ph.D)** 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,

Aditya Pharmacy College,

Surampalem - 533437.

Place: Surampalem

Date:

External Examiner

Internal Examine

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CONCLUSION:

In conclusion, the development of an herbal solid perfume is a project that requires careful consideration of various factors, including the selection of appropriate ingredients, formulation, production process, and packaging. The aim of this project is To develop aromatherapy based long lasting solid perfume with unique blend of various herbal essential oils and natural ingredients that provides a consistent fragrance release and also prove the specific therapeutic activity of the herbal solid perfume.The formulation of the herbal solid perfume was based on beeswax, essential oil, and a blend of essential oils. Beeswax was chosen as the main ingredient because of its ability to provide a stable and smooth texture, while also offering emollient and protective properties for the skin. Coconut oil was added for its nourishing and moisturizing properties. The essential oils are carefully selected based on their therapeutic benefits, such as their ability to promote relaxation, improve mood, and enhance mental clarity. The production process of the herbal solid perfume involved melting the beeswax and coconut oil together in a double boiler, then adding the essential oils of herbal extracts. The mixture was then poured into a small tin and allowed to cool and solidify. The final product had a pleasant and natural fragrance, and was easy to apply and absorb into the skin. The packaging of the herbal solid perfume was designed to be simple, yet aesthetically pleasing and functional. The small container was convenient and portable, allowing users to carry the solid perfume with them wherever they go. In terms of the evaluation of the herbal solid perfume, several tests were performed to assess its fragrance, texture, longevity, packaging, and antimicrobial properties. The fragrance of the solid perfume was found to be pleasant and long-lasting, while the texture was smooth and easy to apply. The packaging was deemed convenient and eco-friendly, while the antimicrobial properties of the essential oils were found to provide some level of protection against harmful microorganisms. Overall, the development of the herbal solid perfume was a successful project that demonstrated the feasibility of creating a natural and sustainable alternative to traditional liquid perfumes. The use of beeswax and herbal ingredients provided a stable and effective formulation that was gentle on the skin, while also providing therapeutic benefits. In conclusion, the herbal solid perfume project represents an exciting opportunity for further research and development in the area of natural and sustainable cosmetics. With the growing demand for environmentally friendly and health conscious products, the herbal solid perfume provides a promising alternative to traditional perfumes that aligns with these values. The packaging of Beeswax-based solid perfume should be designed with sustainability in mind. The packaging should be customizable to match the brand's ethos and provide a unique and memorable experience for customers.

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

"COMPOSITION OF VALSARTAN LOADED NIOSOMES WITH ENHANCED BIOAVAILABILITY AND STABILITY USING NATURAL SURFACTANT."

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

(2021-2025)

Jawaharlal Nehru Technological University, Kakinada, A.P

BY

CHITNEEDI LAKSHMI GEETHIKA (213G1R0014)

CHUNDURI HARSHINI (213G1R0015)

DODDA LIKHITHA (213G1R0016)

HITESH RAJ MANDAL (213G1R0048)

Under the guidance of,

Dr. T. Uday Kumar, M. Pharm, PhD

Assistant Professor

Department of Pharmaceutical Technology

Aditya Pharmacy College, Surampalem-533437

DECLARATION

The project embodied in this thesis entitled *"COMPOSITION OF VALSARTAN LOADED NIOSOMES WITH ENHANCED BIOAVAILABILITY AND STABILITY USING NATURAL SURFACTANT"* was carried out in the Department of Pharmaceutics under the guidance of Dr. T. Uday Kumar, 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.

CHITNEEDI LAKSHMI GEETHIKA (213G1R0014) Ch. L. Geethika

CHUNDURI HARSHINI (213G1R0015) CH. Harshini.

DODDA LIKHITHA (213G1R0016) D. Likhitha.

HITESH RAJ MANDAL (213G1R0048) Hitesh Raj Mandal

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CERTIFICATE BY THE GUIDE

I hereby to declare that this dissertation entitled *"COMPOSITION OF VALSARAN LOADEDNIOSOMES WITH ENHANCED BIOAVAILABITY AND STABILITY USING NATURAL SURFACTANT"* Is an original Research work carried out by **CHITNEEDI LAKSHMI GEETHIKA (213G1R0014), CHUNDURI HARSHINI (213G1R0015), DODDA LIKHITHA (213G1R0016), HITESH RAJ MANDAL (213G1R0048)** under my supervision in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy.

T. Uday Kumar.

Dr.T. Uday Kumar, M.Pharm,PhD

Assistant Professor,

Department of Pharmaceutical Technology,

Aditya Pharmacy College

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ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation entitled *"COMPOSITION OF VALSARTAN LOADED NIOSOMES WITH ENHANCED BIOAVAILABILITY AND STABILITY USING NATURAL SURFACTANT* **"submitted to the JNTU-K 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 CHITNEEDI LAKSHMI GEETHIKA (213G1R0014), CHUNDURI HARSHINI (213G1R0015), DODDA LIKHITHA (213G1R0016), HITESH RAJ MANDAL (213G1R0048) under the supervision of** Dr. T. Uday Kumar **and it has been previously not any other University of Academic Institution for any higher degree.**

Dr. D. SATHIS KUMAR, M. PHARM, PhD
Principal and Professor,
Aditya Pharmacy College,
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CERTIFICATE

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Place: Surampalem

Date:

Internal Examiner **External Examiner**

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

CONCLUSION: -

The ultimate goal of formulation of Valsartan loaded noisome 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. It can be reasonably accomplished by developing tablets using super disintegrant. In this present investigation, an attempt was made to develop an immediate release of Valsartan tablets to treat Hypertension. Standard graph of Valsartan was prepared by using UV Spectrophotometer at250nm. It has good bioavailability, and this method was used to find concentration of Valsartan from formulation. Dissolution studies were conducted for the sample of valsartan noisome. From data it was found the percentage of super disintegrant affect the release profile. As the amount of super disintegrant increased, drug release was enhanced. Amongst all formulations, formulation prepared by drug showed least disintegrating time, least wetting time, greater water absorption ratio and faster dissolution. Further research emphasis has to be done over in vivo study and in vitro – in vivo correlations.

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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

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

ADVANCING GREEN CHEMISTRY: ECO-CONSCIOUS FTIR METHOD FOR RAPID ESTIMATION OF VILDAGLIPTIN IN PHARMACEUTICALS.

