


ADITYA

PHARMACY COLLEGE

(Formerly known as Aditya Institute of Pharmaceutical Sciences & Research)

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

B. PHARMACY

| S. NO. | SUBJECT CODE | NAME OF THE SUBJECT | PG. NO. |
|--------|--------------|---|---------|
| 1 | BP 103 T | Pharmaceutics-I (Theory) | 5-11 |
| 2 | BP 405 T | Pharmacognosy and Phytochemistry (Theory) | 12-19 |
| 3 | BP 601 T | Medicinal Chemistry-III (Theory) | 20-27 |
| 4 | BP 201 T | Human Anatomy and Physiology-II (Theory) | 28-34 |
| 5 | BP 603 T | Herbal Drug Technology (Theory) | 35-42 |
| 6 | BP 607 P | Medicinal Chemistry III (Practical) | 43-51 |
| 7 | BP 602 T | Pharmacology-III (Theory) | 52-60 |
| 8 | BP 406 P | Medicinal Chemistry-I (Practical) | 61-68 |
| 9 | BP 605 T | Pharmaceutical Biotechnology (Theory) | 69-77 |
| 10 | BP 501 T | Medicinal Chemistry-II (Theory) | 78-85 |
| 11 | BP 802 T | Social and Preventive Pharmacy (Theory) | 86-92 |
| 12 | BP 504 T | Pharmacognosy and Phytochemistry –II (Theory) | 93-98 |
| 13 | BP 102 T | Pharmaceutical Analysis (Theory) | 99-106 |
| 14 | BP 606 T | Pharmaceutical Quality Assurance (Theory) | 107-114 |
| 15 | BP 203 T | Biochemistry (Theory) | 115-120 |
| 16 | BP 301 T | Pharmaceutical Organic Chemistry-II (Theory) | 121-128 |
| 17 | BP 702 T | Industrial Pharmacy-II (Theory) | 129-134 |
| 18 | BP 104 T | Pharmaceutical Inorganic Chemistry (Theory) | 135-142 |
| 19 | BP 106 T | Remedial Mathematics (Theory) | 143-150 |
| 20 | BP 402 T | Medicinal Chemistry-I (Theory) | 151-158 |
| 21 | BP 701 T | Instrumental Methods of Analysis (Theory) | 159-167 |
| 22 | BP 304 T | Pharmaceutical Engineering (Theory) | 168-176 |
| 23 | BP 107 P | Human Anatomy and Physiology-I (Practical) | 177-181 |
| 24 | BP 108 P | Pharmaceutical Analysis-I (Practical) | 182-186 |
| 25 | BP 109 P | Pharmaceutics-I (Practical) | 187-191 |
| 26 | BP 110 P | Pharmaceutical Inorganic Chemistry (Practical) | 192-194 |
| 27 | BP 111 P | Communication Skills (Practical) | 195-198 |
| 28 | BP 112 RB P | Remedial Biology (Practical) | 199-201 |
| 29 | BP 207 P | Human Anatomy and Physiology-II (Practical) | 202-206 |
| 30 | BP 208 P | Pharmaceutical Organic Chemistry-I (Practical) | 207-210 |
| 31 | BP 209 P | Biochemistry (Practical) | 211-214 |
| 32 | BP 210 P | Computer Applications in Pharmacy (Practical) | 215-218 |
| 33 | BP 305 P | Pharmaceutical Organic Chemistry-II (Practical) | 219-222 |
| 34 | BP 306 P | Physical Pharmaceutics-I (Practical) | 223-226 |

| | | | |
|----|----------|---|---------|
| 35 | BP 307 P | Pharmaceutical Microbiology (Practical) | 227-231 |
| 36 | BP 308 P | Pharmaceutical Engineering (Practical) | 232-235 |
| 37 | BP 406 P | Medicinal Chemistry-I (Practical) | 236-239 |
| 38 | BP 407 P | Physical Pharmaceutics-II (Practical) | 240-243 |
| 39 | BP 408 P | Pharmacology-I (Practical) | 244-248 |
| 40 | BP 409 P | Pharmacognosy and Phytochemistry-I (Practical) | 249-252 |
| 41 | BP 506 P | Industrial Pharmacy-I (Practical) | 253-256 |
| 42 | BP 507 P | Pharmacology-II (Practical) | 257-260 |
| 43 | BP 508 P | Pharmacognosy and Phytochemistry-II (Practical) | 261-264 |
| 44 | BP 607 P | Medicinal Chemistry-III (Practical) | 265-268 |
| 45 | BP 608 P | Pharmacology-III (Practical) | 269-272 |
| 46 | BP 609 P | Herbal Drug Technology (Practical) | 273-276 |
| 47 | BP 705 P | Instrumental Methods of Analysis (Practical) | 277-280 |




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PHARM. D

| S. NO. | SUBJECT CODE | NAME OF THE SUBJECT | PG. NO. |
|--------|--------------|--|---------|
| 48 | 2.1 (T) | Pathophysiology (Theory) | 281-287 |
| 49 | 4.2 (T) | Hospital Pharmacy (Theory) | 288-294 |
| 50 | 1.1 (T) | Human Anatomy & Physiology (Theory) | 295-302 |
| 51 | 5.3 (T) | Clinical Pharmacokinetics and Pharmacotherapeutic Drug Monitoring (Theory) | 303-309 |
| 52 | 4.4 (T) | Biostatistics and Research Methodology (Theory) | 310-317 |
| 53 | 2.2 (T) | Pharmaceutical Microbiology (Theory) | 318-325 |
| 54 | 1.3 (T) | Medicinal Biochemistry (Theory) | 326-332 |
| 55 | 1.1 (P) | Human Anatomy and Physiology (Practical) | 333-337 |
| 56 | 1.2(P) | Pharmaceutics (Practical) | 338-342 |
| 57 | 1.3 (P) | Medicinal Biochemistry (Practical) | 343-346 |
| 58 | 1.4 (P) | Pharmaceutical Organic Chemistry (Practical) | 347-350 |
| 59 | 1.5 (P) | Pharmaceutical Inorganic Chemistry (Practical) | 351-355 |
| 60 | 1.6 (P) | Remedial Biology (Practical) | 356-359 |
| 61 | 2.2 (P) | Pharmaceutical Microbiology (Practical) | 360-364 |
| 62 | 2.3 (P) | Pharmacognosy and Phytopharmaceuticals (Practical) | 365-368 |
| 63 | 2.6 (P) | Pharmacotherapeutics-I (Practical) | 369-372 |
| 64 | 3.1 (P) | Pharmacology-II (Practical) | 373-376 |
| 65 | 3.2 (P) | Pharmaceutical Analysis (Practical) | 377-381 |
| 66 | 3.3 (P) | Pharmacotherapeutics-II (Practical) | 382-385 |
| 67 | 3.5 (P) | Medicinal Chemistry (Practical) | 386-388 |
| 68 | 3.6 (P) | Pharmaceutical Formulations (Practical) | 389-392 |
| 69 | 4.1 (P) | Pharmacotherapeutics-III (Practical) | 393-395 |
| 70 | 4.2 (P) | Hospital Pharmacy (Practical) | 396-399 |
| 71 | 4.3 (P) | Clinical Pharmacy (Practical) | 400-403 |
| 72 | 4.5 (P) | Bio-Pharmaceutics and Pharmacokinetics (Practical) | 404-407 |




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M. PHARMACY

| S. NO. | SUBJECT CODE | NAME OF THE SUBJECT | PG. NO. |
|--------|--------------|---|---------|
| 73 | MPH 202 T | Advanced Bio-Pharmaceutics and Pharmacokinetics | 408-417 |
| 74 | MPH 102 T | Drug Delivery Systems | 418-427 |
| 75 | MPH 105 P-A | Pharmaceutics Practical-I | 428-431 |
| 76 | MPH 105 P-B | Pharmaceutics Practical-II | 432-434 |
| 77 | MPH 205 P-A | Pharmaceutics Practical-III | 435-438 |
| 78 | MPH 205 P-B | Pharmaceutics Practical-IV | 439-442 |
| 79 | MPA 105 P-A | Pharmaceutical Analysis Practical-I | 443-446 |
| 80 | MPA 105 P-B | Pharmaceutical Analysis Practical-II | 447-450 |
| 81 | MPA 205 P-A | Pharmaceutical Analysis Practical-III | 451-454 |
| 82 | MPA 205 P-B | Pharmaceutical Analysis Practical-IV | 455-458 |




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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



“FORMULATION AND EVALUATION OF VALSARTAN FAST DISSOLVING TABLETS”

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

(2020-2024)



Jawaharlal Nehru Technological University, Kakinada, A.P

BY:

**AAVALA DEEPIKA (203G1R0001)
ADAPA VIJAY KUMAR (203G1R0002)
ADHIKARI VARSHA ANUPAMA (203G1R0003)
ALLIMPALLI MADHURI DEVI (203G1R0004)
ALLU KESAVARDHINI (203G1R0005)**

Under the guidance of,

Dr. T. Uday Kumar, M. Pharm, Ph. D

Associate. Professor

Department of pharmaceutical Technology

Aditya Pharmacy College

Surrampalem-533437

2020-2024



**PRINCIPAL
Aditya Pharmacy College
SURREMPALEM-533 437**

CERTIFICATE



This is to certify that the dissertation entitled "FORMULATION AND EVALUATION OF VALSARTAN FAST DISSOLVING TABLETS", 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 Aavala Deepika(203G1R0001), Adapa Vijay Kumar(203G1R0002), Adhikari Varsha Anupama(203G1R0003), Allimpalli Madhuri Devi(203G1R0004), Allu Kesavardhini(203G1R0005) under the supervision of Dr.T.Uday Kumar and it has been previously not submitted to any other University of Academic Institution for any higher degree.

Place: Surampalem

Date:


Internal Examiner


External Examiner

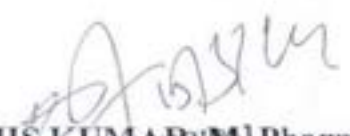



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CERTIFICATE



This is to certify that the dissertation entitled "FORMULATION AND EVALUATION OF VALSARTAN FAST DISSOLVING TABLETS", 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 Aavala Deepika(203G1R0001), Adapa Vijay Kumar(203G1R0002), Adhikari Varsha Anupama(203G1R0003), Allimpalli Madhuri Devi(203G1R0004), Allu Kesavardhini(203G1R0005) under the supervision of Dr.T.Uday Kumar and it has been previously not submitted to any other University of Academic Institution for any higher degree.


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

Principal and Professor,
Aditya Pharmacy College,
SURAMPALEM-533 437

Aditya Pharmacy College,

Surampalem




Aditya Pharmacy College,
SURAMPALEM-533 437

CERTIFICATE BY THE GUIDE



I hereby declare that this dissertation entitled "Formulation and Evaluation of Valsartan Fast Dissolving Tablets", is a original research work carried out by Aavala Deepika(203G1R0001), Adapa Vijay Kumar(203G1R0002), Adhikari Varsha Anupama (203G1R0003), Allimpalli Madhuri Devi(203G1R0004), Allu Kesavardhini(203G1R0005) under my supervision in partial fulfilment of the requirement for the degree of Bachelor of Pharmacy.

T. Udaya Kumar 15/3/24.
Dr. T. Uday Kumar, M. Pharm, Ph. D

Associate. Professor

Department of Pharmaceutical Technology

Aditya Pharmacy College



[Signature]
Aditya Pharmacy College
SI RAMPALEM-533 437

DECLARATION



The project embodied in this thesis entitled "Formulation and Evaluation of Valsartan Fast Dissolving Tablets", 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.

A. Deepika

AAVALA DEEPIKA (203G1R0001)

A vijay Kumar.

ADAPA VIJAY KUMAR (203G1R0002)

A.V. Anupama

ADHIKARI VARSHA ANUPAMA (203G1R0003)

A Madhuri Devi

ALLIMPALLI MADHURI DEVI (203G1R0004)

A. Kesavardhini

ALLU KESAVARDHINI (203G1R0005)



[Signature]
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CONCLUSION

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

In this present investigation, an attempt was made to develop the immediate release of Valsartan tablets to treat Hypertension.

Standard graph of Valsartan was prepared by using UV Spectrophotometer at 248 nm. It has good reproducibility and this method was used to find out concentration of Valsartan from formulation.

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

Amongst all formulations, formulation F8 prepared by drug with 2% crospovidone showed least disintegrating time, least wetting time, greater water absorption ratio and faster dissolution. Thus crospovidone can be successfully used in the formulation of fast disintegrating tablets so formulation F8 was found to be the best formulation. From the above studies, it was concluded that fast dissolving tablet of Valsartan that formulation containing crospovidone is most acceptable. Further research emphasis has to be done over in vivo study and in vitro – in vivo correlations.



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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, leaf constants, 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



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UNIT IV

10 Hours

Pharmacognosy in various systems of medicine:

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

Introduction to secondary metabolites:

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

UNIT V

08 Hours

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

Plant Products:

Fibers - Cotton, Jute, Hemp

Hallucinogens, Teratogens, Natural allergens

Primary metabolites:

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

Carbohydrates: Acacia, Agar, Tragacanth, Honey

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

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

Marine Drugs:

Novel medicinal agents from marine sources



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PHYTOCHEMICAL EVALUATION OF INVITRO ANTIOXIDANT ACTIVITY
OF *ACACIA NILOTICA* BARK EXTRACT

Dissertation submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA



In the partial fulfillment of the requirements for the Award of the degree of
BACHELOR OF PHARMACY

BY

ANIMIREDDY JYOTHI VARA PRASAD (203G1R0006)

ANISETTI MANIKANTA (203G1R0007)

ANNE SREENIVAS (203G1R0008)

BANDARU SAI DURGA (203G1R0009)

BODDU SAI SRI VANDANA (203G1R0010)

Under the guidance of

Mr. S.Nageswarao, M.Pharm

Associate Professor

Department of Pharmacology



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

Batch: 2020-2024



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(Affiliated to PCI, AICTE & JNTUK)

Surampalem - 533437 E.G.District, Andhra Pradesh

CERTIFICATE

This is to certify that the dissertation work entitled a study on "PHYTOCHEMICAL EVALUATION OF INVITRO ANTIOXIDANT ACTIVITY OF *ACACIA NILOTICA* BARK EXTRACT" submitted in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2020-2024. This is a bonafide work carried out by ANIMIREDDY JYOTHI VARA PRASAD (203GIR0006), ANISETTI MANIKANTA (203GIR0007), ANNE SREENIVAS (203GIR0008), BANDARU SAI DURGA (203GIR0009), BODDU SAI SRI VANDANA (203GIR0010) under the direct guidance and supervision of S. Nageswarao, M.Pharm Associate Professor, Department of Pharmacology, Aditya pharmacy college, Surampalem, Andhra Pradesh.

(Internal Examiner)

(External Examiner)

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CERTIFICATE

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Date:

Place:

SIGNATURE

Dr. D. Satish kumar, M.Pharm & Ph.D

Aditya Pharmacy College
Professor & Principal

Aditya Pharmacy College

Surampalem



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

S.Nageswarao, M.Pharm(Ph.D)

CERTIFICATE BY THE SUPERVISOR

This is to certify that the dissertation work entitled a study on "PHYTOCHEMICAL EVALUATION OF INVITRO ANTIOXIDANT ACTIVITY OF *ACACIA NILOTICA* BARK EXTRACT" submitted in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2020-2024. This is a bonafide work carried out by ANIMIREDDY JYOTHI VARA PRASAD (203GIR0006), ANISETTI MANIKANTA (203GIR0007), ANNE SREENIVAS (203GIR0008), BANDARU SAI DURGA (203GIR0009), BODDU SAI SRI VANDANA (203GIR0010) under the direct guidance and supervision.

S.Nageswarao 14/3/24.
SIGNATURE

S.Nageswarao, M.Pharm (Ph.D)

Associate Professor

Dept of Pharmacology

Aditya Pharmacy College

Surampalem

ADITYA PHARMACY COLLEGE



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SURAMPALAM-533 437

DECLARATION

We hereby declare that the dissertation work entitled "PHYTOCHEMICAL EVALUATION OF INVITRO ANTIOXIDANT ACTIVITY OF *ACACIA NILOTICA* BARK EXTRACT" in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2020-2024, 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 S. Nageswarao, M.Pharm(PhD), Associate Professor, Department of Pharmacology, Aditya pharmacy college, Surampalem, Andhra Pradesh. we also declare that the matter embodied in it is a genuine work.

ANIMIREDDY JYOTHI VARA PRASAD (203G1R0006)

Aj v prasad

ANISETTI MANIKANTA (203G1R0007)

A. Manikanta

ANNE SREENIVAS (203G1R0008)

Sreenivas A

BANDARU SAI DURGA (203G1R0009)

B. Sai Durga

BODDU SAI SRI VANDANA (203G1R0010)

B. S. S. vandana



6.CONCLUSION

The study was taken up to evaluate the Hydroalcoholic extract.

- Antioxidant activity of hydroalcoholic extract was investigated as free radical scavenging activity by adopting various invitro methods.
- The extract was investigated for its antioxidant activity by DPPH radical scavenging activity, hydrogen peroxide activity. The findings of the present study explored the antioxidant potential of the bark extract by 1,1-diphenyl-1, 2-picryl hydrazyl (DPPH) radical scavenging activity and hydrogen peroxide activity.
- The acute oral toxicity study conducted for the extract indicated that it was safe upto 2000mg/kg.
- Results of preliminary phytochemical tests indicated the presence of flavanoids, saponins, steroids, tannins and carbohydrates in hydroalcoholic extraction of *Acacia nilotica* invitro activities were conducted at 50 and 100mg/kg.
- From the results obtained it can be concluded that the alcoholic extract of *Acacia nilotica*. The phytoconstituents tannins, steroids, Flavanoids and saponins present in the extract may be responsible for the Antioxidant activity.



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BP601T. MEDICINAL CHEMISTRY – III (Theory)

45 Hours

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

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

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

Course Content:

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

UNIT – I

10 Hours

Antibiotics

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

β -Lactam antibiotics: Penicillin, Cephalosporins, β - Lactamase inhibitors, Monobactams

Aminoglycosides: Streptomycin, Neomycin, Kanamycin

Tetracyclines: Tetracycline, Oxytetracycline, Chlortetracycline, Minocycline, Doxycycline

UNIT – II

10 Hours

Antibiotics

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



Macrolide: Erythromycin Clarithromycin, Azithromycin.