Is a Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

BACHELOR OF PHARMACY

By

KASA SHANMUKHA (Regd. No. 213G1R0028)

KINTHADA TEJASWINI (Regd. No. 213G1R0029)

KONDAPALLI V.M.S.ANJALI KUMAR (Regd. No. 213G1R0030)

KORAMATI HANSIKA (Regd. No. 213G1R0031)

Under the guidance of

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

Professor& Principal

Aditya Pharmacy College

Surampalem – 533 437

2021- 2025

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

DECLARATION

We here by declare that the dissertation work entitled "**Advancing Green Chemistry: Eco-Conscious FTIR Method for Rapid Estimation of Vildagliptin in Pharmaceuticals**". in partial fulfillment of the degree of Bachelor of Pharmacy of the JNTU Univerasity, Kakinada for the academic year 2021-2025, 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 Dr. D.SathisKumar, Professor, Aditya Pharmacy College, Surampalem. We also declared that the matter embodied in it is a genuine work.

KASA SHANMUKHA(Regd. No. 213G1R0028) K. Shanmukha

KINTHADA TEJASWINI (Regd. No. 213G1R0029) K. Tejaswini.

KONDAPALLI V.M.S.ANJALI KUMAR (Regd. No. 213G1R0030) K.V.M.S. Anjali Kumar.

KORAMATI HANSIKA (Regd. No. 213G1R0031) K. Hansika

Place: Surampalem

Date: 25/03/2025

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
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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.

CERTIFICATE

This is to certify that the dissertation work entitled"**Advancing Green Chemistry: Eco-Conscious FTIR Method for Rapid Estimation of Vildagliptin in Pharmaceuticals**"is submitted tothe Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the awardof the degree of **Bachelor of Pharmacy**. This is a bonafiedwork carried out by KasaShanmukha(Regd. No. 213G1R0028), KinthadaTejaswini (Regd. No. 213G1R0029), KondapalliV.M.S.AnjaliKumar (Regd. No. 213G1R0030), KoramatiHansika (Regd. No. 213G1R0031) under by direct guidance and supervision.

Dr. D. Sathis Kumar
Guide

Place: Surampalem
Date:

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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.

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

CERTIFICATE

This is to certify that the dissertation work entitled **"Advancing Green Chemistry: Eco-Conscious FTIR Method for Rapid Estimation of Vildagliptin in Pharmaceuticals"**is submitted to the JNT University, Kakinada in partial fulfillment for the award of the degree of**Bachelor of Pharmacy** for the academic year 2021-2025. This is a bonafied work carried out by KasaShanmukha(Regd. No. 213G1R0028), KinthadaTejaswini (Regd. No. 213G1R0029), KondapalliV.M.S.AnjaliKumar (Regd. No. 213G1R0030), KoramatiHansika (Regd. No. 213G1R0031) under the direct guidance and supervision of**Dr. D. Sathis Kumar,** M.Pharm., Ph.D.,Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

Place: Surampalem.

Date: 7/3/25

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Dr. D.SathisKumar, M.Pharm., Ph.D.,
Principal and Professor,
Aditya Pharmacy College,
Surampalem, Andhra Pradesh.

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SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE

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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 **"Advancing Green Chemistry: Eco-Conscious FTIR Method for Rapid Estimation of Vildagliptin in Pharmaceuticals"is** submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of**Bachelor of Pharmacy**. This is a bonafied work carried out byKasaShanmukha(Regd. No. 213G1R0028), KinthadaTejaswini (Regd. No. 213G1R0029), KondapalliV.M.S.AnjaliKumar (Regd. No. 213G1R0030), KoramatiHansika (Regd. No. 213G1R0031) under the guidance and supervision of**Dr. D.Sathis Kumar,**Professor, Aditya Pharmacy College, Surampalem.

Date:

Place:

SIGNATURE OF EVALUATOR 1

SIGNATURE OF EVALUATOR 2

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8. SUMMARY

A simple and selective FTIR method is described for the determination of vildagliptin was achieved on the following conditions:

Wavenumber	:	1700 – 1300cm^{-1}
Average scan	:	16 scans
Resolution	:	4 cm^{-1}
Measurement time	:	Exceeding 20 seconds.
Mode	:	Absorption mode.
Temperature	:	Room temperature,
Concentration	:	3% of vildagliptin in water.

Linearity was observed in the range 1% to 5% for vildagliptin (r^2 =0.99 at both wavenumbers) for the amount of drug estimated by the proposed methods was in good agreement with the label claim.

8.1 CONCLUSION

From the above experimental results and parameters it was concluded that, this newly developed method for the estimation of vildagliptin was found to be eco-friendly, simple, precise, and accurate makes this method more acceptable and cost effective and it can be effectively applied for routine analysis in research institutions, quality control department in meant in industries, approved testing laboratories studies in near future.

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

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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

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Phone : 099484 88240 / 241 / 242

Date: 21/06/2024

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Ms. BANDISURI SAHEEDA BEGAM,** Roll No.: **213G1R0006** is a Bonafide student of **ADITYA PHARMACY COLLEGE**, E.G. District, Andhra Pradesh, had undergone industrial training in our organization from 21-05-2024 to 21-06-2024 as a part of partial fulfilment of the B.Pharmacy course.

During the training period she had interacted with all Production, Quality control and R&D Departments and acquired basic knowledge in these areas.

During the aforesaid period we found her to be sincere, hard working and having a learning attitude.

For Arch Pharmalabs Limited,

JSS Ramayya

General Manager – HR & Admin

PRINCIPAL
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SURAMPALEM 533 437

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.

ADITYA
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Aditya Nagar, ADB Road, Surampalem. Kakinada Dist., A.P.