Miscellaneous: Chloramphenicol*, Clindamycin.

Prodrugs: Basic concepts and application of prodrugs design.

Antimalarials: Etiology of malaria.

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

Biguanides and dihydro triazines: Cycloguanil pamoate, Proguanil.

Miscellaneous: Pyrimethamine, Artesunate, Artemether, Atovaquone.

UNIT – III

10 Hours

Anti-tubercular Agents

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

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

Urinary tract anti-infective agents

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

Miscellaneous: Furazolidine, Nitrofurantoin*, Methanamine.

Antiviral agents:

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

UNIT – IV

08 Hours

Antifungal agents:

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

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

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

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



“FORMULATION AND EVALUATION OF SALICYLIC ACID EXTENDED RELEASE TABLETS USING MUSA PARADISIACA POWDER”

*Dissertation submitted to the Jawaharlal Nehru Technological University,
Kakinada in partial fulfilment of the requirements for the degree of Bachelor of
Pharmacy (2024)*



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

BACHELOR OF PHARMACY

SUBMITTED BY

| | |
|-----------------------------|-------------------------|
| BOJJAVASANTHA | (203G1R0011) |
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| CHAKKA DIMPULESRI CHANDRIKA | (203G1R0013) |
| CHERUVUPALLI SREENU | (203G1R0015) CH. Sreenu |
| CHINTHA GAYATHRI MANISHA | (203G1R0016) |

UNDER THE GUIDANCE OF

Dr. CHS PHANI KUMAR M.Pharm, Ph.D

Professor

Department of Pharmaceutics



ADITYA PHARMACY COLLEGE

Surampalem – 533437

2023-2024



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CERTIFICATE

This is to certify that the dissertation entitled "FORMULATION AND EVALUATION OF SALICYLIC ACID EXTENDED RELEASE TABLETS USING *MUSA PARADISICA* POWDER" submitted to the JNT 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 BOJJA VASANTHA (203G1R0011) BORRA VIGNITA (203G1R0012) CHAKKA DIMPUL SRI CHANDRIKA (203G1R0013) CHERUVUPALLI SREENU (203G1R0015) CHINTHA GAYATHRI MANISHA (203G1R0016) under the supervision of **Dr. CH. S. PHANI KUMAR M.Pharm, Ph.D.** and it has not been previously submitted to any other university or academic institution for any higher degree.

Internal Examiner

External Examiner



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Place: Surampalem

Date:

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

Principal & Professor

Aditya Pharmacy College
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Principal
Aditya Pharmacy College
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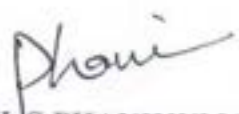
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CERTIFICATE

I hereby declare that this dissertation entitled "FORMULATION AND EVALUATION OF SALICYLICACID EXTENDED RELEASE TABLETS USING *MUSA PARADISCIA* POWDER" is a record of original research work carried out by BOJJA VASANTHA (203G1R0011) BORRA VIGNITA (203G1R0012) CHAKKA DIMPULU SRICHANDRIKA (203G1R0013) CHERUVUPALLI SREENU (203G1R0015) CHINTHA GAYATHRI MANISHA (203G1R0016) under my supervision in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy.


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DECLARATION

The project embodied in this thesis entitled "FORMULATION AND EVALUATION OF SALICYLIC ACID EXTENDED RELEASE TABLETS USING *MUSAPARADISIACA* POWDER" was Carried out in the department of Pharmaceutical Technology under the guidance of **Dr. CH. S. PHANI 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.

BOJJA VASANTHA

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Conclusions

- The λ_{max} for the salicylic acid in distilled water was found to be 540nm and scanning the absorbance using colorimetry the absorbances were taken in between 25-125 μ g/ml concentration range the results were observed as shown in **Table 7.1** and correlation coefficient (R^2) for concentration vs absorbances was observed to be 0.998 as shown in **Figure 7.3**. Hence, from all these observations it was concluded that the UV-Visible Spectrophotometer is suitable to analyze the salicylic acid present in various dosage forms. Because coefficient (R^2) was present between the standard value i.e. 0.997 to 0.999.
- Tablets were designed and formulated with the help of HPMC and banana powder as release rate retardants at three concentrations of each retardant and compared with tablet without rate release retardant. All the tablets were prepared with the direct compression method after confirming with good precompression parameters of all formulations.
- Highest concentration of each rate release retardant was showing better retardation of *in-vitro* drug release from the tablet dosage form. Comparatively HPMC was showing 1.2 - fold more *in-vitro* drug release retardation compared to banana powder.
- Order of drug release was dominated by zero-order release when compared among all formulations from F1 to F7 and all formulations were following diffusion mechanism of release from the tablet dosage form, especially non-Fickian diffusion Super case Transport-II mechanism from all the formulations from F1 to F7.
- With respect to all the studies, it was observed that F4 and F7 were showing better retardation *in-vitro* drug release. F4 was formulated with the help of banana powder and F7 was prepared with the help of HPMCK100 as rate release retardants, comparatively F7 was showing better retardation effect on *in-vitro* drug release from the tablet dosage form and 1.2-fold more retardation effect. But, F4 was also showing nearly equivalent retardation effect compared to F7 and is designed with the help of natural retardant, which is safe compared to the HPMC, a synthetic ingredient. As well banana powder was showing only 1.2-fold less retardation effect compared to HPMC and safe in its use as tablet excipient, hence F4 was considered as final formulation of this study.
- F4 formulation was designed with the help of 40% w/w per tablet weight of banana powder, it shows 86.65% *in-vitro* drug release at the end of 6th hours, its order of drug release from the tablet dosage form is zero-order and mechanism of release is non-Fickian Super case Transport II from the tablet dosage form.

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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



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**ANTI-BACTERIAL AND ANTI-OXIDANT ACTIVITY OF ETHANOLIC
FLOWERS EXTRACT OF WOODFORDIA FRUTICOSA**

*Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfilment of
the requirements for the Degree of Bachelor of Pharmacy (2024)*



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA.

SUBMITTED BY

CHITRADA SATISH (203G1R0017)
CHITTIBOMMA SIVA NANDHINI (203G1R0018)
CHOLLA VAMSI VIKRAM (203G1R0019)
DANDUPROLU SANDYA (203G1R0020)
DATLA CHANDANA SRI (203G1R0021)

Under the guidance of

K.SUDHA RANI, M.Pharm
Assistant Professor



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

(2020 – 2024)

25



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CERTIFICATE



This is to certify that the dissertation entitled "ANTI-BACTERIAL AND ANTI-OXIDANT ACTIVITY OF ETHANOLIC FLOWERS EXTRACT OF WOODFORDIA FRUTICOSA" 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 CHITRADA SATISH (203G1R0017), CHITTIBOMMA SIVA NANDHINI (203G1R0018), CHOLLA VAMSI VIKRAM (203G1R0019), DANDUPROLU SANDYA (203G1R0020), DATLA CHANDANA SRI (203G1R0021). They have done this research work under the supervision of **K.SUDHA RANI, M.Pharm** and it has not been previously submitted to any other university or academic institution for any higher degree.

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Principal,
Aditya Pharmacy College,
Surampalem-533437,
Andhra Pradesh.

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Aditya Pharmacy College,
Surampalem- 533437.

Place:

Date:

INTERNAL EXAMINER

EXTERNAL EXAMINER

27



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CERTIFICATE BY THE GUIDE



This is to certify that the dissertation entitled "ANTI-BACTERIAL AND ANTIOXIDANT ACTIVITY OF ETHANOLIC FLOWERS EXTRACT OF WOODFORDIA FRUTICOSA" 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 CHITRADA SATISH (203G1R0017), CHITTIBOMMA SIVA NANDHINI (203G1R0018), CHOLLA VAMSI VIKRAM (203G1R0019), DANDUPROLU SANDYA (203G1R0020), DATLA CHANDANA SRI (203G1R0021). They have done this research work under the supervision.

K.SUDHA RANI, M.Pharm
Assistant Professor



DECLARATION

The project embodied in this thesis entitled "ANTIBACTERIAL AND ANTIOXIDANT ACTIVITY OF ETHANOLIC FLOWERS EXTRACT OF WOODFORDIA FRUTICOSA" was carried out in the department of pharmaceutical analysis under the guidance of Ms.K.SUDHA RANI 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.

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Ch. Satish

CHITTIBOMMA SIVA NANDHINI (203G1R0018)

Ch. Siva Nandhini

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D. Sandya

DATLA CHANDANA SRI (203G1R0021)

D. Chandana Sri



Conclusion

From the study, it was concluded that ethanolic extract woodfordia fruticosa was rich in phytoconstituents. Total Phenolic Content, Total Flavonoid Content and Total Alkaloid Content were found. Based on observation it is revealed that the plant is rich in secondary metabolites and the other phytoconstituents that may have significant medicinal property to produce biological activity.

The ethanolic extract of woodfordia fruticosa flowers proved to be the best choice for screening antioxidant activity in order to explore medicinal profiles.

From the study, it was revealed that it has good Anti-bacterial activity, which was analysed from in-vitro agar cup plate method.



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

Herbal excipients:

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

Herbal formulations :

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

UNIT- IV

10 Hours

Evaluation of Drugs WHO & ICH guidelines for the assessment of herbal drugs
Stability testing of herbal drugs.

Patenting and Regulatory requirements of natural products:

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

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

UNIT-V

07 Hours

General Introduction to Herbal Industry

Herbal drugs industry: Present scope and future prospects.

A brief account of plant based industries and institutions involved in work on medicinal and aromatic plants in India.

Schedule T – Good Manufacturing Practice of Indian systems of medicine

Components of GMP (Schedule – T) and its objectives

Infrastructural requirements, working space, storage area, machinery and equipments, standard operating procedures, health and hygiene, documentation and records.




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**"FORMULATION, EVALUATION, AND COMPARISON OF APIXABAN
IMMEDIATE RELEASE TABLETS: A COMPREHENSIVE STUDY WITH
MARKETED PRODUCTS FOR SIMILARITY FACTOR ANALYSIS"**

*Dissertation submitted to the Jawaharlal Nehru Technological University,
Kakinada in partial fulfillments of the requirements for the degree of Bachelor
of Pharmacy (2024)*



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

Submitted BY
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INAKOTI SONIYA SANTI (203G1R0031)

Under the Guidance of
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Assistant professor



Aditya Pharmacy College

Surampalem - 533437
2020-2024



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CERTIFICATE



This is to certify that the dissertation entitled "Formulation, Evaluation, And Comparison Of Apixaban Immediate Release Tablets: A Comprehensive Study With Marketed Products For Similarity Factor Analysis" 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 GUBBALA RUTH CHANDRIKA (203GIR0027), GUNNAM SARANYA (203GIR0028), GURUBILLI SIVA KUMAR (203GIR0029), IMMIDISETTI TEJASWINI (203GIR0030), INAKOTI SONIYA SANTI (203GIR0031).

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.

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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)

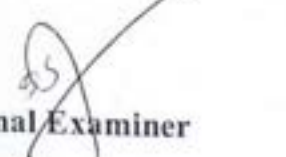
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DECLARATION

The project embodied in this thesis entitled "Formulation, Evaluation, And Comparison Of Apixaban Immediate Release Tablets: A Comprehensive Study With Marketed Products For Similarity Factor Analysis" 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.

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9. SUMMARY AND CONCLUSION

Studies have been carried out on Apixaban drug with an objective to formulate, evaluate, and compare Apixaban immediate release tablets. To Formulate & develop immediate release tablets of Apixaban 5 mg- aimed at optimized formulation development and bioequivalent immediate release formulation compared to marketed formulation with a brand name APIXAWYN 2.5 mg.

Preformulation studies like solubility, melting point, description, Hygroscopicity, flow properties, FTIR and loss on drying were performed.

After compatibility studies the ingredients were finalized and by using Direct compression Method compression of uncoated tablets were done by using CADMACH 16 rotary punch machine. Later by using dip coating technique coating was completed. After coating the tablets were found to be smooth surface. The characterization studies were preformed for both uncoated and coated tablets. Formulation trials from F1 to F4 were carried out for optimizing the process and formula.

The following evaluation tests were carried out on post compression which includes Weight variation, Hardness, Friability, Disintegration and Dissolution parameters. Formulation trial F1-F3 had shown good post compression characteristics but less dissolution when compared with marketed product & similarity of drug release is also less. In formulation optimization we had taken the change in concentration of Sodium Starch Glycolate to meet the dissolution profile with marketed formulation.

Formulation trials F1-F3 does not meet the criteria for dissolution when compared with the marketed formulation by using similarity factor (f_2) analysis. Among all the formulations F4 had shown good dissolution results with APIXAWYN 2.5 mg and the similarity factor (f_2) has shown value 71.4.

The formulation F4 had shown good results in post compression parameters like Weight variation, Hardness, Friability, Disintegration Drug content and Dissolution parameters. The release profile of the formulation F4 had shown 96.30% and an assay value as 99.35 %. The release profile of the APIXAWYN 2.5 mg had shown 94.30% and an assay value as 99 %.

From the study, it is concluded that the *In-Vitro* release of Apixaban tablets prepared using formulation F4 demonstrated superior results compared to the marketed formulation APIXAWYN 2.5 mg. Through meticulous formulation optimization, including adjustments in ingredient concentration, formulation F4 achieved enhanced dissolution profiles and overall post-compression characteristics. These findings suggest that formulation F4 has the potential for improved therapeutic efficacy and bioequivalence compared to the marketed product. Further studies, including *In-Vitro* pharmacokinetic assessments, are warranted to validate these promising *In-Vitro* results and ascertain the clinical relevance of formulation F4 in enhancing patient outcomes and treatment effectiveness for Apixaban therapy.



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I Preparation of drugs and intermediates

- 1 Sulphanilamide
- 2 7-Hydroxy, 4-methyl coumarin
- 3 Chlorobutanol
- 4 Triphenyl imidazole
- 5 Tolbutamide
- 6 Hexamine

II Assay of drugs

- 1 Isonicotinic acid hydrazide
- 2 Chloroquine
- 3 Metronidazole
- 4 Dapsone
- 5 Chlorpheniramine maleate
- 6 Benzyl penicillin

III Preparation of medicinally important compounds or intermediates by Microwave irradiation technique

IV Drawing structures and reactions using chem draw®

V Determination of physicochemical properties such as logP, clogP, MR, Molecular weight, Hydrogen bond donors and acceptors for class of drugs course content using drug design software Drug likeliness screening (Lipinskies RO5)

Recommended Books (Latest Editions)

1. Wilson and Giswold's Organic medicinal and Pharmaceutical Chemistry.
2. Foye's Principles of Medicinal Chemistry.
3. Burger's Medicinal Chemistry, Vol I to IV.
4. Introduction to principles of drug design- Smith and Williams.
5. Remington's Pharmaceutical Sciences.
6. Martindale's extra pharmacopoeia.



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7. Organic Chemistry by L.L. Finar, Vol. II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. 1-5.
9. Indian Pharmacopoeia.
10. Text book of practical organic chemistry- A.L Vogel.




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**ASSESSMENT OF PREBIOTIC ACTIVITY AND PHYTOCHEMICAL SCREENING OF
TAMARIND SEED EXTRACT. DECODING THE TAMARIND SEED'S PREBIOTIC ACTIVITY IN
CHOCOLATES**

Dissertation submitted to the Jawaharlal Nehru Technological University in partial fulfillment of
the requirements for the degree of bachelor of pharmacy

(2020)



Jawaharlal Nehru Technological University, Kakinada A.P.,

BY

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Kaki Meghana(203G1R0033)

Kaladi Deepika(203G1R0034)

Kaladi Satya Sri (203G1R0035)

Kandula DVVL Surendra (203G1R0036)



Under the Guidance of

MATTA SARIKA M.Pharm.,(Ph.D).

Assistant Professor

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This is to certify that the dissertation entitled "Assessment of prebiotic activity and phytochemical screening of tamarind seed extract. Decoding the tamarind seed's prebiotic activity in chocolates" 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 Kedarisetty Meghna Kavya(203G1R0032) Kaki Meghna (203G1R0033) Kaladi Deepika (203G1R0034) Kaladi Satya Sri(203G1R0035) Kandula D V V L Surendra (203G1R0036) under the supervision Matta Sarika M.Pharm,(Ph.D). and it has been previously not submitted to any other university or academic institution for any higher degree.

Internal examiner

External examiner

50



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Place: Surampalem

Date:

[Handwritten Signature]
(Principal)

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

Principal & Professor
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51



[Handwritten Signature]
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CERTIFICATE BY GUIDE



I hereby declare that this dissertation entitled "Assessment of prebiotic activity and phytochemical screening of tamarind seed extract. Decoding the tamarind seed's prebiotic activity in chocolate." is an original research work carried out by **Kedarisetty Meghna Kavya (203G1R0032) Kaki Meghna (203G1R0033) Kaladi Deepika (203G1R0034) Kaladi Satya Sri (203G1R0035) Kandula DVVL Surendra (203G1R0036)** in my supervision in the partial fulfillment of the requirement for the degree of Bachelor of Pharmacy.

M. Sarika

Matta Sarika M.Pharm.,(Ph.D).

Assistant Professor

Dept. of Pharmaceutical Analysis

52



(Signature)
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Aditya Pharmacy College
SURAMPALAM-533 437

DECLARATION



The project embodied in this thesis entitled "Assessment of prebiotic activity and phytochemical screening of tamarind seed extract. Decoding the tamarind seed's prebiotic activity in chocolate" was carried out in the department of pharmaceuticals under the guidance of **Matta Sarika M.Pharm.,(Ph.D).** Assistant Professor, dept. of pharmaceutical Analysis, Aditya Pharmacy College, Surampalem. This work is original and has not been submitted in part or on full for any degree of this or any other university. The information furnished in this dissertation is genuine to the best of my knowledge and belief.

Kedarisetty Meghna Kavya (203G1R0032) *K. Meghna Kavya*

Kaki Meghana (203G1R0033)

Kaladi Deepika (203G1R0034) *K. Deepika*

Kaladi Satya Sri (203G1R0035) *K. Satyashri*

Kandula D V V L Surendra (203G1R0036)



SUMMARY & CONCLUSION

The various qualitative tests indicate that the seeds of *Tamarindus indica* contain Steroids, Sterols, Tannins, Phenols, Triterpenoids, Proteins, and Fixed Oils present in aqueous extract and ethanolic extract. Different extract of *Tamarindus indica* plant were subjected to phytochemical screening for evaluation of chemical constituents. Phytochemical screening revealed the presence of carbohydrates, proteins, saponins, tannins, triterpenoids in ethanol, pet ether and water extract of plant.

Prebiotics are a group of nutrients that are degraded by gut microbiota. Their relationship with human overall health has been an area of increasing interest in recent years. They can feed the intestinal microbiota, and their degradation products are short-chain fatty acids that are released into blood circulation, consequently, affecting not only the gastrointestinal tracts but also other distant organs. Fructo-oligosaccharides and galacto-oligosaccharides are the two important groups of prebiotics with beneficial effects on human health. Since low quantities of fructo- oligosaccharides and galacto-oligosaccharides naturally exist in foods, scientists are attempting to produce prebiotics on an industrial scale. Considering the health benefits of prebiotics and their safety, as well as their production and storage advantages compared to probiotics, they seem to be fascinating candidates for promoting human health condition as a replacement or in association with probiotics.

In children there would be low resistant and low immunity for digestion and they will not like to take the medicine. Has they like to consume chocolates these prebiotics are given in the form of chocolate and the prebiotic chocolate which is prepared is sugar free and very safe to consume and helps to increase digestion and prevent diarrhea associated with antibiotics.

In recent years, awareness of people between health and diet has increased, forcing people to consume foods with functional properties. Therefore, increasing functionality of the product without damaging quality characteristics is very crucial to meet people requirement. When considering the fact that chocolate is widely consumed by people of all ages throughout the world.

Chocolate is consumed by people of all ages in all segments of society throughout the world. The popularity of this food is mainly associated with its potential to arouse sensory

pleasure and positive emotions. Increasing awareness of the link between healthy eating and well-being is reflected in the current views of the general consumers. Consumers perceive functional foods as a member of the specific food category to which they belong. Also, in developed economies, a key trend at the moment is confectionery products that deliver functional benefits for health and well-being, such as functional chocolate.

For the preparation of Prebiotic chocolate we use tamrind seed extract which contains Prebiotic properties. These are the seeds which is extracted from the plant *Tamrindus Indica* which helps in promoting digestion and manage diabetes they improve digestion, absorption of nutrients and overall gut functions while helping ward off illnesses. It could be concluded that it is promising bioactive compound carrier.



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 poisonings and
3. appreciate correlation of pharmacology with related medical sciences.

Course Content:

UNIT-I

10hours

1. Pharmacology of drugs acting on Respiratory system

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

2. Pharmacology of drugs acting on the Gastrointestinal Tract

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

UNIT-II

10hours

3. Chemotherapy

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

UNIT-III

10hours

3. Chemotherapy

- a. Antitubercular agents
- b. Antileprotic agents



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- c. Antifungal agents
- d. Antiviral drugs
- e. Anthelmintics
- f. Antimalarial drugs
- g. Antiamoebic agents

UNIT-IV

08hours

3. Chemotherapy

- l. Urinary tract infections and sexually transmitted diseases.
- m. Chemotherapy of malignancy.

4. Immunopharmacology

- a. Immunostimulants
 - b. Immunosuppressant
- Protein drugs, monoclonal antibodies, target drugs to antigen, biosimilars

UNIT-V

07hours

5. Principles of toxicology

- a. Definition and basic knowledge of acute, subacute and chronic toxicity.
- b. Definition and basic knowledge of genotoxicity, carcinogenicity, teratogenicity and mutagenicity
- c. General principles of treatment of poisoning
- d. Clinical symptoms and management of barbiturates, morphine, organophosphorus compound and lead, mercury and arsenic poisoning.

6. Chronopharmacology

- a. Definition of rhythm and cycles.
- b. Biological clock and their significance leading to chronotherapy.



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COMPARATIVE STUDY OF SUPERDISINTEGRANTS USING

ANTI-AMOEBIK DRUG AS A MODEL

Dissertation submitted to the Jawaharlal Nehru Technological University in partial
fulfilment of the requirements for the degree of bachelor of pharmacy



Jawaharlal Nehru Technological University, Kakinada A.P.,

BY

Kandula Praveen (203G1R0037)

Karri Pavani Sri Sai Anvitha (203G1R0038)

Kedariseti Naga Sai Satya Kumari (203G1R0039)

Ketireddi Naga Venkata Sri Lakshmi Mohiti (203G1R0040)

Killi Neelima (203G1R0041)



Under the Guidance of

GOWRIPATTAPU SRIDEVI M.PHARM.,(Ph.D).

Associate Professor

Department of Pharmaceutics

Aditya Pharmacy College

Surampalem- 533437

2020-2024



58

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SURAMPalem-533437

CERTIFICATE



This is to certify that the dissertation entitled "Comparative study of super disintegrants using anti amoebic drug as a model " 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 Kandula Praveen (203G1R0037) Karri Pavani Sri Sai Anvitha (203G1R0038) Kedariseti Naga Sai SatyaKumari (203G1R0039) Ketireddi Naga Venkata Sri Lakshmi Mohiti (203G1R0040) Killi Neelima (203G1R0041) under the supervision Gowripattapu Sridevi M.Pharm.,(Ph.D). and it has been previously not submitted to any other university or academic institution for any higher degree.

Place: Surampalem

Date:

Internal examiner

External examiner



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CERTIFICATE



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(Principal)

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

Principal & Professor



60



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SIRAMPALAM

DECLARATION



The project embodied in this thesis entitled "Comparative study of superdisintegrants using anti amoebic drug as a model " was carried out in the department of pharmaceutics under the guidance of **Gowripattapu Sridevi M.Pharm.,(Ph.D).** Associate Professor, dept. of Pharmaceutics, Aditya Pharmacy College, Surampalem. This work is original and has not been submitted in part or on full for any degree of this or any other university. The information furnished in this dissertation is genuine to the best of my knowledge and belief.

Kandula Praveen (203G1R0037) *K. Praveen.*

Karri Pavani Sri Sai Anvitha (203G1R0038) *K.P.S.S. Anvitha*

Kedariseti Naga Sai Satya Kumari (203G1R0039) *K.N.S. satyakumari*

Ketireddi Naga Venkata Sri Lakshmi Mohiti (203G1R0040) *K. Mohiti*

Killi Neelima (203G1R0041) *K. Neelima*



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CERTIFICATE BY THE GUIDE



I hereby declare that this dissertation entitled "Comparative study of super disintegrants using anti amoebic drug as a model" is an original research work carried out by
Kandula Praveen (203G1R0037) Karri Pavani Sri Sai Anvitha (203G1R0038) Kedariseti
Naga Sai Satya Kumari (203G1R0039) Ketireddi Naga Venkata Sri Lakshmi Mohiti
(203G1R0040) Killi Neelima (203G1R0041) in my supervision in the partial fulfilment of the
requirement for the degree of Bachelor of Pharmacy.

G. Sridevi

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

Associate Professor

Dept. of Pharmaceutics



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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 (sweet potato peel powder) & synthetic superdisintegrant (Croscarmellose sodium).
- Disintegrant action of sweet potato peel powder (natural) is faster than Croscarmellose sodium (synthetic).
- Fast disintegrating tablets of Metronidazole were prepared and evaluated. In the present study 4 formulations were prepared. Two formulations with natural superdisintegrant and other two formulations with synthetic superdisintegrant.
- Standard curve of Metronidazole was determined by plotting absorbance V/s concentration at 277 nm and it follows the Beer's law. The R^2 is 0.999 respectively.
- The granules for matrix tablets were characterized with respect to angle of repose, bulk density, tapped density, Carr's index, and Hausners ratio. Angle of repose was less than 31° and Carr's index values were less than 14 for the formulations of all the batches indicating good 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.
- Metronidazole fast dissolving tablets can be formulated using wet granulation technique.
- By the results we confirm that order of drug release follows first order kinetics because R^2 value is higher for the first order than zero order.



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SUMMARY AND CONCLUSION

- The *in vitro* studies have shown that this is a potential drug delivery system for metronidazole with considerably good stability and release profile.



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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.



7. Organic Chemistry by I.L. Finar, Vol. II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. 1-5.
9. Indian Pharmacopoeia.
10. Text book of practical organic chemistry- A.I.Vogel.



A handwritten signature in green ink, consisting of stylized initials and a long horizontal stroke.

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SURAMPALEM-533 437

MICROWAVE ASSISTED SYNTHESIS, DOCKING STUDIES
AND POTENTIAL APPLICATIONS OF NOVEL
BENZIMIDAZOLE DERIVATIVES

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



BACHELOR OF PHARMACY (2020-2024)

Submitted by

DEYYALA LAXMAN (203G1R0022)

GAMIDI SRAVYA (203G1R0023)

GEESALA AMUKTHA (203G1R0024)

GRANDHI LAKSHMI VAISHNAVI (203G1R0025)

GUBBALA KEERTHI (203G1R0026)

Under the guidance of

TANINKI SRI SOWKHYA M. Pharm

Department of Pharmaceutical chemistry

Assistant Professor

ADITYA PHARMACY COLLEGE

SURAMPalem- 533437



BATCH NO. 2020-2024

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NAAC A Grade Accredited and ISO 9001:2015 Certified Institute.
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P. Pin: 533437.

CERTIFICATE

This is to certify that the dissertation work entitled "**MICROWAVE ASSISTED SYNTHESIS, DOCKING STUDIES AND POTENTIAL APPLICATIONS OF NOVEL BENZIMIDAZOLE 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 DEYYALA LAXMAN (203G1R0022), GAMIDI SRAVYA (203G1R0023), GEESALA AMUKTHA (203G1R0024), GRANDHI LAKSHMI VAISHNAVI (203G1R0025), GUBBALA KEERTHI (203G1R0026) under the direct guidance and supervision of Ms. TANINKI SRI SOWKHYA M. Pharm and it has not been submitted to any other university or academic institution for any higher degree.

Place: Surampalem

Date:

(Principal) NCIPAL

Dr. D. Sathish Kumar
Aditya Pharmacy College
SURAMPALAM-533 437

M. pharm, ph.D

(INTERNAL EXAMINER)

(EXTERNAL EXAMINER)

34



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CERTIFICATE




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(PRINCIPAL) PRINCIPAL
Aditya Pharmacy College
Dr. D. Sathish Kumar
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M. pharm, ph. D



CERTIFICATE




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Ms. TANINKI SRI SOWKHYA, (M. Pharm)



DECLARATION

The project embodied in this thesis "MICROWAVE ASSISTED SYNTHESIS, DOCKING STUDIES AND POTENTIAL APPLICATIONS OF NOVEL BENZIMIDAZOLE DERIVATIVES" was carried out in the department of Pharmaceutical Organic Chemistry under the guidance of Ms. TANINKI SRI SOWKHYA 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.

D. Laxman
DEYYALA LAXMAN
(203G1R0022)

G. Sravya
GAMIDI SRAVYA
(203G1R0023)

G. Amuktha
GEESALA AMUKTHA
(203G1R0024)

G. L. Vyshnavi
GRANDHI LAKSHMIVAISHNAVI
(203G1R0025)

G. Keerthi
GUBBALA KEERTHI
(203G1R0026)



6. SUMMARY AND CONCLUSIONS

Benzimidazole derivatives are reported for the antimicrobial, anticancer, anthelmintic, antiviral activities etc. As per plan and objectives we carried extensive literature survey, based on the literature, designed a scheme for the synthesis of various Benzimidazole derivatives.

- Benzimidazole were synthesized by the 2.7g of ortho phenylene diamine, 4.8 ml of acetic acid are dissolved and then kept in microwave for few minutes and further process is followed by the pyridine, chloro acetyl chloride respectively.
 - By performing the microwave assisted synthesis process the novel derivatives can be produced.
 - Benzimidazole by combining with the chloro acetyl chloride produced the novel derivatives like 1a.
 - The synthesized compound 1a screened for the physico-chemical parameters.
 - The FTIR spectra of the title compounds displayed characteristic absorption bands observed at 1342-1266 cm^{-1} due to imidazole, bands at 1855-1785 cm^{-1} due to acid halide, bands at 1600-1500 cm^{-1} due to benzene was founded.
 - Bioactivity scores by using online tools BIOVIA & DWIPERL.
 - The compound (1a) displayed conventional hydrogen bond with pi-pi -420, pi-pi T- shape 485 stacked, bump of the bond-178, positive-positive charges value 4.81, pi-alkyl 4.81.
- Benzimidazole derivatives were synthesized 1a in a good yield. Docking studies revealed that compounds showed good binding affinity towards NRF2 synthase protein (4XMB).
- The 1a derivatives shows good antimicrobial Activity.



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



Unit III

10 Hours

Types of immunity- humoral immunity, cellular immunity

- a) Structure of Immunoglobulins
- b) Structure and Function of MHC
- c) Hypersensitivity reactions, Immune stimulation and Immune suppressions.
- d) General method of the preparation of bacterial vaccines, toxoids, viral vaccine, antitoxins, serum-immune blood derivatives and other products relative to immunity.
- e) Storage conditions and stability of official vaccines
- f) Hybridoma technology- Production, Purification and Applications
- g) Blood products and Plasma Substitutes.

Unit IV

08Hours

- a) Immuno blotting techniques- ELISA, Western blotting, Southern blotting.
- b) Genetic organization of Eukaryotes and Prokaryotes
- c) Microbial genetics including transformation, transduction, conjugation, plasmids and transposons.
- d) Introduction to Microbial biotransformation and applications.
- e) Mutation: Types of mutation/mutants.

Unit V

07 Hours

- a) Fermentation methods and general requirements, study of media, equipments, sterilization methods, aeration process, stirring.
- b) Large scale production fermenter design and its various controls.
- c) Study of the production of - penicillins, citric acid, Vitamin B12, Glutamic acid, Griseofulvin,
- d) Blood Products: Collection, Processing and Storage of whole human blood, dried human plasma, plasma Substitutes.

Recommended Books (Latest edition):

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



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Society of Chemistry.

5. Zaborsky: Immobilized Enzymes, CRC Press, Degraland, Ohio.
6. S.B. Primrose: Molecular Biotechnology (Second Edition) Blackwell Scientific Publication.
7. Stanbury F., P., Whitakar A., and Hall J., S., Principles of fermentation technology, 2nd edition, Aditya books Ltd., New Delhi




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SYNTHESIS AND ANTIBACTERIAL ACTIVITY OF SOME
NOVEL 4-(1H-BENZO[D][1,2,3]TRIAZOL-1-YL)-6-PHENYL-5,6-
DIHYDROPYRIMIDINE-2(1H)-THIONE

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



BACHELOR OF PHARMACY

(2020-2024)

Submitted by

KONANAM SIVAGANGA (203G1R0042)

MANE BOOMICA (203G1R0043)

MATCHA SAILAJA (203G1R0044)

MD ABDUL RAHIM (203G1R0045)

Under the supervision of

Mr SHAIK RAFI, M Pharm

Assistant Professor,

Department of Pharmaceutical Chemistry



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

Recognized by UGC Under section 2(f),

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SURAMPAL

CERTIFICATE



This is to certify that the dissertation work entitled "SYNTHESIS AND ANTIBACTERIAL ACTIVITY OF SOME NOVEL 4-(1H-BENZO[D][1,2,3]TRIAZOL-1-YL)-6-PHENYL-5,6-DIHYDROPYRIMIDINE-2(1H)-THIONE" 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 KOSANAM SIVAGANGA(203G1R0042), MANE BOOMICA(203G1R0043), MATCHA SAILAJA(203G1R0044), MD ABDUL RAHIM(203G1R0045). They have done this research work under the supervision of Mr SHAIK RAFI, M.Pharm and it has not been submitted to any other university or academic institution for any higher degree.

Place: Surampalem

Date:

Signature

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

Principal & Professor
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SURAMPALAM-533 437

CERTIFICATE



This is to certify that the dissertation work entitled "SYNTHESIS AND ANTIBACTERIAL ACTIVITY OF SOME NOVEL 4-(1H-BENZO[D][1,2,3]TRIAZOL-1-YL)-6-PHENYL-5,6-DIHYDROPYRIMIDINE-2(1H)-THIONE" 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 KOSANAM SIVAGANGA(203G1R0042), MANE BOOMICA(203G1R0043), MATCHA SAILAJA(203G1R0044), MD ABDUL RAHIM(203G1R0045). They have done this research work under the supervision of Mr SHAIK RAFI, M.Pharm and it has not been submitted to any other university or academic institution for any higher degree.

Place: Surampalem

Date:

Internal examiner

External examiner

ADITYA PHARMACY COLLEGE

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Aditya Pharmacy College
SURAMPALEM-533 437

CERTIFICATE



This is to certify that the dissertation work entitled "SYNTHESIS AND ANTIBACTERIAL ACTIVITY OF SOME NOVEL 4-(1H-BENZO[D][1,2,3]TRIAZOL-1-YL)-6-PHENYL-5,6-DIHYDROPYRIMIDINE-2(1H)-THIONE" 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 KOSANAM SIVAGANGA(203G1R0042), MANE BOOMICA(203G1R0043), MATCHA SAILAJA(203G1R0044), MD ABDUL RAHIM(203G1R0045). This bonafied project work was carried out under the direct guidance and supervision of,

Mr SHAIK RAFI, (M.Pharm)

Assistant Professor,

Aditya Pharmacy College,

Surampalem

ADITYA PHARMACY COLLEGE



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SURAMPALAM-527 437

DECLARATION

The project embodied in this thesis work entitled "SYNTHESIS AND ANTIBACTERIAL ACTIVITY OF SOME NOVEL 4-(1H-BENZO[D][1,2,3]TRIAZOL-1-YL)-6-PHENYL-5,6-DIHYDROPYRIMIDINE-3(1H)-THIONE" 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.