Program

Medicinal chemistry - III

Certified that this is the bonafide record of practical work done by

Mr./Ms. K. Vaishnavi

with Roll No. 223Q1R0046 a student of B-2 Semester

in the B. Pharmacy course during the Academic Year 2024-25

No. of Experiments Conducted 15

No. of Experiments Completed 15

Faculty incharge

Principal

Submitted for the practical examination held on 25/04/25

Examiner -1

Examiner -2

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
1.	23/12/24	Preparation of 2,4,5 Triphenyl Imidazole	01-02	A+	
2.	30/12/24	Preparation of 7-Hydroxy, 4-methyl coumarin	3-04	A+	
3.	06/01/25	Preparation of chlorobutanol	05	A+	
4.	20/01/25	Preparation of Hexamine	06-07	A+	
5.	27/01/25	Assay of metronidazole	08-09	A+	
6.	03/2/25	Assay of chlorpheniramine maleate	10-11	A+	
7.	17/02/25	Microwave assisted of synthesis of 7-Hydroxy-4-methyl coumarin	12-13	A+	
8.	03/3/25	Synthesis of Sulphonilamide	14-16	A	
9.	10/3/25	Synthesis of Tolbutamide	17	A	
10.	17/3/25	Assay of Isoniazid	18-19	A+	
11	24/3/25	Assay of chloroquine phosphate	20-21	A+	
12.	24/3/25	Synthesis of Benzilic acid	22-23	A+	
13	31/3/25	Synthesis of [illegible]oxazin	24-25	A+	

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
14	31/03/25	synthesis of Dapsone	26-27	~~A1~~	
15	7/04/25	Micro-wave assisted of synthesis of 2,4,5 Triphenyl Imidazole	28	~~A1~~	
16	07/4/25	Physicochemical properties	29-32	~~A~~	

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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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PHARMACY COLLEGE

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Aditya Nagar, ADB Road, Surampalem. Kakinada Dist., A.P.

Program

PHARMACOLOGY - III

Certified that this is the bonafide record of practical work done by

Mr./Ms. Telagareddy Srivalli

with Roll No. 223G1R0049 a student of 3rd year 2nd Semester

in the B.pharmacy course during the Academic Year 2024-2025

No. of Experiments Conducted 15

No. of Experiments Completed 15

Faculty incharge

Principal

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the practical examination held on .....

30/04/2025

Examiner -1

30/4/25

Examiner -2

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
1.	20/12/24	Dose calculation in pharmacological experiments	1-4	A+	
2.	20/12/24	Antiallergic activity by mast cell stabilization assay	5-7	A+	
3.	27/12/24	Study of Antiulcer activity of a drug using pylorus ligand SHAY rat model & NSAIDs induced ulcer model	8-11	A+	
4.	31/1/25	study of effect of drugs on GI motility	12-14	A+	
5.	24/1/25	Effect of agonist and Antagonist on guinea pig ileum	15-18	A+	
6.	31/1/25	Effect of saline purgative on frog intestine	19-22	A+	
7.	21/2/25	Estimation of serum biochemical parameters by using semi auto analyzer	23-26	A+	
8.	28/2/25	Test of pyrogens (Rabbit method)	27-30	A+	

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
9.	28/2/25	Insulin hypoglycemic effect on rabbit	31-33	A+	
10.	7/3/25	determination of acute oral toxicity of a drug from given data	34-36	A+	
11	12/3/25	determination of acute irritation / corrosion of a test substance	37-40	A+	
12	12/3/25	determination of acute eye irritation / corrosion of a test substance	41-43	A+	
13.	21/3/25	calculation of pharmaco-kinetic parameters from a given data.	44-46	A+	
14.	28/3/25	biostatistics methods in experimental pharmacology (Students t-test, ANOVA)	47-51	A+	
15.	9/4/25	biostatistical method in experimental pharmacology (chi square test, wilcox-an signed rank test)	52-57	A+	

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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.

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Program

Herbal Drug Technology

Certified that this is the bonafide record of practical work done by

Mr./Ms. K.L.N.S.S.Dhanani Devi

with Roll No. 223G1R0047 a student of B.pharmacy VI-Semester

in the B.pharmacy course during the Academic Year 2024-25.

No. of Experiments Conducted 24

No. of Experiments Completed 22

09/04/2025

Faculty incharge

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Principal

Submitted for the practical examination held on 23/4/25

Examiner -1

Examiner -2

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
*	8/1/25	General procedure of preliminary phytochemical screening of Crude drugs	1	A+	22/1/25
1	8/1/25	Preliminary phytoconstituents Screening of unknown Crude drug Sample-1	10 1	A+ A+	
2	8/1/25	Preliminary phytoconstituents Screening of unknown Crude drug Sample-2	19	A+	22/1/25
3	22/1/25	Evaluation of Excipients of Natural Origin-Agar	27	A+	
4	22/1/25	Evaluation of Natural Excipient - Acacia.	30	A+	29/1/25
5	29/1/25	Evaluation of Natural Excipient - starch	32	A+	
6	29/1/25	Evaluation of Natural Excipient - Honey	34	A+	5/2/25
7	5/2/25	Evaluation of Natural Excipient - Benzoin	36	A+	12/2/25
8	5/2/25	Evaluation of Natural Excipient - Talc	38	A+	
9	12/2/25	Evaluation of Natural Excipient - Gelatin	40	A+	19/2/25
10	12/2/25	Determination of alcohol Content in Asava & Arishta	42	A+	
11	19/2/25	Monograph Analysis of Herbal drugs from Recent pharmacopiea - Senna.	44	A+	5/3/25
12	19/2/25	Monograph Analysis of Tragacanth from recent pharmacopoea	48	A+	

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INDEX

S.No	Date	Name of the Experiment	Page No.	Marks	Signature
13	5/3/25	Monograph Analysis of Castor oil from Recent pharmacopoiea.	52	A+	
14	5/3/25	Monograph Analysis of Haridra from recent pharmacopoiea	54	A+	12/3/25
15	12/3/25	Formulation & Evaluation of Vataka Syrup	57	A+	19/3/25
16	12/3/25	Preparation & Formulation, Evaluation of Cinnamon tablets	60	A+	
17	19/3/25	Preparation, Formulation & Evaluation of Senna tablets	62	A+	
18	19/3/25	Preparation of Methi Shikakaya Shampoo	64	A+	26/3/25
19	26/3/25	Preparation of Churna powder	66	A+	
20	26/3/25	Preparation & Evaluation of Turmeric topical Cream	69	A+	2/4/25
21	2/4/25	Preparation of Lemon hand Lotion	71	A+	
22	2/4/25	Determination of phenol Content in clove oil	73	A+	9/4/25
23	9/4/25	Determination of total alkaloid in Cinchona	74	A+	
24	9/4/25	Determination of Aldehyde Content	76	A+	9/4/25

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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