K. Sivaganga
KOSANAM SIVAGANGA (203G1R0042)

M. Boomica
MANE BOOMICA (203G1R0043)

M. Sailaja
MATCHA SAILAJA (203G1R0044)

MD. Abdul Rahim
MD ABDUL RAHIM (203G1R0045)



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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.
- Prepared chalcones were cyclised using thiourea.
- All the compounds synthesized were characterized by physical (R_f values, melting point, molecular weight, molecular formula).
- The title compounds were screened for antibacterial activity. The tested compounds do not have antibacterial activity at 250 μ ml concentration.



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

H₁-antagonists: Diphenhydramine hydrochloride*, Dimenhydrinate, Doxylamines succinate, Clemastine fumarate, Diphenylpyraline hydrochloride, Tripelemine 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

H₂-antagonists: Cimetidine*, Famotidine, Ranitidin.

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

Anti-neoplastic agents:

Alkylating agents: Meclorethamine*, Cyclophosphamide, Melphalan,



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Chlorambucil, Busulfan, Thiotepa

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

Antibiotics: Dactinomycin, Daunorubicin, Doxorubicin, Bleomycin

Plant products: Etoposide, Vinblastin sulphate, Vincristin sulphate

Miscellaneous: Cisplatin, Mitotane.

UNIT – II

10 Hours

Anti-anginal:

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

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

Diuretics:

Carbonic anhydrase inhibitors: Acetazolamide*, Methazolamide, Dichlorphenamide.

Thiazides: Chlorthiazide*, Hydrochlorothiazide, Hydroflumethiazide, Cyclothiazide,

Loop diuretics: Furosemide*, Bumetanide, Ethacrynic acid.

Potassium sparing Diuretics: Spironolactone, Triamterene, Amiloride.

Osmotic Diuretics: Mannitol

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

UNIT- III

10 Hours

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

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

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

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



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PHYTOCHEMICAL EVALUATION OF INVITRO ANTICOAGULANT ACTIVITY
OF *GYMNEMA SYLVESTRE*

Dissertation submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA



In the partial fulfillment of the requirements for the Award of the degree of
BACHELOR OF PHARMACY

BY

MOHAMMED YUSUF (203G1R0046)

MORTHABESODHYAN SATYAM (203G1R0047)

NALLAMELLI ANTHA (203G1R0048)

NAMBALLA BHARGAVI (203G1R0049)

Under the guidance of

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

Associate Professor

Department of Pharmacology



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

Batch: 2020-2024



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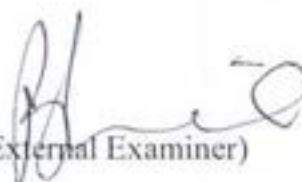
(Affiliated to PCI, AICTE & JNTUK)

Surampalem - 533437 E.G.District, Andhra Pradesh

CERTIFICATE

This is to certify that the dissertation work entitled a study on "PHYTOCHEMICAL EVALUATION OF INVITRO ANTICOAGULANT ACTIVITY OF *GYMNEMA SYLVESTRE*" submitted in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2020-2024. This is a bonafide work carried out by MOHAMMED YUSUF (203GIR0046), MORTHABESODHYAN SATYAM (203GIR0047), NALLAMELLI ANITHA (203GIR0048), NAMBALLA BHARGAVI (203GIR0049), under the direct guidance and supervision of S.Nageswarao, M.Pharm(Ph.D) Associate Professor, Department of Pharmacology, Aditya pharmacy college, Surampalem, Andhra Pradesh.


(Internal Examiner)


(External Examiner)




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(Affiliated to PCI, AICTE & JNTUK)

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

CERTIFICATE

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Date:

Place:

SIGNATURE

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

Professor & Principal
Aditya Pharmacy College
Aditya Pharmacy College
SURAMPALAM-533 437
Surampalem



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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 "PHYTOCHEMICAL EVALUATION OF INVITRO ANTICOAGULANT ACTIVITY OF *GYMNEA SYLVESTRE*" submitted in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2020-2024. This is a bonafide work carried out by MOHAMMED YUSUF (203GIR0046), MORTHABESODHYAN SATYAM (203GIR0047), NALLAMELLI ANITHA (203GIR0048), NAMBALLA BHARGAVI (203GIR0049), under the direct guidance and supervision.

S. Nageswara Rao
SIGNATURE

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

Associate Professor

Dept of Pharmacology

Aditya Pharmacy College

Surampalem



[Signature]
PRINCIPAL
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SURAMPALAM-533437

DECLARATION

We hereby declare that the dissertation work entitled "PHYTOCHEMICAL EVALUATION OF INVITRO ANTICOAGULANT ACTIVITY OF *GYMNEMA SYLVESTRE*" in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2020-2024, 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 S. Nageswarao, M.Pharm(PhD), Associate Professor, Department of Pharmacology, Aditya pharmacy college, Surampalem, Andhra Pradesh. we also declare that the matter embodied in it is a genuine work.

MOHAMMED YUSUF (203G1R0046) *md. Yusuf*

MORTHABESODHYAN SATYAM (203G1R0047) *M. B. Satyam*

NALLAMELLI ANITHA (203G1R0048) *N. Anitha*

NAMBALLA BHARGAVI (203G1R0049) *N. Bhargavi*



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Conclusion

In this study we evaluated phytochemical screening and invitro anticoagulant activity of ethanolic extract of *Gymnema sylvestre* leaves. The ethanolic extract of the plant showed significant activity when compared to other extracts like aqueous and chloroform 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.



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 issues related 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 to health 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



FORMULATION AND EVALUATION OF POLY HERBAL SOAP

Dissertation submitted to the Jawaharlal Nehru technology University, Kakinada in partial fulfilment of the requirements of the degree of Bachelor of pharmacy (2024)



JAWAHARLAL NEHRU TECHNOLOGY UNIVERSITY, KAKINADA

BACHELOR OF PHARMACY

SUBMITTED BY

Obilisetti Gowri Aparna Rajeswari (203G1R0050)

Palaparthi Veera Gani Lakshmi (203G1R0051)

Pottika Hemavathi (203G1R0052)

Ranganadham Mounika (203G1R0053)

UNDER THE GUIDANCE OF

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

Associate Professor

Department of pharmacology



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2020-2024

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Approved by AICTE, PCI and affiliated to JNT University, Kakinada Aditya Nagar, ADB Road, Surampalem. F.G. Dist., A.P. pin: 533437

CERTIFICATE

This is certified that the dissertation entitled **"FORMULATION AND EVALUATION OF POLYHERBAL SOAP"** was submitted to the Jawaharlal Nehru technology 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 by Obilisetti Gowri Aparna Rajeswari(203G1R0050), Palaparthi Veera Gani Lakshmi(203G1R0051), Pottika HemaVathi(203G1R0052), Ranganadham Mounika(203G1R0053). They have done this research work under the supervision of Mrs. G. Prasanthi and it has not been previously submitted to any other university or academic institution for any higher degree.

Internal Examiner

External Examiner

84



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

CERTIFICATE

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Place: Surampalem

Date:

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

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

CERTIFICATE

I hereby declare that this dissertation entitled is **"FORMULATION AND EVALUATION OF POLYHERBAL SOAP"** a record of original research work carried out by Obiliseti Gowri Aparna Rajeswari (203G1R0050), Palaparthi Veera Gani Lakshmi (203G1R0051), Pottika Hema Vathi(203G1R0052), Ranganadham Mounika (203G1R0053) under my supervision in partial fulfilment of the requirement for the degree of Bachelor of Pharmacy.

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

Associate Professor,

Department of pharmacology

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SURAMPALEM-533 437

DECLARATION

The project embodied in this thesis entitled "**FORMULATION AND EVALUATION OF POLYHERBAL SOAP**" was carried out in the department of Pharmacology under the guidance of Mrs. G. PRASANTHI., 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.

Obilisetti Gowri Aparna Rajeswari(203G1R0050) *O. G. A. Rajeswari*

Palaparathi Veera Gani Lakshmi(203G1R0051) *P. V. Gani Lakshmi*

Pottika Hema Vathi(203G1R0052) *P. Hemavathi*

Ranganadham Mounika(203G1R0053) *R. Mounika*

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[Signature]
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8. CONCLUSION

The herbal plants of Butterfly pea, Tulasi and Ashwaghandha constituents' extraction was studied. The prepared formulation when tested for different test gave good result. It does not give any irritancy to skin it was determined by using this soap by few volunteers hence it is proved that soap does not give any irritancy to skin. Furthermore, the prepared soap was standardized by evaluating various physico-chemical properties such as pH, appearance, odour in which exhibit satisfactory effect.

Herbal therapy has the ability to heal a wide number of skin ailments. Around 80% of population in India depends on traditional health medicine and use different plant-based products for curing problems associated with skin. Compared with the conventional allopathic drugs, ayurvedic medicines have relatively low cost and can be of great benefit to the Indian people especially the poor people. Herbal medicines are a rich source of active ingredients and can be safer and cost-effective skin infection treatment ranging from rashes to dreadful skin cancer.



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: Glycyrrhetic 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.



PHYTOCHEMICAL SCREENING AND ANTIBACTERIAL ACTIVITY OF
METHANOLIC LEAF EXTRACT OF "*FICUS NOTA PLANT*"

Dissertation submitted to



Jawaharlal Nehru Technological University, Kakinada, A.P.

In partial fulfilment for the award of the degree of

BACHELOR OF PHARMACY

BY

SALADI SAI SRIRAM 203G1R0054

SEELA PRADEEP 203G1R0055

SEELAM LEELAVATHI 203G1R0056

SETTI AMRUTHA SRI 203G1R0057

Under the guidance of
DR.P.Bhaskara Rao, M.Pharm., Ph.D
Associate Professor
Department of Pharmaceutical Analysis



Aditya Pharmacy Collage, Surampalem-533437

2020-2024

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SURAMPalem-533437

CERTIFICATE




This is to certify that Mr/Ms carried out the dissertation on "PHYTOCHEMICAL SCREENING AND ANTIBACTERIAL ACTIVITY OF METHANOLIC LEAF EXTRACTS OF *FICUS NOTA PLANT*" in the partial fulfilment of the requirements for the award of B. Pharmacy in Pharmacognosy and this is a bonafide research work done by them under my supervision and guidance at the laboratory of Pharmacognosy, Aditya Pharmacy College, Surampalem, affiliated to Jawaharlal Nehru Technological University, Kakinada.


DR.P. BHASKAR RAO, M.Pharm., Ph.D
Associate Professor,
Aditya Pharmacy College,
Surampalem.

Place: Surampalem

Date : 13/3/2024




Aditya Pharmacy College
SURAMPALAM-533 434

CERTIFICATE



This is to certify that Saladi Sai Sriram, Seela Pradeep, Seelam Leelavathi, Setti Amrutha Sri has carried out the dissertation work on "PHYTOCHEMICAL SCREENING AND ANTIBACTERIAL ACTIVITY OF METHANOLIC LEAF EXTRACT OF THE *FICUS NOTA PLANT*" in the partial fulfilment of the requirements for the award of B.Pharmacy in Pharmacognosy and this is a bonafide research work done by them under the supervision of Dr.P.Bhaskara Rao and guidance at the Laboratory of Pharmacognosy, Aditya Pharmacy College, Surampalem, affiliated to Jawaharlal Nehru Technological University, Kakinada.

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

Place: Surampalem
Date :
PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 437



Aditya Pharmacy College
SURAMPALAM-533 437

DECLARATION

We hereby declare that the dissertation work entitled "PHYTOCHEMICAL SCREENING AND ANTIBACTERIAL ACTIVITY OF METHANOLIC LEAF EXTRACT OF THE *FICUS NOTA PLANT*" in partial fulfilment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2020-2024, 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.Bhaskara Rao, M.Pharm., Ph.D, Associate Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied, it is a genuine work.

| | | |
|-------------------|------------|----------------|
| SALADI SAI SRIRAM | 203G1R0054 | S.S. Sri Ram |
| SEELA PRADEEP | 203G1R0055 | S. Pradeep |
| SEELAM LEELAVATHI | 203G1R0056 | S. Leelavathi |
| SETTI AMRUTHA SRI | 203G1R0057 | B. Amrutha Sri |



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CONCLUSION

Medical plants are potential renewable natural resources and which provide many health benefits for the human health care. Medicinal value of the plants lies in phytochemical constituents that belong to various classes of chemical compounds such as Alkaloids, Glycosides, Flavonoids etc and produce a definite physiological action on our human body. In the present study *Ficus* *Nota* plant leaves extract had shown significant antibacterial activity against *E. coli* using amikacin as reference standard.

This thesis establishes a marked antibacterial activity of methanolic extract of the leaves of the plant *Ficus nota*. However actual antibacterial constituents need to be extracted and identified, also its tolerable levels in the human body as well as any toxic effects on human and animal tissues must be investigated accordingly. This investigation has opened the possibility of the use of this plant in future drug development. However, before coming to the conclusive statement, further research is needed to be carried out for the bio active constituents which are responsible for these biological activities.



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BP102T. PHARMACEUTICAL ANALYSIS (Theory)

45 Hours

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

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

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

Course Content:

UNIT-I

10 Hours

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

- i) Different techniques of analysis
- ii) Methods of expressing concentration
- iii) Primary and secondary standards.
- iv) Preparation and standardization of various molar and normal solutions- Oxalic acid, sodium hydroxide, hydrochloric acid, sodium thiosulphate, sulphuric acid, potassium permanganate and ceric ammonium sulphate

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

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

UNIT-II

10 Hours

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

UNIT-III

10 Hours

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



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UNIT-IV

08 Hours

Redox titrations

- (a) Concepts of oxidation and reduction
- (b) Types of redox titrations (Principles and applications)

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

UNIT-V

07 Hours

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




PRINCIPAL
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**3-CARBOXY PHENYL BORONIC ACID MODIFIED SILVER
NANOPARTICLES IMPREGNATED ANTI-FUNGAL GEL FOR
TREATMENT OF CUTANEOUS CANDIDIASIS**

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



BACHELOR OF PHARMACY

Submitted by

SIDDABATTULA SRAVANTHI (203G1R0058)

KANUPURI SUMA LAHARI (203G1R0059)

SURAMPUDI BHAGYA SRI (203G1R0060)

TADALA MANIKANTA (203G1R0061)

Under the guidance of

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

Associate Professor



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

(2020 – 2024)




**Aditya Pharmacy College
SURAMPALAM-533 437**



CERTIFICATE

This is to certify that the dissertation work entitled a study on "3-CARBOXY PHENYL BORONIC ACID MODIFIED SILVER NANOPARTICLES IMPREGNATED ANTI-FUNGAL GEL FOR TREATMENT OF CUTANEOUS CANDIDIASIS" 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 SIDDABATTULA SRAVANTHI (203G1R0058), KANUPURI SUMA LAHARI (203G1R0059), SURAMPUDI BHAGYA SRI (203G1R0060), TADALA MANIKANTA (203G1R0061), under the direct guidance and supervision of Dr .P.S.S.SAI KIRAN M.Pharm, Ph.D., Associate Professor, and it has not been submitted to any other university or academic institution for any higher degree.


(Internal examiner)


(External examiner)



98

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SURAMPALAM-533 437



CERTIFICATE

This is to certify that the dissertation work entitled a study on "3-CARBOXY PHENYL BORONIC ACID MODIFIED SILVER NANOPARTICLES IMPREGNATED ANTI-FUNGAL GEL FOR TREATMENT OF CUTANEOUS CANDIDIASIS" 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 SIDDABATTULA SRAVANTHI (203G1R0058), KANUPURI SUMA LAHARI (203G1R0059), SURAMPUDI BHAGYA SRI (203G1R0060), TADALA MANIKANTA (203G1R0061), under the direct guidance and supervision of Dr .P.S.S.SAI KIRAN M.Pharm, Ph.D., Associate Professor, and it has not been submitted to any other university or academic institution for any higher degree.

(Principal)

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

PRINCIPAL

Aditya Pharmacy College
Principal & Professor
SURAMPUDI 533 437



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SURAMPUDI 533 437



CERTIFICATE

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



100

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DECLARATION

The project embodied in this thesis "**3-CARBOXY PHENYL BORONIC ACID MODIFIED SILVER NANOPARTICLES IMPREGNATED ANTI-FUNGAL GEL FOR TREATMENT OF CUTANEOUS CANDIDIASIS**" was carried out in the department of Pharmaceutical Organic Chemistry 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 existence literature have been indicated throughout thesis of the project work at appropriate places.

SIDDABATTULA SRAVANTHI (203G1R0058) *S. Sravanthi*

KANUPURI SUMA LAHARI (203G1R0059) *K. Suma Lahari*

SURAMPUDI BHAGYA SRI (203G1R0060) *S. Asha Sree*

TADALA MANIKANTA (203G1R0061) *T. Manikanta*



5. CONCLUSION

The formulation of 3-carboxy phenyl boronic acid modified silver nanoparticles loaded hydrogel (PBA-AgNP-gel) represents a significant advancement in the field of antifungal therapy. The synergistic effects of PBA modification and gel formulation contribute to the enhanced antifungal efficacy against *Candida albicans* and *Candida glabrata*. Further research and development efforts are warranted to translate these promising findings into clinically viable antifungal products for the management of fungal infections.




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BP606TPHARMACEUTICAL QUALITY ASSURANCE (Theory)

45 Hours

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

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

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

Course content:

UNIT – I

10 Hours

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

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

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

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

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

NABL accreditation : Principles and procedures

UNIT - II

10 Hours

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

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

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

UNIT – III

10 Hours

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



materials.

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

UNIT – IV

08 Hours

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

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

UNIT – V

07 Hours

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

Warehousing: Good warehousing practice, materials management

Recommended Books: (Latest Edition)

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




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SYNTHESIS AND CHARACTERIZATION AND BIOLOGICAL EVALUATION OF CHALCONE DERIVATIVES

A dissertation submitted to JNTUK, Kakinada in partial fulfilment for the award of the degree of



BACHELOR OF PHARMACY

(2020-2024)

Submitted by

| | |
|----------------------------|--------------|
| TURIBATLA SRI MERCY | (203G1R0062) |
| NAKKA VVSS BHUMIKA | (203G1R0063) |
| YALAGAPATI SONAPADMINI | (203G1R0064) |
| DHAVILESWARAPU NAGA SIVANI | (203G1R0066) |

Under the guidance of

Mr. Shaik Rafi, Associate. Professor



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Aditya Nagar, Adil Road, Surampalem - G. Dist. A.P. Pin- 533437

CERTIFICATE



This is to certify that the dissertation work entitled "synthesis and characterization and biological evaluation of chalcone derivatives" was submitted to the JNTU-K, Kakinada in partial fulfilment of the award of the degree of Bachelor of Pharmacy is a record of original research work carried out by TURIBATLA SRI MERCY (203G1R0062) NAKKA V.V.S.S. BHUMIKA (203G1R0063) YALAGAPATI SONAPADMINI (203G1R0064) DHAVILESWARAPU NAGA SIVANI (203G1R0066) They have done this research work under the supervision of **Mr. Shaik Rafi**, Associate professor and it has not been submitted to any other university or academic institution for any higher degree.