FORMULATION AND EVALUATION OF POLY HERBAL SOAPS

Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

BACHELOR OF PHARMACY

By

GEDELA AJAY SAI (Regd. No. 213G1R0020)

GOLLAPALLI CHANDRA SEKHAR (Regd.No.213G1R0021)

GOMPA SANDHYA (Regd.No.213G1R0022)

GOPA MEENAKSHI (Regd.No.213G1R0023)

Under the guidance of

Dr. P. BHASKARARAO, M. Pharm., Ph. D

Associate Professor

Department of Pharmaceutical Analysis

Aditya Pharmacy College

Surampalem – 533 437

Batch: 2021- 2025

DECLARATION

We hereby declare that the dissertation work entitled "FORMULATION AND EVALUATION OF POLY HERBAL SOAPS" in partial fulfillment of the degree in Bachelor of Pharmacy of the JNTU, Kakinada for the academic year 2021-2025, 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 Dr.P.BHASKARARAO , Pharmaceutical analysis, Associate Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

G. Ajaysai

GEDELA AJAY SAI

(213G1R0020)

G. Chandra Sekhar

GOLLAPALLI CHANDRAA SEKHAR

(213G1R0021)

G. Sandhya

GOMPA SANDHYA

(213G1R0022)

G. Meenakshi

GOPA MEENAKSHI

(213G1R0023)

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

Dr. P. BHASKARARAO, M. Pharm., Ph. D

Associate Professor

Department of Pharmaceutical Analysis,

CERTIFICATE

This is to certify that the dissertation work entitled a study on **"FORMULATION AND EVALUATION OF POLY HERBAL SOAPS"** submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNTU, Kakinada for the academic year 2021-2025. This is a Bonafide work carried out by **GEDELA AJAY SAI** (Regd. No. 213G1R0020), **GOLLAPALLI CHANDRA SEKHAR** (Regd.No.213G1R0021), **GOMPA SANDHYA** (Regd.No.213G1R0022), **GOPA MEENAKSHI** (Regd.No.213G1R0023) under my direct guidance and supervision.

13/03/2025

Dr.P.Bhaskara Rao

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

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

Principal & Professor

CERTIFICATE

This is to certify that the dissertation work entitled a study on "**FORMULATION AND EVALUATION OF POLY HERBAL SOAPS**" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNTU, Kakinada for the academic year 2021-2025. The original research work carried out by **GEDELA AJAY SAI** (Regd. No. 213G1R0020), **GOLLAPALLI CHANDRA SEKHAR** (Regd.No.213G1R0021), **GOMPA SANDHYA** (Regd.No.213G1R0022), **GOPA MEENAKSHI** (Regd.No.213G1R0023) under the direct guidance and supervision of **Dr. P. BHASKARARAO, M. Pharm., Ph. D**, Pharmaceutical analysis, Associate Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation work entitled **"FORMULATION AND EVALUATION OF POLY HERBAL SOAPS"** is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Bachelor of Pharmacy. This is a Bonafide work carried out by **GEDELA AJAY SAI** (Regd. No. 213G1R0020), **GOLLAPALLI CHANDRA SEKHAR** (Regd.No.213G1R0021), **GOMPA SANDHYA** (Regd.No.213G1R0022), **GOPA MEENAKSHI** (Regd.No.213G1R0023) under the guidance and supervision of **Dr. P. BHASKARARAO, M. Pharm., Ph. D**, Pharmaceutical analysis, Associate Professor, Aditya Pharmacy College, Surampalem.

Place: Surampalem

Date:

Principal
Aditya Pharmacy College
SURAMPALEM-533 437

(Internal Examiner)

(External Examiner)

CONCLUSION

Poly herbal soap formulations were prepared by using ingredients like turmeric, betle leaf extract, aloe vera extract, chaulmoogra oil, papaya oil, coconut oil. Various evaluation tests were carried out according to the standard procedures. Soap formulations did not cause any irritation to the skin, it was determined by using these soaps on a few volunteers. Formulation (F4) exhibited satisfactory results and were matching the standard marketed product.

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**

FORMULATION AND EVALUATION OF FAST-DISSOLVING PARACETMOL TABLETS USING FENNEL POWDER AS A NATURAL DISINTEGRANT."

Is a Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

BACHELOR OF PHARMACY (2021-2025)

PALA SATYANARAYANA RAJU (Regd.No.213G1R0040)

ALLAKA CHANDINI (Regd.No.213G1R0041)

BUGATHA SURYA BHAVYESH (Regd.No.213G1R0046)

GUTHULA HARITHA (Regd. No. 213G1R0047)

KARRI LAKSHMI KSHEERAJA (Regd.No.213G1R0049)

Under the guidance of

Dr.CH.S.Phani Kumar, M.Pharm.PH.D.,

Assistant Professor

Department of Pharmaceutics

Aditya Pharmacy College

Surampalem – 533 437

Batch: 2021- 2025

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Web: www.adityapharmacy.edu.in
Aditya Nagar, ADB Road, Surampalem – 533437, Kakinada Dist., A.P., INDIA.

DECLARATION

We hereby declare that the dissertation work entitled on FORMULATION AND EVALUATION OF FAST-DISSOLVING PARACETMOL TABLETS USING FENNEL POWDER AS A NATURAL DISINTEGRANT."in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2021-2025, 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.DR.CH.S.PHANI KUMAR,M.Pharm., Ph.D Pharmaceutics, Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

PALA SATYANARAYANA RAJU (213G1R0040)

ALLAKA CHANDINI (213G1R0041)

BUGATHA SURYA BHAVYESH (213G1R0046)

GUTHULA HARITHA (213G1R0047)

KARRI LAKSHMI KSHEERAJA (213G1R0049)

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Aditya Nagar, ADB Road, Surampalem – 533437, Kakinada Dist., A.P., INDIA.

Mr.DR.CH.S.Phani Kumar,M.Pharm.,Ph.D,

Department of Pharmaceuticus,

Assistant Professor.

CERTIFICATE

This is to certify that the dissertation work entitled a study on **FORMULATION AND EVALUATION OF FAST-DISSOLVING PARACETMOL TABLETS USING FENNEL POWDER AS A NATURAL DISINTEGRANT."**submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2021-2025. This is a bonafied work carried out by **PALA SATYANARAYANA RAJU**(Regd. No. 213G1R0040), **ALLAKA CHANDINI**(Regd.No.213G1R0041),**BUGUTHA SURYA BHAVYESH** (Regd.No.213G1R0046),**GUTHULA HARITHA**(Regd.No.213G1R0047),**KARRI LAKSHMI KSHEERAJA** (Regd.No.213G1R0049) under my direct guidance and supervision.

15/03/25

(Dr.CH.S.Phani Kumar.)

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Dr. D. Satis kumar, M.Pharm., Ph.D.,

Principal & Professor.

CERTIFICATE

This is to certify that the dissertation work entitled a study on **FORMULATION AND EVALUATION OF FAST-DISSOLVING PARACETMOL TABLETS USING FENNEL POWDER AS A NATURAL DISINTEGRANT"** .submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2021-2025.The original research work carried out by **PALA SATYANARAYANA RAJU** (Regd.No. 213G1R0040),**ALLAKA CHANDINI** (Regd.No.213G1R0041),**BUGUTHA SURYA BHAVYESH** (Regd.No.213G1R0046),**GUTHULA HARITHA** (Regd.No.213G1R0047),**KARRI LAKSHMI KSHEERAJA** (Regd.No.213G1R0049) under the direct guidance and supervision of **MR.DR.CH.S.PHANI KUMAR**,M.Pharm.,Ph.D Pharmaceutics, Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

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Place:Surampalem

Date:

(Principal)

(Internal Examiner)

(External Examiner)

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VIII. CONCLUSIONS

This study successfully formulated and evaluated fast-dissolving Paracetamol tablets using fennel powder as a natural disintegrant. The results demonstrated that increasing the concentration of fennel powder (F2–F4) improved tablet disintegration and dissolution, comparable to formulations containing croscarmellose sodium (F5–F7). Among all formulations, F4 (10% fennel powder) and F7 (10% CCS) showed the fastest disintegration and highest dissolution efficiency, with F4 achieving complete drug release in 30 minutes. Drug release kinetics analysis revealed that formulations F1, F3, and F5 followed Zero-order release, suggesting sustained drug release, while F4, F6, and F7 fit better with the First-order model, indicating concentration-dependent release. The Higuchi model confirmed a diffusion-controlled mechanism, and Korsmeyer-Peppas analysis indicated a combination of diffusion and polymer relaxation processes. Overall, the findings suggest that fennel powder is an effective natural disintegrant, offering a sustainable and cost-efficient alternative to synthetic superdisintegrants like CCS. Given its biocompatibility, ease of availability, and pharmaceutical functionality, fennel powder can be utilized in fast-dissolving tablet formulations, enhancing patient compliance and therapeutic efficacy.

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

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Department of

INSTRUMENTAL METHOD OF ANALYSIS.

Name: Ch.M.heleena.. PIN No. 213G1R0013

Certified that this is the bonafide record of practical work done by

Mr./Ms. Ch. Margreat Heleena

a student of IV.I.B.Pharm *with Regd. No.* 213G1R0013

in the INSTRUMENTAL METHOD OF ANALYSIS *Laboratory during the year* 2024-2025

No. of Experiments Conducted 21 No. of Experiments Attended 21

B. Sujith 17/01/2025

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
	11-06-24	INTRODUCTION TO SPECTRO - SCOPICAL ANALYSIS.	01-02	25/06/2024
01.	12-06-24	CALIBRATION OF UV-VISIBLE SPECTROPHOTOMETER.	03-07	25/06/2024
02.	18-06-24	DETERMINATION OF ABSORPTION MAXIMA (λmax) FOR POTASSIUM-PERMAGNATE.	08-09	02/07/2024
03.	25-06-24	EFFECT OF SOLVENT ON ABSORPTION MAXIMA (λmax) OF PHENOL	10-12.	09/07/2024
04.	02-07-24	ASSAY OF PARACETMOL BY USING $A^{1\%}_{1cm}$ or SPECIFIC ABSORBANCE.	13-15	09/07/2024
05.	09-07-24	ASSAY OF PARACETMOL BY CHEMICAL DERVITIZATION METHOD	16-18.	16/07/2024
06.	15-07-24	ASSAY OF PARACETMOL USING OXIDATION FOLLOWED BY CHELATION-REACTION	19-21	29/07/2024
07.	16-07-24	ESTIMATION OF SALICYLIC ACID BY CALIBRATION CURVE BY CALORIMETRY	22-23	29/07/2024
08.	16-07-24	ASSAY OF SALICYLIC ACID USING DIRECT COMPARSION METHOD OR SINGLE POINT METHOD.	24-26	29/07/2024
09.	23-07-24	ESTIMATION OF SULPHANILAMIDE EYE DROPS BY COLORIMETRY	27-29.	23/08/2024
10.	30-07-24	ESTIMATION OF QUININE SULPHATE BY FLOURIMETRY	30-31	28/08/2024
11.	12-08-24	SIMULTANEOUS ESTIMATION OF CAFFEINE AND SODIUM BENZOATE USING SIMULTANEOUS EQUATION METHOD	32-34	02/09/2024

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S.No.	Date	Name of the Experiment	Page No.	Remarks
12.	13-08-24	ESTIMATION OF SULPHATE BY NEPHLOTURBIDIMETRY	35-38	03/09/2024
13.	13-08-24	ESTIMATION OF CHLORIDE ION BY NEPHLOTURBIDIMETRY	39-42	10/09/2024
14.	14-08-24	DETERMINATION OF SODIUM ION CONCENTRATION IN UNKNOWN SAMPLE BY FLAME PHOTOMETRY	43-44	10/09/2024
15.	14-08-24	DETERMINATION OF POTASSIUM IONS IN UNKNOWN SAMPLE BY FLAME-PHOTOMETRY	45-46	10/09/2024
11.	16-08-24	INTRODUCTION TO CHROMATOGRAPHY	47-49	17/09/2024
16.	16-08-24	IDENTIFICATION OF AMINO ACIDS BY USING ASCENDING PAPER CHROMATOGRAPHY	50-52	17/09/2024
17.	20-08-24	IDENTIFICATION OF AMINO ACIDS BY RADIAL PAPER CHROMATOGRAPHY	53-55	17/09/2024
18.	20-08-24	IDENTIFICAⁿ OF METRONIDAZOLE IN GIVEN SAMPLE BY ASCENDING PAPER CHROMATOGRAPHY	56-57	17/09/2024
19.	26-08-24	SEPARATION AND IDENTIFICAⁿ OF PLANT PIGMENTS BY 2-D PAPER CHROMATOGRAPHY.	58-60	17/09/2024
20.	27-08-24	SEPARATION & IDENTIFICAⁿ OF PLANT PIGMENTS BY COLUMN CHROMATOGRAPHY	61	17/09/2024
21.	28-08-24	SEPARATION & IDENTIFICATⁿ OF SULPHONAMIDE DRUG BY THIN LAYER CHROMATOGRAPHY.	62-63	17/09/2024
22.	03-09-24	IDENTIFICATION AND SEPARATION OF SUGARS BY USING TLC PLATES.	64-66	17/09/2024
23.	10-09-24	STANDARD OPERATING PROCEDURE FOR HPLC	67-68	17/09/2024
24.	17-09-24	STANDARD OPERATING PROCEDURE FOR GAS CHROMATOGRAPHY	69-70	17/09/2024