PLACE: Surampalem

DATE:

(Principal)

Dr. D Sathis Kumar, M. Pharm, Ph.D.
Aditya Pharmacy College
Aditya Pharmacy College

Surampalem



Principal
Aditya Pharmacy College
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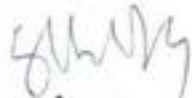
CERTIFICATE

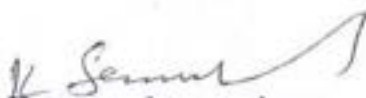


This is to certify that the dissertation entitled "SYNTHESIS AND CHARACTERIZATION AND BIOLOGICAL EVALUATION OF CHALCONE DERIVATIVES" was submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfilment of the award of the degree of Bachelor of Pharmacy is a record of original research work carried out by TURIBATLA SRI MERCY (203G1R0062) NAKKA V.V.S.S. BHUMIKA (203G1R0063) YALAGAPATI SONAPADMINI (203G1R0064) DHAVILESWARAPU NAGA SIVANI (203G1R0066). They have done this research work under the supervision of **Mr. Shaik Rafi**, Associate Professor and it has not been submitted to any other university or academic institution for any higher degree.

Place: Surampalem

Date:


Internal examiner


External examiner




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ADITYA PHARMACY COLLEGE

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CERTIFICATE



This is to certify that the dissertation work entitled "SYNTHESIS AND CHARACTERIZATION AND BIOLOGICAL EVALUATION OF CHALCONE DERIVATIVES" was submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfilment of the award of the degree of Bachelor of Pharmacy is a record of original research work carried out by TURIBATLA SRI MERCY (203G1R0062) NAKKA V.V. S.S. BHUMIKA (203G1R0063) YALAGAPATI SONAPADMINI (203G1R0064) DHAVILESWARAPU NAGA SIVANI (203G1R0066). This bonafied project work was carried out under the direct guidance and supervision of,

Mr. Shaik Rafi,

Associate professor

Aditya Pharmacy College

Surampalem



Aditya Pharmacy College
SURAMPALAM-533 437

DECLARATION

The project embided in this thesis "SYNTHESIS AND CHARACTERIZATION AND BIOLOGICAL EVALUATION OF CHALCONE DERIVATIVES" was carried out in the department of Pharmaceuical Organic Chemistry under the guidance of Mr. Shaik Rafi, Associate. professor, 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.

TURIBATLA SRI MERCY (203G1R0062) *T. Sri Mercy*

NAKKA VVSS BHUMIKA (203G1R0063) *Bhumika*

YALAGAPATI SONAPADMINI (203G1R0064) *Y. Sonapadmini*

DHAVILESWARAPU NAGA SIVANI (203G1R0066) *Sivani*



Principal
Aditya Pharmacy College
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SUMMARY AND CONCLUSION

- The title compounds were prepared by taking equal moles of compounds and suitable aldehyde in a clean mortar and triturate with aqueous NaOH by adding drop by drop the solid product comes around 15 to 20 mins.
- All the compounds synthesized were characterized by physical (R_F values, melting point, molecular weight, molecular formula).
- The title compounds were screened for antibacterial activity. The tested compounds do not have anti-bacterial activity at 250 μ l concentration.



BP203 T. BIOCHEMISTRY (Theory)

45 Hours

Scope: Biochemistry deals with complete understanding of the molecular levels of the chemical process associated with living cells. The scope of the subject is providing biochemical facts and the principles to understand metabolism of nutrient molecules in physiological and pathological conditions. It is also emphasizing on genetic organization of mammalian genome and hetero & autocatalytic functions of DNA.

Objectives: Upon completion of course student shall able to

1. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
2. Understand the metabolism of nutrient molecules in physiological and pathological conditions.
3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

Course Content:

UNIT I

08 Hours

- **Biomolecules**

Introduction, classification, chemical nature and biological role of carbohydrate, lipids, nucleic acids, amino acids and proteins.

- **Bioenergetics**

Concept of free energy, endergonic and exergonic reaction, Relationship between free energy, enthalpy and entropy; Redox potential.

Energy rich compounds; classification; biological significances of ATP and cyclic AMP

UNIT II

10 Hours

- **Carbohydrate metabolism**

Glycolysis – Pathway, energetics and significance

Citric acid cycle- Pathway, energetics and significance

HMP shunt and its significance; Glucose-6-Phosphate dehydrogenase (G6PD) deficiency

Glycogen metabolism Pathways and glycogen storage diseases (GSD)

Gluconeogenesis- Pathway and its significance

Hormonal regulation of blood glucose level and Diabetes mellitus

- **Biological oxidation**

Electron transport chain (ETC) and its mechanism.




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**“EXPLORING ANDROGRAPHIS: HARNESSING
NANOSTRUCTURE FOR ANTHELMINTIC
POTENTIAL VIA LIPID CARRIER
FORMULATION”**

Dissertation submitted to the JNTU-K University in partial fulfillment of the
requirements for the degree of Bachelor of Pharmacy
(2024)



Jawaharlal Nehru Technological University, Kakinada, A.P

Submitted by

| | |
|-----------------------|--------------|
| D.RAMA KRISHNA | (203G1R0067) |
| K. LAKSHMI RATNA SREE | (203G1R0068) |
| S. NAGA SATISH | (203G1R0069) |
| SOUMYA SAMANTA | (203G1R0070) |



Under the guidance of
Mr.G.Ramakrishna M.Pharm.,(Ph.D)
Assistant professor

Department of pharmaceutics
ADITYA PHARMACY COLLEGE,
Surrampalem-533437

(2023-2024)



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SURREMPALEM-533 437

CERTIFICATE



This is to certify that the dissertation work entitled “ Explouring Andrographis: Harnessing Nanostructure for Anthelmintic Potential Via Lipid Carrier Formulation” was submitted to the JNTU-K, Kakinada in partial fulfillment of the award of the degree of Bachelor of Pharmacy is a record of original research work carried out by D. RAMA KRISHNA (203G1R0067), K. LAKSHMI RATNA SREE(203G1R0068), S. NAGA SATISH(203G1R0069), SOUMYA SAMANTA(203G1R0070). They have done this research work under the supervision of Mr.G.RAMA KRISHNA M.Pharm.,(Ph.D)., and it has not been submitted to any other university or academic institution for any higher degree.

PLACE: Surampalem

DATE:

[Signature]
Dr. D.Sathis Kumar, M. Pharm, Ph.D.
Principal & Professor,
Aditya Pharmacy College.

[Signature]
Internal examiner

[Signature]
External examiner



[Signature]
PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 437

CERTIFICATE BY THE GUIDE



This is to certify that the dissertation work entitled "Explouring Andrographis: Harnessing Nanostructure for Anthelmintic Potential Via Lipid Carrier Formulation", is a original research work carried out by D. RAMA KRISHNA (203G1R0067), K. LAKSHMI RATNA SREE (203G1R0068) ,S.NAGA SATISH (203G1R0069), SOUMYA SAMANTA(203G1R0070) This bonafied project work was carried out under the direct guidance and supervision of,

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

Assistant professor

Department of Pharmaceutics

Aditya Pharmacy College



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SIRAMPALEM-533 437

DECLARATION



The project embodied in this thesis "Explouring Andrographis: Harnessing Nanostructure for Anthelmintic Potential Via Lipid Carrier Formulation", was carried out in the department of PHYSICAL PHARMACEUTICS under the guidance of of Mr. G. RAMA KRISHNA, M.Pharm, (Ph.D)., Asst. professor, 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.

D. RAMA KRISHNA (203G1R0067)

D. Ramakrishna

K. LAKSHMI RATNA SREE (203G1R0068)

K. Ratna Sree

S. NAGA SATISH (203G1R0069)

S. Naga Satish

SOUMYA SAMANTA (203G1R0070)

Soumya Samanta



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CONCLUSION:- In conclusion our research provides compelling evidence supporting the hypothesis that *Andrographis paniculata* possesses significant antihelmintic activity. Notably our product demonstrated superior efficacy when compared to a widely used marketed drug. These findings highlight *Andrographis paniculata* as a promising and novel candidate for the development of antihelmintic agents urging further investigation into its therapeutic application. The multifaceted pharmacological potential of this natural compound opens avenues for future research and the development of innovative treatments for helminthic infections.



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.



FORMULATION OF METRONIDAZOLE BY USING NATURAL AND SYNTHETIC SUPERDISINTEGRANTS

Dissertation submitted to the Jawaharlal Nehru Technology University, Kakinada in
partial fulfilment of the requirements of the degree of Bachelor of pharmacy (2024)



JAWAHARLAL NEHRU TECHNOLOGY UNIVERSITY, KAKINADA

BACHELOR OF PHARMACY

SUBMITTED BY

Priyanka Choudhary (203G1R0071)

Raushan Kumar Yadav (203G1R0072)

Pawan Kumar (203G1R0074)

Simran (203G1R0075)

UNDER THE GUIDANCE OF

Mrs. Vallabhareddy Prasanna Sai Sree

Assistant Professor

Department of pharmaceuticals



ADITYA PHARMACY COLLEGE

Surampalem-533437

2020-2024



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ADITYA PHARMACY COLLEGE

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

CERTIFICATE

This is certify that the dissertation entitled "FORMULATION OF METRONIDAZOLE BY USING NATURAL AND SYNTHETIC SUPERDISINTEGRANTS" was submitted to the Jawaharlal Nehru technology 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 by Priyanka choudhary (203G1R0071), Raushan kumar yadav (203G1R0072), Pawan kumar (203G1R0074), Simran (203G1R0075). They have done this research work under the supervision of Mrs.Vallabhareddy Prasanna Sai Sree and it has not been previously submitted to any other university or academic institution for any higher degree.


Internal Examiner


External Examiner




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ADITYA PHARMACY COLLEGE.

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

CERTIFICATE

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Place: Surampalem

Date:

Dr. D. Sathis Kumar, M. Pharm, ph.d.

Principal
Aditya Pharmacy College
SURAMPALEM-533 437



120

Principal
Aditya Pharmacy College
SURAMPALEM-533 437



ADITYA PHARMACY COLLEGE .

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

CERTIFICATE

I hereby declare that this dissertation entitled is "FORMULATION OF METRONIDAZOLE BY USING NATURAL AND SYNTHETIC SUPERDISINTEGRANTS" a record of original research work carried out by Priyanka choudhary (203G1R0071), Raushan kumar yadav (203G1R0072), Pawan kumar (203G1R0074), Simran (203G1R0075) under my supervision in partial fulfilment of the requirement for the degree of Bachelor of Pharmacy.

Vallabhareddy prasanna sai sree

Mrs. Vallabhareddy Prasanna Sai Sree

Assistant Professor,

Department of pharmaceuticals



[Signature]
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Aditya Pharmacy College
SURAMPALAM-533 437

DECLARATION

The project embodied in this thesis entitled "FORMULATION OF METRONIDAZOLE BY USING NATURAL AND SYNTHETIC SUPERDISINTEGRANTS" was carried out in the department of pharmaceutics under the guidance of Mrs. Vallabhareddy Prasanna Sai Sree, 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.

Priyanka choudhary (203G1R0071)

Priyanka choudhary

Raushan kumar yadav (203G1R0072)

Raushan kumar yadav

Pawan kumar (203G1R0074)

Pawan Kumar.

Simran (203G1R0075)

Simran



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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 powder) & synthetic super disintegrant (Cross Carmellose sodium).
- Super Disintegrant action of crosscarmellose sodium (synthetic) is faster than raw banana powder (natural).
- Fast disintegrating tablets of metronidazole 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 metronidazole 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.
- The approach of the present study was to make a comparative evaluation of drug release profile between natural super disintegrant (banana powder) & synthetic super disintegrant (Crosscarmellose sodium).
- Disintegrant action of crosscarmellose sodium 25mg (synthetic) is faster than raw banana powder (natural).
- Oro dispersible tablets of metronidazole 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 metronidazole 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.
- 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.



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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 ODT.

- Metronidazole ODTs can be formulated using direct compression technique.

The in vitro studies have shown for F1 that this is a potential drug delivery system for metronidazole with considerably good stability and release profile.




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BP 702 T. INDUSTRIAL PHARMACYII (Theory)

45 Hours

Scope: This course is designed to impart fundamental knowledge on pharmaceutical product development and translation from laboratory to market

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

1. Know the process of pilot plant and scale up of pharmaceutical dosage forms
2. Understand the process of technology transfer from lab scale to commercial batch
3. Know different Laws and Acts that regulate pharmaceutical industry
4. Understand the approval process and regulatory requirements for drug products

Course Content:

UNIT-I

10 Hours

Pilot plant scale up techniques: General considerations - including significance of personnel requirements, space requirements, raw materials, Pilot plant scale up considerations for solids, liquid orals, semi solids and relevant documentation, SUPAC guidelines, Introduction to platform technology

UNIT-II

10 Hours

Technology development and transfer: WHO guidelines for Technology Transfer(TT): Terminology, Technology transfer protocol, Quality risk management, Transfer from R & D to production (Process, packaging and cleaning), Granularity of TT Process (API, excipients, finished products, packaging materials) Documentation, Premises and equipments, qualification and validation, quality control, analytical method transfer, Approved regulatory bodies and agencies, Commercialization - practical aspects and problems (case studies), TT agencies in India - APCTD, NRDC, TIFAC, BCIL, TBSE / SIDBI; TT related documentation - confidentiality agreement, licensing, MoUs, legal issues

UNIT-III

10 Hours

Regulatory affairs: Introduction, Historical overview of Regulatory Affairs, Regulatory authorities, Role of Regulatory affairs department, Responsibility of Regulatory Affairs Professionals

Regulatory requirements for drug approval: Drug Development Teams, Non-Clinical Drug Development, Pharmacology, Drug Metabolism and Toxicology, General considerations of Investigational New Drug (IND) Application, Investigator's Brochure (IB) and New Drug Application (NDA), Clinical research / BE studies, Clinical Research Protocols, Biostatistics in Pharmaceutical Product Development, Data Presentation for FDA Submissions, Management of Clinical Studies.



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**"METHOD DEVELOPMENT AND VALIDATION OF
EMPAGLIFLOZIN (BULK AND FORMULATION) BY USING UV –
VISIBLE SPECTROSCOPY"**

*Dissertation submitted to the Jawaharlal Nehru Technological University,
Kakinada in partial fulfillments of the requirements for the degree of Bachelor
of Pharmacy (2024)*



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

Submitted BY
PREMABATI KUMARI SINGH (203G1R0076)

PRATIYUSH SRIVSATAVA (203G1R0077)

MUSUNOORILAKSHMI TEJASWI (203G1R0078)

AMAN BACHHAR (203G1R0079)

Under the Guidance of

Miss. B. SUJIYA, M. Pharm.,
Associate Professor
DEPARTMENT OF PHARMACEUTICAL ANALYSIS



Aditya Pharmacy College

Surampalem - 533437

2020-2024



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CERTIFICATE



This is to certify that the dissertation entitled "METHOD DEVELOPMENT AND VALIDATION OF EMPAGLIFLOZIN (BULK AND FORMULATION) BY USING UV-VISIBLE SPECTROSCOPY" 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 PREMABATI KUMARI SINGH (203G1R0076), PRATIYUSH SRIVASTAVA (203G1R0077), MUSUNOORILAKSHMI TEJASWI (203G1R0078), AMAN BACHHAR (203G1R0079). They have done this research work under the supervision of Miss. Balla Sujiya, M. Pharm., and it has not been previously submitted to any other university or academic institution for any higher degree.

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

Aditya Pharmacy College,
Surampalem-533437.

Place: Surampalem

Date:

Internal Examiner

External Examiner



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

B. Sujya
Mr. BALLA SUJYA, M. Pharm.,

Associate Professor,

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Place: Surampalem

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DECLARATION

The project embodied in this thesis entitled "METHOD DEVELOPMENT AND VALIDATION OF EMPAGLIFLOZIN (BULK AND FORMULATION) BY USING UV-VISIBLE SPECTROSCOPY" was carried out in the department of Pharmaceutical Technology 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.

Premabati
PREMABATI KUMARI SINGH
(203G1R0076)

Pratiyush Srivastava
PRATIYUSH SRIVASTAVA
(203G1R0077)

M. Tejash
MUSUNOORI. LAKSHMI TEJASWI
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Aman
AMAN BACHHAR
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Principal
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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:

TABLE 2.19: Summarized Table for Empagliflozin (BULK & FORMULATION)

| PARAMETER | RESULTS | |
|---------------------|---------------------------------|---------------------------------|
| | BULK | FORMULATION |
| Wavelength(nm) | 279 | 279 |
| Linearity Range | 1 – 5 $\mu\text{g} / \text{ml}$ | 1 – 5 $\mu\text{g} / \text{ml}$ |
| Regression Equation | 0.999 | 0.9998 |
| Slope (m) | 0.1742 | 0.1309 |
| Intercept (c) | -0.0086 | -0.0045 |
| LOD | 0.235 $\mu\text{g}/\text{ml}$ | 0.154 $\mu\text{g}/\text{ml}$ |
| LOQ | 0.942 $\mu\text{g}/\text{ml}$ | 0.538 $\mu\text{g}/\text{ml}$ |



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

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



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Bicarbonate*, Aluminum hydroxide gel, Magnesium hydroxide mixture

Cathartics: Magnesium sulphate, Sodium orthophosphate, Kaolin and Bentonite

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

UNIT IV

08 Hours

- **Miscellaneous compounds**

Expectorants: Potassium iodide, Ammonium chloride*.