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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

TEAM
Labs and Consultants

Registered Office : B-115, 116, 117 & 509, Annapoorna Block, Aditya Enclave, Ameerpet, Hyderabad - 530038.
Ph. : (O) 040-23748555, 23748616, Fax : 040-23748666, Email : teamlabs@gmail.com

Branch Office : # 24-4-11, Darul Fateh Building, 1st Floor, Harbour Road, Visakhapatnam-530 001.
Ph. : (O) 0891-2748699, Cell : 9849033397, E-mail : teamlabsvizag@gmail.com

TO WHOMSOEVER MAY CONCERN

Date: 21/06/2024

This is to certify that **Ms. MADAVARAPU RAMALAKSHMI,** Roll No: **213G1R0034** is a Bona fide student of ADITYA PHARMACY COLLEGE, E.G. District, Andhra Pradesh, had undergone Industrial training in our organization from 21-05-2024 to 21-06-2024 as a part of partial fulfillment of the B. Pharmacy course.

During the training period she had interacted with all Lab Analysis, Micro Biology and R&D Departments and acquired basic knowledge in these areas.

During the a foresaid period we found her to be sincere, hardworking and having a learning attitude.

For Team Labs and Consultants,

TEAM Labs and Consultants

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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

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Synthesis and Computational Evaluation of Triphenyl Imidazole Derivatives: Docking and ADMET Studies

Is a Dissertation Submitted to the

Jawaharlal Nehru Technological University, Kakinada,A.P

in partial fulfillment of the requirements for the degree of

BACHELOR OF PHARMACY(2021-2025)

By

MADDURI SIVAMANI (Regd. No. 213G1R0036)

MAKIREDDI RAJESWARI(Regd.No.213G1R0037)

MANCHALA HARSHITHA(Regd.No.213G1R0038)

NIKHIL JILLELLA (Regd.No.213G1R0039)

Under the guidance of

L.PARINAYA SRI, M.Pharm., (Ph.D.)

Assistant Professor

Department of Pharmaceutical Chemistry

Aditya Pharmacy College

Surampalem – 533 437

Batch: 2021-2025

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DECLARATION

We hereby declare that the dissertation work entitled "**Synthesis and Computational Evaluation of Triphenyl Imidazole Derivatives: Docking and ADMET Studies**" in partial fulfillment of the degree in Bachelor of Pharmacy of the University, Kakinada for the academic year 2021-2025, was carried out by using the library and laboratories of Aditya Pharmacy College, Surampalem, Andhra Pradesh under the valuable and efficient guidance and supervision of Ms. L. PARINAYA SRI, M.Pharm., (Ph.D.), Pharmaceutical chemistry, Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

MADDURI SIVAMANI (Regd.No.213G1R0036) M. Siva

MAKIREDDI RAJESWARI (Regd.No.213G1R0037) M. Rajeswari

MANCHALA HARSHITHA(Regd.No.213G1R0038) M. Harshitha

NIKHIL JILLELLA (Regd.No.213G1R0039) Nikhil.J

PRINCIPAL
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SURAMPALEM-533 437

CERTIFICATE

This is to certify that the dissertation work entitled a study on "**Synthesis and Computational Evaluation of Triphenyl Imidazole Derivatives: Docking and ADMET Studies**" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the Jawaharlal Nehru Technological University, Kakinada for the academic year 2021-2025. This is a Bonafide work carried out by **MADDURI SIVAMANI** (Regd. No. 213G1R0036), **MAKIREDDI RAJESWARI** (Regd.No.213G1R0037),**MANCHALA.HARSHITHA**(Regd.No.213G1R0038),**NIKHIL JILLELLA**(Regd.No.213G1R0039)under my direct guidance and supervision.

Ms. L. Parinaya Sri, M.Pharm., (Ph. D)

Department of Pharmaceutical chemistry,

Assistant Professor.

13/03/2025

Ms. L. PARINAYA SRI, M.Pharm., (Ph.D.)

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SURAMPALEM-533 437

CERTIFICATE

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

Principal & Professor.

Aditya Pharmacy College,

Surampalem-533437.

Place:Surampalem

Date:

(PRINCIPAL)
PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

CERTIFICATE

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Place:Surampalem

Date:

External Examiner:

Internal Examiner:

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SUMMARY

2,4,5-Triphenylimidazoles exhibit antibacterial, antifungal, anti-inflammatory, antiviral, antiplatelet, analgesic, antituberculosis, antitumoral, and antidepressant activities. An extensive literature survey was conducted to design a synthetic scheme for various derivatives. Equimolar amounts of benzil (25 mM), benzaldehyde (25 mM), and ammonium acetate (130 mM) were dissolved in 100 mL acetic acid, stirred, and refluxed for 1 hour in an oil bath. The mixture was then cooled to room temperature, recrystallized, and dried.

Equimolar amounts of 2,4,5-triphenylimidazole, triethylamine, cinnamic acid or salicylic acid or para-amino benzoic acid, and H_2SO_4 were individually refluxed for 1 hour. After cooling to room temperature, the obtained 2,4,5-triphenylimidazole derivatives (1a, 1b, and 1c) were collected, recrystallized, and dried.