Emetics: Copper sulphate*, Sodium potassium tartarate

Haematinics: Ferrous sulphate*, Ferrous gluconate

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

Astringents: Zinc Sulphate, Potash Alum

UNIT V

07 Hours

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




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ASSESSMENT OF ANTI-UROLITHIATIC AND ANTI-OXIDANT ACTIVITY OF *COLOCASIA ESCULENTA* ON STEM

Dissertation submitted to the Jawaharlal Nehru technology University, Kakinada in partial
fulfilment of the requirements of the degree of Bachelor of pharmacy (2024)



JAWAHARLAL NEHRU TECHNOLOGY UNIVERSITY, KAKINADA

BACHELOR OF PHARMACY

SUBMITTED BY

Sourav Chakrabarty (203G2R0080)

Edala. Srisindhu (203G1R0081)

Rabindra prasad Yadav (203G1R0082)

Mohamad Danish Rafi khan (203G1R0083)

UNDER THE GUIDANCE OF

Mrs. M.Lalitha kala

Assistant Professor

Department of pharmacology



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2020-2024



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pin: 533437

CERTIFICATE

This is certify that the dissertation entitled "ASSESSMENT OF ANTIUROLITHIATIC AND ANTI-OXIDANT ACTIVITY OF *COLOCASIA ESCULENTA* ON STEM" was submitted to the Jawaharlal Nehru technology 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 by Sourav Chakrabarty (203G1R0080), Edala.Srisindhu (203G1R0081), Rabindra prasad Yadav (203G1R0082), Mohamad Danish Rafi khan (203G1R0083). They have done this research work under the supervision of Mrs. M. Lalitha kala and it has not been previously submitted to any other university or academic institution for any higher degree.

Internal Examiner

External examiner



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Place: Surampalem

Date:

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

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CERTIFICATE

I hereby declare that this dissertation entitled is "ASSESSMENT OF ANTI-
UROLITHIATIC AND ANTI-OXIDANT ACTIVITY OF COLOCASIA
ESCULENTA ON STEM" a record of original research work carried out by
Sourav Chakrabarty (203G1R0080), Edala.srisindhu (203G1R0081), Rabindra
prasad Yadav (203G1R0082), Mohamad Danish Rafi khan (203G1R0083) under
my supervision in partial fulfilment of the requirement for the degree of Bachelor
of Pharmacy.

Mrs. M. Lalitha kala

Assistant Professor,

Department of pharmacology




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DECLARATION

The project embodied in this thesis entitled "ASSESSMENT OF ANTIUROLITHIATIC AND ANTI-OXIDANT ACTIVITY OF *COLOCASIA ESCULENTA* ON STEM" was carried out in the department of pharmacology under the guidance of Mrs. M. Lalitha Kala., 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.

Sourav Chakrabarty (203G1R0080)

S. Chakrabarty

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Sindhu

Rabindra prasad Yadav (203G1R0082)

Rabindra

Mohamad Danish Rafi khan (203G1R0083)

Danish



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7.CONCLUSION

From the study, it was concluded that ethanolic extract *Colocasia esculenta* was rich in phytoconstituents. Total Phenolic Content, Total Flavonoid Content and Total Alkaloid Content were found. Based on observation it is revealed that the plant is rich in secondary metabolites and the other phytoconstituents that may have significant medicinal property to produce biological activity. The ethanolic extract of *Colocasia* stem proved to be the best choice for screening various pharmacological activities in order to explore medicinal profiles.

From the study, it was revealed that it has good Anti-Urolithiatic activity, which was analysed from in-vitro nucleation and aggregation assay, respectively. So far much pharmacological activity is not reported so we made an attempt for this activity.



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BP 106RMT.REMEDIAL MATHEMATICS (Theory)

30 Hours

Scope: This is an introductory course in mathematics. This subject deals with the introduction to Partial fraction, Logarithm, matrices and Determinant, Analytical geometry, Calculus, differential equation and Laplace transform.

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

1. Know the theory and their application in Pharmacy
2. Solve the different types of problems by applying theory
3. Appreciate the important application of mathematics in Pharmacy

Course Content:

UNIT – I

06 Hours

- **Partial fraction**

Introduction, Polynomial, Rational fractions, Proper and Improper fractions, Partial fraction, Resolving into Partial fraction, Application of Partial Fraction in Chemical Kinetics and Pharmacokinetics

- **Logarithms**

Introduction, Definition, Theorems/Properties of logarithms, Common logarithms, Characteristic and Mantissa, worked examples, application of logarithm to solve pharmaceutical problems.

- **Function:**

Real Valued function, Classification of real valued functions,

- **Limits and continuity :**

Introduction, Limit of a function, Definition of limit of a function ($\epsilon - \delta$ definition), $\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a} = na^{n-1}$, $\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = 1$,

UNIT –II

06 Hours

- **Matrices and Determinant:**

Introduction matrices, Types of matrices, Operation on matrices, Transpose of a matrix, Matrix Multiplication, Determinants, Properties of determinants, Product of determinants, Minors and co-Factors, Adjoint or adjugate of a square matrix, Singular and non-singular matrices, Inverse of a matrix, Solution of system of linear of equations using matrix method, Cramer's rule, Characteristic equation and roots of a square matrix, Cayley-Hamilton theorem, Application of Matrices in solving Pharmacokinetic equations



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UNIT – III

06 Hours

- **Calculus**

Differentiation : Introductions, Derivative of a function, Derivative of a constant, Derivative of a product of a constant and a function, Derivative of the sum or difference of two functions, Derivative of the product of two functions (product formula), Derivative of the quotient of two functions (Quotient formula) – **Without Proof**, Derivative of x^n w.r.t x , where n is any rational number, Derivative of e^x , Derivative of $\log_e x$, Derivative of a^x , Derivative of trigonometric functions from first principles (**without Proof**), Successive Differentiation, Conditions for a function to be a maximum or a minimum at a point. Application

UNIT – IV

06 Hours

- **Analytical Geometry**

Introduction: Signs of the Coordinates, Distance formula,

Straight Line : Slope or gradient of a straight line, Conditions for parallelism and perpendicularity of two lines, Slope of a line joining two points, Slope – intercept form of a straight line

Integration:

Introduction, Definition, Standard formulae, Rules of integration, Method of substitution, Method of Partial fractions, Integration by parts, definite integrals, application

UNIT-V

06 Hours

- **Differential Equations** : Some basic definitions, Order and degree, Equations in separable form, Homogeneous equations, Linear Differential equations, Exact equations, **Application in solving Pharmacokinetic equations**
- **Laplace Transform** : Introduction, Definition, Properties of Laplace transform, Laplace Transforms of elementary functions, Inverse Laplace transforms, Laplace transform of derivatives, Application to solve Linear differential equations, **Application in solving Chemical kinetics and Pharmacokinetics equations**

Recommended Books (Latest Edition)

1. Differential Calculus by Shanthinarayan
2. Pharmaceutical Mathematics with application to Pharmacy by Panchaksharappa Gowda D.H.
3. Integral Calculus by Shanthinarayan
4. Higher Engineering Mathematics by Dr.B.S.Grewal



**"MICROWAVE ASSISTED SYNTHESIS & DOCKING STUDIES OF
NOVEL DERIVATIVE OF 2,4,5-TRIPHENYL IMIDAZOLE"**

*Dissertation submitted to the Jawaharlal Nehru Technological
University, Kakinada in partial fulfillment of the requirements for the
Degree of Bachelor of Pharmacy (2024)*



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY,
KAKINADA.
SUBMITTED BY**

SHEKHAR ABDUL AHAD (20JG1R0084)

NARAYAN YADAV (20JG1R0085)

SONU TELI (20JG1R0086)

D. SAI DEEPTHI RANI (20JG1R0087)



UNDER THE GUIDANCE OF

CH. LAKSHMI MADHAVI, PhD, DSc, Pharm. (Ph.D.)

Assistant Professor

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2023-24

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

CERTIFICATE

This is to certify that the dissertation entitled "MICROWAVE ASSISTED SYNTHESIS & DOCKING STUDIES OF NOVEL DERIVATIVE OF 2,4,5-TRIPHENYL IMIDAZOLE" 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 SHEKH ABDULAHAD (203G1R0084), NARAYAN YADAV (203G1R0085), SONU TELI (203G1R0086), D.SAI DEEPTHI RANI (203G1R0087). They have done this research work under the supervision of Ms. Ch. Lakshmi Madhavi, PGDIEM, 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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Surampalem- 533437.

Place: Surampalem

Date:

INTERNAL EXAMINER



EXTERNAL EXAMINER

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


Principal,
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Place: Surampalem

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C.L. Madhavi

Ch.Lakshmi Madhavi, PGDIPSLN, Pharmacy (Ph.D)

Assistant Professor,

Aditya pharmacy college,

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DECLARATION

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SHEKH ABDULAHAD(203G1R0084)

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Chapter-6

SUMMARY AND CONCLUSION

- 2,4,5-triphenyl imidazole derivatives are reported for the antibacterial, antifungal, anti-inflammatory, antiviral, analgesic activities etc. As per plan and objectives we carried extensive literature survey, based on the literature, designed a scheme for the synthesis of various 2,4,5-triphenyl imidazole derivative.
- 2,4,5-triphenyl imidazole was synthesized from 0.5ml of benzil, 0.25ml of benzaldehyde and 5ml of ammonium acetate are dissolved in glacial acetic and then kept in microwave for few minutes and monitored till the formation of the intermediate by determining the melting point and performing TLC
- Later 2,4,5-triphenyl imidazole was further processed with the chloroacetyl chloride and produced the novel derivatives like 1a.
- The synthesized compound 1a screened for the physio-chemical parameters.
- The FTIR spectra of the compound displayed characteristic absorption bands observed at 3401- due to OH stretching, 1706.16 due to C=O stretching, 1640 due to C=C stretching, 1601.7 due to amides NH₂ and 695 due to benzene was founded.
- Bioactivity scores by using online tools BIOVIA & DWIPERL
- The compound (1a) displayed conventional hydrogen bond with pi-pi -420, pi-pi T-shape 485 stacked, bump of the bond-178, positive-positive charges value 4.81, pi-alkyl 4.81.
- 2,4,5-triphenyl imidazole derivatives were synthesized 1a in a good yield. Docking studies revealed that compounds showed good binding affinity towards NRF2 synthase protein (4XMB).
- The derivative 1a shows good antioxidant activity.



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BP402T. MEDICINAL CHEMISTRY – I (Theory)

45 Hours

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

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

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

Course Content:

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

UNIT- I

10 Hours

Introduction to Medicinal Chemistry

History and development of medicinal chemistry

Physicochemical properties in relation to biological action

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

Drug metabolism

Drug metabolism principles- Phase I and Phase II.

Factors affecting drug metabolism including stereo chemical aspects.

UNIT- II

10 Hours

Drugs acting on Autonomic Nervous System

Adrenergic Neurotransmitters:

Biosynthesis and catabolism of catecholamine.

Adrenergic receptors (Alpha & Beta) and their distribution.

Sympathomimetic agents: SAR of Sympathomimetic agents

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



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

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

Adrenergic Antagonists:

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

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

UNIT-III

10 Hours

Cholinergic neurotransmitters:

Biosynthesis and catabolism of acetylcholine.

Cholinergic receptors (Muscarinic & Nicotinic) and their distribution.

Parasympathomimetic agents: SAR of Parasympathomimetic agents

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

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

Cholinesterase reactivator: Pralidoxime chloride.

Cholinergic Blocking agents: SAR of cholinolytic agents

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

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

UNIT- IV

08 Hours

Drugs acting on Central Nervous System

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METHOD DEVELOPMENT AND VALIDATION FOR **ATROPINE** SULPHATE IN
BULK & TABLET DOSAGE FORM USING TURMERIC POWDER BY UV VISIBLE
SPECTROPHOTOMETER.

Dissertation Submitted to

JNT UNIVERSITY

KAKINADA

In Partial fulfillment for the award of the degree of

BACHELOR OF PHARMACY

SUBMITTED BY



NITESHKUMAR YADAV (203G1R0088)

U L S TULASI KOTHAPALLI (203G1R0089)

KOPPULA. MANASWI (203G1R0090)

RAJANA ALEKHYA (203G1R0091)

Under the guidance of

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

Professor



Aditya Pharmacy College, Surampalem,

Andhra Pradesh, India-533 437

Batch: 2020- 2024



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

CERTIFICATE

This is to certify that the dissertation work entitled a study on METHOD DEVELOPMENT AND VALIDATION FOR ATROPINE SULPHATE IN BULK & TABLET DOSAGE FORM USING TURMERIC POWDER BY UV VISIBLE SPECTROPHOTOMETER submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2020-2024. This is a bonafied work carried out by NITESH KUMAR YADAV (203G1R0088), U L S TULASI KOTHAPALLI (203G1R0089), KOPPULA. MANASWI (203G1R0090), RAJANA ALEKHYA (203G1R0091) 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:

Dr. D. SathisKumar, M.Pharm., Ph.D.,
Principal, Aditya Pharmacy College
SURAMPALEM-533 437
Aditya Pharmacy College,
Surampalem, Andhra Pradesh,



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EVALUATION CERTIFICATE

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Place: Surampalem

Date:


SIGNATURE OF EVALUATOR 1


SIGNATURE OF EVALUATOR 2




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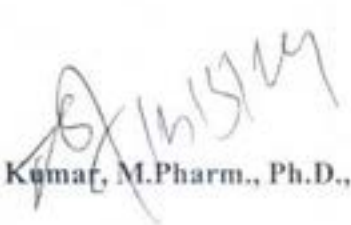
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Dr. D. Sathis Kumar, M.Pharm., Ph.D.,

Guide

Place: Surampalem

Date:




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DECLARATION

We hereby declare that the dissertation work entitled "METHOD DEVELOPMENT AND VALIDATION FOR ATROPINE SULPHATE IN BULK & TABLET DOSAGE FORM USING TURMERIC POWDER BY UV VISIBLE SPECTROPHOTOMETER" in partial fulfillment of the degree in Bachelor of Pharmacy of the JNTUniversity, Kakinada for the academic year 2020-2024, was carried out by us in the library and laboratories of AdityaPharmacy College, Surampalem, Andhra Pradesh under the valuable and efficient guidance and supervision of Dr. D. Sathis Kumar, M.Pharm., Ph.D., Professor, AdityaPharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

NITESHKUMAR YADAV (203G1R0088)

U L S TULASI KOTHAPALLI (203G1R0089)

KOPPULA. MANASWI (203G1R0090)

RAJANA ALEKHYA (203G1R0091)

Place: Surampalem

Date:



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8. Conclusion:

The presented method was precise, sensitive and accurate. The advantages of proposed method were its simple procedure for sample preparation. The satisfying recoveries and low coefficient of variation confirmed the suitability of proposed method for the routine analysis of atropine sulphate in pharmaceuticals.



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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



Atomic absorption spectroscopy- Principle, interferences, instrumentation and applications

Nepheloturbidometry- Principle, instrumentation and applications

UNIT –III

10 Hours

Introduction to chromatography

Adsorption and partition column chromatography-Methodology, advantages, disadvantages and applications.

Thin layer chromatography- Introduction, Principle, Methodology, Rf values, advantages, disadvantages and applications.

Paper chromatography-Introduction, methodology, development techniques, advantages, disadvantages and applications

Electrophoresis– Introduction, factors affecting electrophoretic mobility, Techniques of paper, gel, capillary electrophoresis, applications

UNIT –IV

08 Hours

Gas chromatography - Introduction, theory, instrumentation, derivatization, temperature programming, advantages, disadvantages and applications

High performance liquid chromatography (HPLC)-Introduction, theory, instrumentation, advantages and applications.

UNIT –V

07 Hours

Ion exchange chromatography- Introduction, classification, ion exchange resins, properties, mechanism of ion exchange process, factors affecting ion exchange, methodology and applications

Gel chromatography- Introduction, theory, instrumentation and applications

Affinity chromatography- Introduction, theory, instrumentation and applications



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SITTARTHALEM-533 637

**'COMPARISON OF QUALITATIVE ANALYSIS OF COW MILK,
BUFFALO MILK AND MARKETING MILK'**

*Dissertation submitted to the Jawaharlal Nehru Technological
University, Kakinada in partial fulfilment of the requirements for the
Degree of Bachelor of Pharmacy (2024)*



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA.

SUBMITTED BY

Pooja Purohit (203GTR0092)
Rabindra Kumar Chaudhary (203GTR0093)
M. Suresh (203GTR0094)
Y. Vani Durga Prasanna (203GTR0095)



UNDER THE GUIDANCE OF
S. Vangmayi Swaroopa, M. pharm
Assistant Professor
ADITYA PHARMACY COLLEGE
Surampalem – 533437
2020-2024

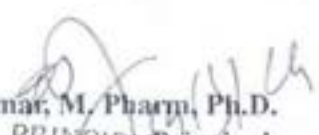


1
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CERTIFICATE



This is to certify that the dissertation entitled "COMPARISON OF QUALITATIVE ANALYSIS OF COW MILK, BUFFALO MILK AND MARKETING MILK" 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 Panji purohit (203G1R0092), Rabindra Kumar Chaudhary(203G1R0093), M.suresh(203G1R0094), Y.Vani Durga Prasanna(203G1R0095). They have done this research work under the supervision of Ms. 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, Principal,
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SURAMPALEM-533 437,
Andhra Pradesh.




2


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CERTIFICATE BY THE GUIDE



This is to certify that the dissertation entitled "COMPARISON OF QUALITATIVE ANALYSIS OF COW MILK, BUFFALO MILK AND MARKETING MILK" 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 Panji purohit (203G1R0092), Rabindra Kumar Chaudhary(203G1R0093), M.suresh(203G1R0094), Y.Vani Durga Prasanna(203G1R0095). They have done this research work under the supervision of Ms. Vangmayi Swaroopa M. pharm. and it has not been previously submitted to any other university or academic institution for any higher degree.


Ms. Vangmayi Swaroopa M. pharm
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Aditya Pharmacy College,
Surampalem- 533437.

Place:

Date:

INTERNAL EXAMINER

EXTERNAL EXAMINER



4

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DECLARATION

The project embodied in this thesis entitled "COMPARISON OF QUALITATIVE ANALYSIS OF COW MILK, BUFFALO MILK AND MARKETING MILK" was carried out in the department of pharmaceutical analysis under the guidance of Ms. Vangmayi Swaroopa M. pharm, Assistant Professor, Aditya Pharmacy College, Surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.