The IR spectra confirmed the presence of key functional groups in the synthesized derivatives. Compound 1a displayed absorption bands at 1597-1637 cm^{-1} (C=O linkage), 1407-1648 cm^{-1} (C=C functional groups), and Ar-H stretching. Compound 1b exhibited a broad absorption at 3521 cm^{-1} (-OH group), along with bands at 1597-1637 cm^{-1} (C=O linkage), 1407-1648 cm^{-1} (C=C functional groups), and Ar-H stretching. Compound 1c showed an absorption band at 3325 cm^{-1} (N-H group), along with bands at 1597-1637 cm^{-1} (C=O linkage), 1407-1648 cm^{-1} (C=C functional groups), and Ar-H stretching. These spectral features confirm the structural integrity of the synthesized derivatives.

The compounds were analyzed for their bioactivity scores, ADMET properties, and molecular docking studies. Compound 1a exhibited strong binding affinity with 4JX3, while compound 1b showed strong binding affinity with 3VI8.

Bioactivity prediction indicated that all three compounds (1a, 1b, and 1c) showed moderate activity as ion channel modulators, kinase inhibitors, nuclear receptor ligands, protease inhibitors, GPCR ligands, and enzyme inhibitors.

ADMET analysis revealed moderate Caco-2 cell permeability, suggesting potential oral absorption. The compounds exhibited strong plasma protein binding, indicating an extended circulation time, and demonstrated good penetration properties. All derivatives obeyed Lipinski's Rule of Five, ensuring high oral absorption and good bioavailability.

Physicochemical parameters and toxicity risks were assessed using PreADMET. Bioactivity scores were predicted using Molinspiration, while ADME properties were evaluated using SwissADME. Molecular docking studies were conducted using Autodock and Discovery Studio.

CONCLUSION

2,4,5-triphenyl Imidazole derivatives **(1a,1b and 1c)** were synthesized in good yield. Docking studies revealed that compound Ia showed good binding affinity towards **PPARα**, and compound 1b showed good binding affinity towards **Pim 1 kinase**. 2,4,5-triphenyl Imidazole derivatives obeys Lipinski rule five and showed the good oral absorption and good bioavailability.

BP809ET. COSMETIC SCIENCE(Theory)

45Hours

UNIT I **10Hours**

Classification of cosmetic and cosmeceutical products

Definition of cosmetics as per Indian and EU regulations, Evolution of cosmeceuticals from cosmetics, cosmetics as quasi and OTC drugs

Cosmetic excipients: Surfactants, rheology modifiers, humectants, emollients, preservatives. Classification and application

Skin: Basic structure and function of skin.

Hair: Basic structure of hair. Hair growth cycle.

Oral Cavity: Common problem associated with teeth and gums.

UNIT II **10 Hours**

Principles of formulation and building blocks of skin care products:

Face wash,

Moisturizing cream, Cold Cream, Vanishing cream and their advantages and disadvantages.Application of these products in formulation of cosmecuticals.

Antiperspants & deodorants- Actives & mechanism of action.

Principles of formulation and building blocks of Hair care products:

Conditioning shampoo, Hair conditioner,anti-dandruff shampoo.

Hair oils.

Chemistry and formulation of Para-phylene diamine based hair dye.

Principles of formulation and building blocks of oral care products:

Toothpaste for bleeding gums, sensitive teeth. Teeth whitening, Mouthwash.

UNIT III **10 Hours**

Sun protection, Classification of Sunscreens and SPF.

Role of herbs in cosmetics:

Skin Care: Aloe and turmeric

Hair care: Henna and amla.

Oral care: Neem and clove

Analytical cosmetics: BIS specification and analytical methods for shampoo, skin-cream and toothpaste.

UNIT IV **08 Hours.**

Principles of Cosmetic Evaluation:Principles of sebumeter, corneometer. Measurement of TEWL, Skin Color, Hair tensile strength, Hair combing properties

Soaps,and syndet bars. Evolution and skin benfits.

"Formulation and Characterization of a Phytochemical-based Sunscreen Gel using Phoenix sylvestris Seed Extract and Zinc Oxide Nanoparticles for Natural UV Protection"

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada inpartialfulfillment of the requirementsfor the Degree of Bachelor of Pharmacy (2024)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA.

SUBMITTED BY

SRI PADAM KAVYA SRI (213G1R0063)

SUPRIYA KAKI (213G1R0064)

SURNI SIRISHA (213G1R0065)

SUBHA SABDAKAR (213G1R0092)

UNDER THE GUIDANCE OF

CH.LAKSHMI MADHAVI, PGDHM,M.Pharm,(Ph.D)

Assistant Professor

ADITYA PHARMACY COLLEGE

Surampalem – 533437

2024-25

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

DECLARATION

This project embodied in thesis entitled **"Formulation and Characterization of a Phytochemical-Based Sunscreen Gel Using Phoenix sylvestris Seed Extract and Zinc Oxide Nanoparticles for Natural UV Protection"** was carried out in the department ofpharmaceutical analysis under the guidance of **Ch.Lakshmi Madhavi,** PGDHM,M.Pharm,(Ph.D), 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.

SRI PADAM KAVYA SRI (213G1R0063)

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CERTIFICATE

This is certify that the dissertation **"Formulation and Characterization of a Phytochemical-Based Sunscreen Gel Using Phoenix sylvestris Seed Extract and Zinc Oxide Nanoparticles for Natural UV Protection"** was submitted to the Jawaharlal Nehru university, Kakinada in partial fulfillment of the requirements for the award of degree of **Bachelor of Pharmacy** is record of original research work carried out by SRI PADAM KAVYA SRI (213G1R0063), SUPRIYA KAKI (213G1R0064), SURNI SIRISHA (213G1R0065), SUBHA SABDAKAR (213G1R0092)under my supervision and it has not been previously submitted to any other university or academic institution for any higher degree.

C.L.Madhavi

Ch.Lakshmi Madhavi, PGDHM,M.Pharm,(Ph.D)

Assistant Professor,

Aditya pharmacy college,

Surampalem-533437.

Place: Surampalem

Date: 21/03/2025

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They have done this research work under the supervision of **Ch.Lakshmi Madhavi,** PGDHM,M.Pharm,(Ph.D) and it has not been previously submitted to any other university or academic institution for any higher degree.

Dr. D. Sathis Kumar, M Pharm, PhD
Principal,
Aditya pharmacy college,
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Aditya Pharmacy College
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Place: Surampalem
Date: 21/03/2025

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They have done this research work under the supervision of Ms.**Ch.Lakshmi Madhavi,** PGDHM,M.Pharm,(Ph.D) and it has not been previously submitted to any other university or academic institution for any higher degree.