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Rabindra Kumar Chaudhary (203G1R0093)

Rabi

M.suresh (203G1R0094)

M. Suresh

Y. Vani Durga Prasanna (203G1R0095)

Y. Voprasanna



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CONCLUSION

Table 10 Comparison of Qualitative analysis of different milk samples

| Test sample | Casein% | Fat % | Acidity % |
|---------------|---------|-------|-----------|
| Buffalo milk | 2.73% | 6.25% | 0.136 |
| Cow milk | 1.64 % | 4% | 0.133 |
| Packaged milk | 2.16% | 5% | 0.130 |

As shown in above table, we can say that casein yield was found more in buffalo milk as compared to rest of the milk, similarly packaged milk had more casein yield than cow milk. The casein is a high-quality protein, that providing all essential amino acids that our body needs. As buffalo milk has higher casein content compared to cow milk and it can offer some advantage like increased protein intake, Enhanced bone health, improved cheese making.

Similarly, fat percentage was found more in buffalo milk as compared to rest of the given milk sample and packaged milk showed more fat percentage than cow milk sample.

As higher fat content in buffalo milk, it may be caused some issue like digestive problem because it is difficult to digest fat globules, so for children buffalo milk may not be advised to take it, cow milk is alternative for children and potential health concerns and digestive issue patient.

According to above table, titratable acidity value of above test sample was in normal range that showed that milk was potable and pure. Higher value generally indicate increased bacterial activity and potential spoilage. that might be considered unsuitable for consumption.

Table 11 Adulterants Detection

| Adulterants | Cow milk | Buffalo milk | Packaged milk |
|-------------|----------|--------------|---------------|
| Formalin | No | No | No |
| Starch | No | No | Yes |
| Cane sugar | No | No | No |
| Salt | No | No | Yes |
| Detergent | No | No | No |
| Water | 31 | 32 | 30 |



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In the given table, we can see that in only one sample was adulterated with starch and salt and rest of the sample had no any traces of adulterants, if we consume the adulterated milk that lead to variety of immediate health problems including gastrointestinal problems, food poisoning, allergic reaction and organ damage also. Adulteration can reduce the nutritional value of milk.

Microbial Examination of milk

As compared to buffalo and cow milk, buffalo milk is generally considered to be more favorable for microbial growth because of several factors like

Higher fat content: buffalo milk has a higher fat content than cow milk that provides readily available energy for microbes to grow and reproduce.

Higher lactose content: Buffalo milks also has a slightly higher lactose content than cow milk, lactose is the sugar that can easily fermented by microbes, providing them with another source of energy.

Lower casein content: casein is the main protein found in milk and it can have antimicrobial properties and buffalo milk has slightly lower casein content than cow milk which may allow microbes to grow easily.

Higher buffering capacity: buffalo milk has a higher buffering capacity than cow milk which means it can resist changes in ph more effectively and that is important for microbial growth.



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BP 304 T. PHARMACEUTICAL ENGINEERING (Theory)

45 Hours

Scope: This course is designed to impart a fundamental knowledge on the art and science of various unit operations used in pharmaceutical industry.

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

1. To know various unit operations used in Pharmaceutical industries.
2. To understand the material handling techniques.
3. To perform various processes involved in pharmaceutical manufacturing process.
4. To carry out various test to prevent environmental pollution.
5. To appreciate and comprehend significance of plant lay out design for optimum use of resources.
6. To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.

Course content:

UNIT-I

10 Hours

- **Flow of fluids:** Types of manometers, Reynolds number and its significance, Bernoulli's theorem and its applications, Energy losses, Orifice meter, Venturimeter, Pitot tube and Rotometer.
- **Size Reduction:** Objectives, Mechanisms & Laws governing size reduction, factors affecting size reduction, principles, construction, working, uses, merits and demerits of Hammer mill, ball mill, fluid energy mill, Edge runner mill & end runner mill.
- **Size Separation:** Objectives, applications & mechanism of size separation, official standards of powders, sieves, size separation Principles, construction, working, uses, merits and demerits of Sieve shaker, cyclone separator, Air separator, Bag filter & elutriation tank.

UNIT-II

10 Hours

- **Heat Transfer:** Objectives, applications & Heat transfer mechanisms. Fourier's law, Heat transfer by conduction, convection & radiation. Heat interchangers & heat exchangers.



- **Evaporation:** Objectives, applications and factors influencing evaporation, differences between evaporation and other heat process. principles, construction, working, uses, merits and demerits of Steam jacketed kettle, horizontal tube evaporator, climbing film evaporator, forced circulation evaporator, multiple effect evaporator & Economy of multiple effect evaporator.
- **Distillation:** Basic Principles and methodology of simple distillation, flash distillation, fractional distillation, distillation under reduced pressure, steam distillation & molecular distillation

UNIT- III

08 Hours

- **Drying:** Objectives, applications & mechanism of drying process, measurements & applications of Equilibrium Moisture content, rate of drying curve. principles, construction, working, uses, merits and demerits of Tray dryer, drum dryer spray dryer, fluidized bed dryer, vacuum dryer, freeze dryer.
- **Mixing:** Objectives, applications & factors affecting mixing, Difference between solid and liquid mixing, mechanism of solid mixing, liquids mixing and semisolids mixing. Principles, Construction, Working, uses, Merits and Demerits of Double cone blender, twin shell blender, ribbon blender, Sigma blade mixer, planetary mixers, Propellers, Turbines, Paddles & Silverson Emulsifier,

UNIT-IV

08 Hours

- **Filtration:** Objectives, applications, Theories & Factors influencing filtration, filter aids, filter medias. Principle, Construction, Working, Uses, Merits and demerits of plate & frame filter, filter leaf, rotary drum filter, Meta filter & Cartridge filter, membrane filters and Seidtz filter.
- **Centrifugation:** Objectives, principle & applications of Centrifugation, principles, construction, working, uses, merits and demerits of Perforated basket centrifuge, Non-perforated basket centrifuge, semi continuous centrifuge & super centrifuge.

UNIT- V

07 Hours

- **Materials of pharmaceutical plant construction, Corrosion and its prevention:** Factors affecting during materials selected for Pharmaceutical plant construction, Theories of corrosion, types of corrosion and there prevention. Ferrous and nonferrous metals, inorganic and organic non metals, basic of material handling systems.



SYNTHESIS AND MOLECULAR DOCKING STUDIES ON CAPRYLIC ACID HYDRAZONES

Dissertation submitted to the Jawaharlal Nehru Technological University,
Kakinada in partial fulfillment of the requirements for the
Degree of Bachelor of Pharmacy (2024)



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY
KAKINADA

SUBMITTED BY

BIKASH BARUAH (203G1R0096)

SUDHA MANJOOSHA MANDAPAKA (203G1R0097)

GANDHAM SIVA PRASAD (203G1R0098)

UDAYA SANDHYA CHALLAPALLI (203G1R0099)

Under the guidance of

L. PARINAYA SRI, M. Pharm.,

Pharmaceutical chemistry

Assistant Professor

Aditya Pharmacy College

Surampalem-533 437.

Batch: 2020-2024




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CERTIFICATE

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Principal
Aditya Pharmacy College
Surampalem-533 437
Surampalem.

Place: Surampalem

Date:

INTERNAL EXAMINER



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EXTERNAL EXAMINER

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Dr. D. Sathish Kumar, M Pharm, PhD

Principal, Aditya Pharmacy College
SURAMPALAM-533 437

Surampalem-533437.

Place: Surampalem

Date:

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Principal
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SURAMPALAM-533 437

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Ms. L. Parinaya Sri (M. Pharma)

Assistant Professor,

Aditya pharmacy college,

Surampalem-533437.

Place: Surampalem

Date:



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DECLARATION

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BIKASH BARUAH (203G1R0096) *Bikash Baruah*

SUDHA MANJOOSHA MANDAPAKA (203G1R0097) *M.S. Manjoosha*

GANDHAM SIVA PRASAD (203G1R0098) *G. Siva Prasad*

UDAYA SANDHYA CHALLAPALLI (203G1R0099) *Ch. Udaya Sandhya*



[Signature]
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SURAMPALEM-533 437

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Chapter 6

Summary and conclusion

Summary

Hydrazone derivatives are reported for the antibacterial, antifungal, anti-inflammatory, antiviral, antiplatelet, analgesic, anticonvulsant, antituberculosis, antitumoral, antidepressant activities etc. As per the plan and objectives we carried extensive literature survey, based on the literature, designed a scheme for the synthesis of various N'-substituted octanehydrazide derivatives with substituted aldehydes.

N'-Substituted Octanehydrazide (**1a-1d**) were synthesized by the equimolar amount of octanehydrazide and substituted aldehydes in few ml of ethanol to that, few drops of conc.HCl were added. The intermediate octanehydrazide were prepared by treatment of ethyl octanoate with hydrazine hydrate. All the compounds were evaluated for antibacterial activity by cup plate method.

The compounds were screened for the antibacterial, antifungal, antioxidant activities, bioactivity score, ADME properties and swiss docking, from which maximum number of compounds were designed. So it was found worthwhile to synthesize few analogs with this derivative.

All the title compounds (**1a-1d**) were tested for the antibacterial activity. Among the series,

All the compounds (**1a-1d**) showed good binding affinity with COX-2.

Bioactivity score towards these compounds (**1a-1d**) revealed that all of them are moderately active as ion channel modulators, kinase inhibitors, nuclear receptor ligands, protease inhibitors and GPCR ligands enzyme inhibitors. Compounds showed moderate Caco₂ cell permeability. All the compounds found to be strongly bound by plasma protein binding. All the compounds showed good penetration to the blood brain barrier except 4-nitro derivative.

All the derivatives obeys Lipinski rule of five and showed the highest oral absorption and good bioavailability.

All the synthesized compounds (**1a-1d**) screened for their physico-chemical parameters and prediction of toxicity risks using online preADMIT, bioactivity score by online Molinspiration



tool and ADME (absorption, distribution, metabolism, excretion) properties were predicted using online preADMIT software and swiss ADME.

Conclusion

Hydrazone derivatives were synthesized and screened for antioxidant, antibacterial and antifungal activities. N'-substituted octanehydrazide (**1a-1D**) were synthesized in good yield. Most of the synthesized compounds showed good antioxidant, antibacterial, antifungal activities. Good antibacterial activity and showed good antifungal activity comparable to the standard. Docking studies revealed that all the derivatives showed good binding affinity towards COX-2, Dihydropterate synthase, Phosphatidylinositol transfer protein. All the compounds obeys Lipinski rule five and showed the highest oral absorption and good bioavailability.



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 Taylor. Williams & Wilkins Co, Riverview, MI USA
4. Text book of Medical Physiology- Arthur C, Guyton and John E. Hall. Miamisburg, OH, U.S.A.
5. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.



6. Textbook of Human Histology by Inderbir Singh, Jaypee brother's medical publishers, New Delhi.
7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brother's medical publishers, New Delhi.
8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi.

Reference Books (Latest Editions)

1. Physiological basis of Medical Practice-Best and Taylor. Williams & Wilkins Co, Riverview, MI USA
2. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
3. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje ,Academic Publishers Kolkata





ADITYA PHARMACY COLLEGE

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

Department of

Name: P. Sujini

PIN No. 23361R0070

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

Mr./Ms. Pirila Sujini

a student of 1st B. Pharmacy with Regd. No. 233G1R0070

*in the HAP-HUMAN ANATOMY & PHYSIOLOGY (Practical)
Laboratory during the year 2023-2024*

No. of Experiments Conducted 15

No. of Experiments Attended 15

Signature [Signature]
Faculty incharge

Signature [Signature]
Head of the Department

Aditya Pharmacy College
SURAMPALAM-533 437

Submitted for the practical examination held on

[Signature]
Examiner-1

[Signature]
Examiner-2



PRINCIPAL
AS Aditya Pharmacy College
SURAMPALAM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|-----------------------|
| 1. | 27-11-23 | Study of compound microscope | 1-3 | } A ⁺ ✓ |
| 2. | 04-12-23 | Microscopic study of epithelial and connective tissue | 4-10 | |
| 3. | 11-12-23 | Microscopic study of muscular and nervous tissue | 11-14 | |
| 4. | 18-12-23 | Identification of axial bones | 15-16 | } A ⁺ ✓ |
| 5. | 08-01-24 | Identification of appendicular bones | 17-19 | |
| 6. | 22-01-24 | Determination of Bleeding Time | 20-21 | |
| 7. | 29-01-24 | Determination of clotting Time | 22-23 | } A ⁺ ✓ |
| 8. | 05-02-24 | Estimation of haemoglobin content | 24-26 | |
| 9. | 12-02-24 | Determination of blood groups | 27-28 | |
| 10. | 19-02-24 | Determination of heart rate and pulse rate | 29-30 | } A ⁺ ✓ |
| 11. | 26-02-24 | Determination of Blood pressure | 31-34 | |



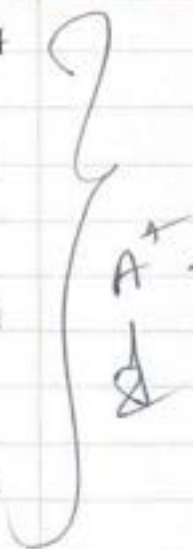
PRINCIPAL

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Aditya Pharmacy College

SURAMPALM-533 432

Painter

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|--|
| 12. | 04-03-24 | Introduction to haemocytometry | 35-37 |  |
| 13. | 11-03-24 | Enumeration of red White blood cell (WBC) count | 38-41 | |
| 14. | 18-03-24 | Enumeration of total red blood corpuscles (RBC) count | 42-44 | |
| 15. | 20-03-24 | Determination of erythrocyte sedimentation rate (ESR) | 45-47 | |

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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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 of Emulsion, 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.

UNIT – 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 dosage forms



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ADITYA PHARMACY COLLEGE

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

Department of
Pharmaceutical
Analysis

Name: M.V.D.B. Nagalakshmi

PIN No. 23361R0052

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

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

a student of 1st year B. Pharm^{acy} with Regd. No. 23361R0052

in the pharmaceutical Laboratory during the year 2023-2024
Analysis

No. of Experiments Conducted 99

No. of Experiments Attended 91

Signature - Faculty incharge

Signature-Head of the Department

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the practical examination held on

12-04-2024

Examiner-1

Examiner-2



Aditya Pharmacy Co.
SURAMPALEM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|------------|--------------|
| (I) | 9/12/23 | INTRODUCTION TO PHARMACEUTICAL ANALYSIS | 01 - 02 | C 05/12/2024 |
| (II) | 9/12/23 | INTRODUCTION TO VOLUMETRIC ANALYSIS | 03 - 04 | C 05/12/2024 |
| (III) | 13/12/23 | APPARATUS REQUIRED FOR VOLUMETRIC ANALYSIS | 05 - 10 | C 05/12/2024 |
| 01 | 13/12/23 | CALIBRATION OF VOLUMETRIC ANALYSIS | 11 - 14 At | C 05/12/2024 |
| 02 | 16/12/23 | PREPARATION AND STANDARDISATION OF 0.1M HCl | 15 - 16 At | C 05/12/2024 |
| 03 | 16/12/23 | PREPARATION AND STANDARDISATION OF 0.1M H ₂ SO ₄ | 17 - 18 At | C 05/12/2024 |
| 04 | 19/12/23 | PREPARATION AND STANDARDISATION OF 0.1M NaOH | 19 - 20 At | C 05/12/2024 |
| 05 | 23/12/24 | PREPARATION AND STANDARDISATION OF 0.1M KMnO ₄ | 21 - 22 At | C 05/12/2024 |
| 06 | 23/12/24 | PREPARATION AND STANDARDISATION OF 0.1M CERRIC AMMONIUM SULPHATE | 23 - 24 At | C 05/12/2024 |
| 07 | 26/12/24 | PREPARATION AND STANDARDISATION OF 0.1M Na ₂ S ₂ O ₃ | 25 - 26 At | C 05/12/2024 |
| (IV) | 30/12/24 | NEUTRALIZATION TITRATIONS | 27 | |
| 08 | 30/12/24 | ASSAY OF AMMONIUM CHLORIDES | 28 - 29 At | C 05/12/2024 |
| (V) | 02/01/24 | NON - AQUEOUS TITRATIONS | | |
| 09 | 02/01/24 | ASSAY OF SODIUM BENZOATE | 30 - 32 At | C 05/12/2024 |
| (VI) | 03/01/24 | OXIDATION - REDUCTION TITRATIONS | 33 | C 15/3/2024 |
| (VII) | 03/01/24 | PERMANGANOMETRY | 34 | C 15/3/2024 |
| 10 | 03/01/24 | ASSAY OF HYDROGEN PEROXIDE BY PERMANGANOMETRY | 35 - 36 At | C 15/3/2024 |