Principal

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Date: 21/03/2025

INTERNAL EXAMINER

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EXTERNAL EXAMINER

Chapter-7

SUMMARY AND CONCLUSION

CONCLUSION:

This study aimed to develop a natural sunscreen gel by extracting and characterizing bioactive phytochemicals from *Phoenix sylvestris* seeds and synthesizing zinc oxide nanoparticles (ZnO NPs) through a green synthesis approach. The formulation was designed to combine the inherent antioxidant and UV-absorbing properties of the seed extract with the broad-spectrum, photostable UV protection provided by ZnO NPs.

Comprehensive evaluation of the gel's physicochemical parameters—including pH, viscosity, spreadability, and sun protection factor (SPF)—demonstrated that the product meets the criteria for effective topical application. The synergistic interaction between the natural phytochemicals and ZnO nanoparticles not only enhanced overall UV protection but also significantly reduced oxidative stress, thereby mitigating photoaging and lowering the risk of UV-induced skin damage. Furthermore, the formulation maintained its stability under varying environmental conditions, indicating its potential for long-term usage.

In addition, detailed analysis of the extraction process and nanoparticle synthesis has provided valuable insights into optimizing the balance between bioactivity and formulation performance. The study underscored the importance of natural compounds in reducing reliance on synthetic chemicals, thereby minimizing adverse skin reactions and environmental hazards. The integration of nanotechnology with herbal extracts presents a novel approach that not only enhances sunscreen efficacy but also contributes to improved skin hydration and overall dermatological health.

Moreover, the favorable SPF results, coupled with minimal skin irritation observed during preliminary evaluations, highlight the gel's promise as a safe and effective sun protection alternative. The encouraging outcomes pave the way for future work, including extended in vivo evaluations, long-term stability studies, and clinical trials to further validate the product's performance. This research lays a robust foundation for the development of advanced, eco-friendly sunscreen formulations that can meet modern consumer demands for both safety and environmental sustainability. Ultimately, the natural sunscreen gel developed

herein demonstrates significant potential to revolutionize sun care by offering a sustainable, effective, and biocompatible solution for skin protection.

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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:

UNIT-I **10 Hours**

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

UNIT-II **10 Hours**

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.

UNIT-III **10 Hours**

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

ASSESSMENT OF ANTI-DIABETIC AND ANTI OXIDANT ACTIVITIES OF THE ETHANOLIC EXTRACT OF "ANDROGRAPHIS PANICULATA" LEAVES

A Dissertation Submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

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

BACHELOR OF PHARMACY in PHARMACOGNOSY

by

GUTTULA BHUVANESWARI (213G1R0024)

JALAGADUGULA JAYA SREE (213G1R0025)

KADALI SWATHI (213G1R0026)

KARRI PAVANI SRIVIDYA (213G1R0027)

Under the esteemed guidance of

Ms. GUDIPUDI TEJASWI M. PHARM

Assistant professor

Department of Pharmacognosy and Phytochemistry

ADITYA PHARMACY COLLEGE,

Approved by AICTE & PCI, Affiliated to JNTUK, Kakinada

Surampalem, Andhra Pradesh, India-533437

Batch:2021-2025.

DECLARATION

We hereby declare that the dissertation work entitled "ASSESSMENT OF ANTI-DIABETIC ACTIVITY AND ANTI-OXIDANT ACTIVITIES OF THE ETHANOLIC EXTRACT OF *ANDROGRAPHIS PANICULATA* LEAVES" in partial fulfilment of the degree in Bachelor of Pharmacy of the JNTUK for the academic year 2021-2025,was carried out by us in the library and laboratories of Aditya Pharmacy College, Surampalem, Andhra Pradesh under valuable and efficient guidance and supervision of **Ms.Gudipudi Tejaswi, M.Pharm,** Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

Guttula Bhuvanewsari (213G1R0024), G. Bhuvaneswari.

Jalagadugula Jaya sree (213G1R0025), J. Jaya Sree

Kadali Swathi (213G1R0026), K. Swathi

Karri Pavani Srividya (213G1R0027). K. Pavani Srividya.

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CERTIFICATE

This is to certify that the dissertation work entitled a study on "ASSESSMENT OF ANTI-DIABETIC AND ANTI-OXIDANT ACTIVITIES OF THE ETHANOLIC EXTRACT OF *ANDROGRAPHIS PANICULATA* LEAVES" *submitted in partial of the degree in Bachelor of Pharmacy of the JNTUK for the academic year 2021-2025. This is a bonafide work carried out by G. Bhuvaneswari, J. Jaya sree, K. Swathi, K. Pavani Srividya under my direct guidance and supervision.*

Guided by

Ms. Gudipudi Tejaswi, M. Pharm

Assistant Professor

Department of Pharmacognosy and Phytochemistry

Aditya pharmacy college.

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

Principal & Professor

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Aditya Pharmacy College,

Surampalem-533437.

Place: Surampalem

Date:

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(PRINCIPAL)

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Place: Surampalem

Date: 25-03-2025

Internal Examiner

External Examiner

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9. CONCLUSION

INVITRO ANTI-DIABETIC ACTIVITY:

The present study demonstrated the anti-diabetic potential of Kalmegh (Andrographis paniculata) extract through the Glucose Uptake Assay using Yeast Cells. The extract significantly enhanced glucose absorption, suggesting its ability to help regulate blood sugar levels. The results were comparable to the standard drug metformin, supporting the traditional use of Kalmegh in diabetes management.

These findings indicate that Kalmegh could be a natural alternative for diabetes control, but further studies, including enzyme-based assays and clinical research, are needed to confirm its effectiveness and mechanism of action.

INVITRO ANTI-OXIDANT ACTIVITY:

Based on the experimental findings of Anti-oxidant activity of ethanolic extract of Andrographis paniculata leaves, it is evident that the plant may contain some novel compounds that possess potent Anti-oxidant activity.

From above Invitro Anti-oxidant results indicates that our compound in Andrographis paniculata has a significant Anti-oxidant which is compared with Ascorbic acid (standard). This Anti-oxidant activity of Andrographis paniculata leaves extract was determined by DPPH Assay.

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