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|-----------------------|---------------|
| VIII | 06/1/24 | CERTOMETRY | 37 | (B) 18/3/2024 |
| 11 | 06/1/24 | ASSAY OF FERROUS SULPHATE By CERTOMETRY | 38 - 40 ^{At} | (B) 18/3/2024 |
| IX | 27/01/24 | IODOMETRY | 41 | (B) 18/3/2024 |
| 12 | 27/01/24 | ASSAY OF COPPER SULPHATE By IODOMETRY | 42 - 44 ^{At} | (B) 18/3/2024 |
| X | 03/02/24 | IODOMETRY | 45 | (B) 18/3/2024 |
| 13 | 03/02/24 | ASSAY OF SODIUM THIOSULPHATE | 46 - 47 ^{At} | (B) 18/3/2024 |
| XI | 06/02/24 | PRECIPITATION TITRATION | 48 | (B) 19/3/2024 |
| 14 | 06/02/24 | ASSAY OF SODIUM CHLORIDE | 49 - 51 ^{At} | (B) 19/3/2024 |
| 15 | 13/02/24 | ASSAY OF CALCIUM GLUCONATE | 52 - 54 ^{At} | (B) 19/3/2024 |
| XII | 17/02/24 | GRAVIMETRIC ANALYSIS | 55 | (B) 19/3/2024 |
| 16 | 17/02/24 | GRAVIMETRIC ESTIMATION OF BARIUM AS BARIUM SULPHATE | 56 - 57 | AB |
| XIII | 20/2/24 | POTENTIOMETRIC TITRATION | 58 | (B) 19/3/2024 |
| 17 | 20/2/24 | POTENTIOMETRIC TITRATION OF STRONG ACID AND STRONG BASE | 59 - 60 ^{At} | (B) 19/3/2024 |
| XIV | 22/02/24 | CONDUCTOMETRY | 61 | (B) 20/3/2024 |
| 18 | 22/02/24 | CONDUCTOMETRIC TITRATION OF STRONG ACID AND STRONG BASE | 62 - 63 ^{At} | (B) 20/3/2024 |
| XV | 02/03/24 | LIMIT TEST | 64 - 65 | (B) 20/3/2024 |
| 19 | 02/03/24 | LIMIT TEST FOR CHLORIDES | 66 - 68 ^{At} | (B) 20/3/2024 |
| 20 | 09/03/24 | LIMIT TEST FOR SULPHATES | 69 - 71 ^{At} | (B) 20/3/2024 |
| 21 | 12/03/24 | LIMIT TEST FOR IRON | 72 - 74 ^{At} | (B) 20/3/2024 |
| 22 | 16/03/24 | LIMIT TEST FOR SODIUM | 75 - 77 | (B) 20/3/2024 |



Verified Completely
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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) Aluminium 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) Divided powders

8. Suppositories

- a) Glycero gelatin suppository
- b) Cocoa 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)



1. H.C. Ansel et al., Pharmaceutical Dosage Form and Drug Delivery System, Lippincott Williams and Walkins, New Delhi.
2. Carter S.J., Cooper and Gunn's-Dispensing for Pharmaceutical Students, CBS publishers, New Delhi.
3. M.E. Aulton, Pharmaceutics, The Science& Dosage Form Design, Churchill Livingstone, Edinburgh.
4. Indian pharmacopoeia.
5. British pharmacopoeia.
6. Lachmann. Theory and Practice of Industrial Pharmacy, Lea& Febiger Publisher, The University of Michigan.
7. Alfonso R. Gennaro Remington. The Science and Practice of Pharmacy, Lippincott Williams, New Delhi.
8. Carter S.J., Cooper and Gunn's. Tutorial Pharmacy, CBS Publications, New Delhi.
9. E.A. Rawlins, Bentley's Text Book of Pharmaceutics, English Language Book Society, Elsevier Health Sciences, USA.
10. Isaac Ghebre Sellassie: Pharmaceutical Pelletization Technology, Marcel Dekker, INC, New York.
11. Dilip M. Parikh: Handbook of Pharmaceutical Granulation Technology, Marcel Dekker, INC, New York.
12. Francoise Nieloud and Gilberte Marti-Mestres: Pharmaceutical Emulsions and Suspensions, Marcel Dekker, INC, New York.





ADITYA PHARMACY COLLEGE

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

Department of
Pharmaceutics

Name: K. Jyothika

PIN No. 2336120044

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

Mr./Ms. K. JYOTHIKA

a student of 1-TB pharmacy with Regd. No. 2336120044

in the Pharmaceutics Laboratory during the year 2023-2024

No. of Experiments Conducted 26

No. of Experiments Attended 25

Signature - Faculty incharge

Signature-Head of the Department
PRINCIPAL

Aditya Pharmacy College
SURAMPALAM-533 437

Submitted for the practical examination held on

K. R.
Examiner-1

K. Pushpalatha
Examiner-2



PRINCIPAL

Aditya Pharmacy College
SURAMPALAM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| * | 11/12/23 | General procedure for waiting the experiment | 1 | Perf |
| * | | SYRUPS | 2-3 | Perf |
| 1, | 21/12/23 | Ex-1 Simple Syrup IP | 5-6 | Perf |
| 2, | 21/12/23 | Ex-2 ferrous phosphate Syrup | 7-9 | Perf |
| * | | ELIXIRES | 10-11 | Perf |
| 3, | 21/12/23 | Ex-3 Piperazine Citrate Elixirs | 12-13 | Perf |
| 4, | 08/01/24 | Ex-4 Paracetamol paediatrics elixir | 14-15 | Perf |
| * | | LINCTUS | 16 | Perf |
| 5, | 08/01/24 | Ex-5 Terpin hydrate Linctus | 17-18 | Perf |
| 6, | 29/01/24 | Ex-6 Iodine Throat paint | 19-20 | Perf |
| | | SOLUTIONS | 21 | Perf |
| 7, | 29/01/24 | Ex-7 Strong solution of Ammonium Acetate ^{IP} | 22-24 | Perf |
| 8, | 29/01/24 | Ex-8 Cresol with Soap Solution IP | 25-26 | Perf |
| 9, | 29/01/24 | Ex-9 Lugole Solution (Aqueous Iodine Soln) | 27-28 | Perf |
| * | | SUSPENSIONS | 29-30 | Perf |
| 10, | 29/01/24 | Ex-10 Calamine Lotion | 31-32 | Perf |
| 11, | 19/02/24 | Ex-11 Magnesium hydroxide Mixture | 33-35 | Perf |
| 12, | 19/02/24 | Ex-12 Aluminium Hydroxide Gel (d) Suspensions. | 36-37 | Perf |
| * | | EMULSION. | 38-39 | Perf |
| 13, | 26/02/24 | Ex-13 Liquid paraffin emulsion. | 40-42 | Perf |
| 14, | 26/02/24 | Ex-14 Turpentine Liniment | 43-44 | Perf |
| * | | POWDERS. | 45-46 | Perf |
| 15, | 04/03/24 | Ex-15 ORS powder. | 47-48 | Perf |
| 16, | 04/03/24 | Ex-16 Diclofenac Sodium effervescent granules. | 49-50 | Perf |



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| 17, | 04/03/24 | Ex-17. Zinc oxide starch dusting powder. | 51-52 | Perf |
| 18, | 04/03/24 | Ex-18. Divided powders. | 53-54 | Perf |
| | | SUPPOSITORIES | 55-56 | Perf |
| 19, | 11/03/24 | Ex-19. Glycero-gelatin suppository. | 57-58 | Perf |
| 20, | 11/03/24 | Ex-20. Coco butter suppository. | 59-60 | Perf |
| 21, | 11/03/24 | Ex-21. Zinc oxide Suppository. | 61-62 | Perf |
| | | SEMI SOLIDS. | 63-64 | Perf |
| 22, | 18/03/24 | Ex-22. Sulphur Ointment. | 65-66 | Perf |
| 23, | 18/03/24 | Ex-23. Non-staining iodine Ointment with methyl Salicylate | 67-68 | Perf |
| 24, | 04/03/24 | Ex-24. Carbopol gel | 69-70 | Perf |
| * | | GARGLES AND MOUTHWASH | 71 | Perf |
| 25, | 18/03/24 | Ex-25. Iodine gargle. | 72-73 | Perf |
| 26, | 04/03/24 | Ex-26. Chlorohexidine Mouthwash. | 74-75 | Perf |



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 437

187

BP110P. PHARMACEUTICAL INORGANIC CHEMISTRY (Practical)

4 Hours / Week

- I **Limit tests for following ions**
 - Limit test for Chlorides and Sulphates
 - Modified limit test for Chlorides and Sulphates
 - Limit test for Iron
 - Limit test for Heavy metals
 - Limit test for Lead
 - Limit test for Arsenic
- II **Identification test**
 - Magnesium hydroxide
 - Ferrous sulphate
 - Sodium bicarbonate
 - Calcium gluconate
 - Copper sulphate
- III **Test for purity**
 - Swelling power of Bentonite
 - Neutralizing capacity of aluminum hydroxide gel
 - Determination of potassium iodate and iodine in potassium iodide
- IV **Preparation of inorganic pharmaceuticals**
 - Boric acid
 - Potash alum
 - Ferrous sulphate

Recommended Books (Latest Editions)

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



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ADITYA PHARMACY COLLEGE

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

Department of

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Name: T. Jotsna

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practical work done by*

Mr./Ms. Tanorapu Jotsna

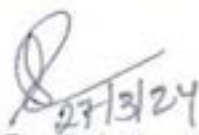
a student of B. Pharmacy with Regd. No. 93361R0096

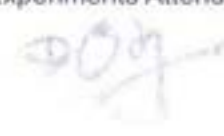
Pharmaceutical

in the Inorganic Chemistry Laboratory during the year 2023-2024

No. of Experiments Conducted 21

No. of Experiments Attended 21


Signature - Faculty incharge


Signature-Head of the Department

Submitted for the practical examination held on 16.4.2024




Examiner-1


PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPATEM-533 437


Examiner-2

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|------------|---|----------|---------|
| | 29-11-2023 | Introduction of Inorganic Chemistry | 1-4 | |
| 1 | 6-12-2023 | Limit test for Chlorides | 5-6 | |
| 2 | 6-12-2023 | Limit test for Sulphates | 7-8 | |
| 3 | 13-12-2023 | Limit test for Iron | 9-10 | |
| 4 | 13-12-2023 | Limit test for Heavy Metals | 11-14 | |
| 5 | 20-12-2023 | Limit test for Lead | 15-16 | |
| 6 | 20-12-2023 | Limit test for Arsenic | 17-18 | |
| 7 | 27-12-2023 | Modified limit test for chlorides & sulphates using $KMnO_4$ | 19-21 | |
| 8 | 10-1-2024 | Modified limit test for chlorides and sulphates using $NaHCO_3$ | 22-23 | |
| 9 | 24-1-2024 | Preparation of Potash Alum | 24-25 | |
| 10 | 31-1-2024 | Preparation of Boric Acid | 26-27 | |
| 11 | 7-2-2024 | Preparation of Ferrous Sulphate | 28-29 | |
| 12 | 14-2-2024 | Swelling Power of Bentonite | 30-31 | |
| 13 | 21-2-2024 | Neutralization capacity of Aluminium Hydroxide Gel | 32-33 | |
| 14 | 26-2-2024 | Presence of Iodate in Potassium Iodide | 34 | |
| 15 | 26-2-2024 | Test for identity of ferrous sulphate | 35-36 | |
| 16 | 6-3-2024 | Test for identity of copper sulphate | 37-38 | |
| 17 | 6-3-2024 | Test for identity of calcium gluconate | 39-40 | |
| 18 | 13-3-2024 | Test for identity of sodium bicarbonate | 41-42 | |
| 19 | 13-3-2024 | Test for identity of magnesium hydroxide | 43-44 | |
| | 20-3-2024 | Test for identity of Barium Sulphate | 45 | |
| | 27-3-2024 | Test for identity of Potassium Chloride | 46-47 | |



BP111P.COMMUNICATION SKILLS (Practical)

2 Hours / week

The following 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 Don't'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





ADITYA PHARMACY COLLEGE

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

Department of
Communication Skills

Name: M. Bhagya Sri Sai

PIN No. 23361R0071

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

Mr. / Ms. M. Bhagya Sri Sai

a student of 11 B Pharmacy with Regd. No. 23361R0051

in the Communication Skills Laboratory during the year 2023-2024

No. of Experiments Conducted 8

No. of Experiments Attended 8

Signature - Faculty incharge

Signature-Head of the Department

PRINCIPAL

Aditya Pharmacy College

SURAMPALM-533 437

Submitted for the practical examination held on



Examiner-1

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALM-533 437

Examiner-2

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| 01 | 14/12/23 | Practice -01 a) Greetings, Introducing and Taking leave | 1-8 | 87 |
| 02 | 28/12/23 | Practice - 02 Giving information and asking for information | 9-15 | 87 |
| 03 | 11/01/24 | Practice -03 Phonetics. | 16-25 | 87 |
| 04 | 1/02/24 | Practice -04 Group discussion | 26-30 | 87 |
| 05 | 15/02/24 | Practice -05 Presentation Skills. | 31-33 | 87 |
| 06 | 29/2/24 | Practice - 06 Interview skills | 34-36 | 87 |
| 07 | 14/03/24 | Practice - 07 Resume writing and cover letter | 37-40 | 87 |
| 08 | 21/03/24 | Practice - 08 Email writing | 41-42 | 87 |



(Signature)

PRINCIPAL

ADITYA PHARMACY COLLEGE(A)
SURAMPALAM-533 437

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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Principal
Aditya Pharmacy College
SURAMPALAM-533 437



ADITYA PHARMACY COLLEGE

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

Department of

Name: Raushan Kumar Shah

PIN No. 23361R0073

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

Mr./Ms. Raushan Kumar Shah

a student of D-pharmacy with Regd. No. 23361R0073

in the Remedial Biology Laboratory during the year 2023-24

No. of Experiments Conducted

11

No. of Experiments Attended

11

Signature - Faculty incharge

Signature-Head of the Department

Submitted for the practical examination held on 15/04/2024



Examiner-1

PRINCIPAL
ADITYA PHARMACY COLLEGE
SURAMPALAM-533 437

Examiner-2

Painter

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| 1. | 18/1/24 | Study of microscopy. | 1 to 6 | Kathik |
| 2. | 1/2/24 | Study of Section cutting techniques, mounting, staining and permanent slide preparation. | 7 to 12 | Kathik |
| 3. | 1/2/24 | Study of cell and its inclusions. | 13 to 18 | Kathik |
| 4. | 1/2/24 | Study of different modification of root. | 19 to 22 | Kathik |
| 5. | 8/12/24 | Study of different modification of stem. | 23 to 26 | Kathik |
| 6. | 22/02/24 | Study of different modification of leaf. | 27 to 28 | Kathik |
| 7. | 29/02/24 | Study of plant Tissues | 29 to 32 | |
| 8. | 07/03/24 | Microscopic Study of transverse section of Dicot Stem. | 33 to 36 | Kathik |
| 9. | 14/03/24 | Microscopic Study of transverse section of Monocot Stem | 37 to 39 | Kathik |
| 10. | 21/03/24 | Microscopic Study of transverse section of Dicot Root. | 40 to 42 | Kathik |
| 11. | 21/03/24 | Microscopic Study of transverse section of monocot root | 44 to 46 | Kathik |



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SURAMPALAM-533 437

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 Taylor. Williams & Wilkins Co, Riverview, MI USA



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4. Text book of Medical Physiology- Arthur C, Guyton and John. 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 PHARMACY COLLEGE

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

Department of
Human Anatomy and physiology

Name: V. Rama lakshmi

PIN No. 2336120040

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

Mr./Ms. V. Rama lakshmi

a student of B. Pharmacy with Regd. No. 2336120040
in the HAP - HUMAN ANATOMY & PHYSIOLOGY Laboratory during the year 2023-2024

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 28/09/24

Examiner-1

Examiner-2



Aditya Pharmacy College
SURAMPALAM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|------------|---|----------|---------|
| 1 | 01.05.2024 | To Study the integumentary and Special Senses using Specimen models | 01-07 | } G |
| 2 | 08.05.2024 | To Study the Nervous System using Specimen models | 08-11 | |
| 3 | 15.05.2024 | To Study the Endocrine System using Specimen models | 12-15 | } G |
| 4 | 05.06.2024 | To Demonstrate the Functions of Olfactory Nerve | 16-17 | |
| 5 | 12.06.2024 | To Examine Different types of Tastes | 18-19 | |
| 6 | 19.06.2024 | To Demonstrate the Visual Activity | 20-22 | } G |
| 7 | 26.06.2024 | To Demonstrate the Reflex Activity | 23-25 | |
| 8 | 03.07.2024 | Recording of Body Temperature | 26-27 | |
| 9 | 10.07.2024 | To Demonstrate Negative and Positive Feedback Mechanism | 28-29 | |



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|------------|--|----------|---------|
| 10 | 24.07.2024 | Determination OF Tidal Volume and Vital Capacity | 30-31 | } g |
| 11 | 31.07.2024 | Recording OF Basal Mass index | 32 | |
| 12 | 07.08.2024 | To Study the Digestive, Respiratory, Cardiovascular, Reproductive System with charts | 33-37 | |
| 13 | 14.08.2024 | Study of Family Planning devices and Pregnancy Diagnosis Test | 38-41 | } g |
| 14 | 21.08.2024 | Permanent Slides OF Vital organs and Gonads | 42-45 | |
| 15 | 21.08.2024 | Determination OF Total Blood Count by Cell Analyser. | 46-47 | |



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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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ADITYA PHARMACY COLLEGE

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

Department of

Pharmaceutical Organic chemistry-I

Name: M. Pojitha

PIN No. 23361R0054

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

Mr./Ms. Marisetty Pojitha

a student of I-II B Pharmacy with Regd. No. 23361R0054

in the ph. Organic chemi Laboratory during the year 2023-24
-stry-I

No. of Experiments Conducted

15

No. of Experiments Attended

15

Signature - Faculty incharge

Signature-Head of the Department

PRINCIPAL

Aditya Pharmacy College

Submitted for the practical examination held on SURAMP-533 437

Examiner-1

Examiner-2



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| * | | Lab Safety & Precautions | 01 | } Dmshy |
| * | | Laboratory Rules. | 02 | |
| 1 | 11/05/24 | Determination of Melting Point. | 3-5 | |
| 2 | 18/05/24 | Determination of Boiling point. | 6-7 | } Dmshy |
| 3. | 08/06/24 | Purification Techniques. | 8-13 | |
| * | 08/06/24 | Systemic procedure for Organic Compound Analysis. | 14-26 | } Dmshy |
| 4 | 15/06/24 | Qualitative Analysis for Organic Compound Sample - 01 | 27-30 | |
| 5 | 15/06/24 | Qualitative Analysis for Organic Compound Sample - 02. | 31-32 | } Dmshy |
| 6 | 22/06/24 | Qualitative Analysis for Organic Compound Sample - 03 | 33-36 | |
| 7 | 29/06/24 | Qualitative Analysis for Organic Compound Sample - 04 | 37-41 | } Dmshy |
| 8 | 29/06/24 | Qualitative Analysis for Organic Compound Sample - 05 | 42-45 | |

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| 9 | 20/07/24 | Qualitative Analysis for organic compound Sample - 06. | 46-49 | } Duly |
| 10 | 20/07/24 | Qualitative Analysis for organic compound sample - 07. | 50-54 | |
| 11 | 27/08/24 | Preparation of Dibenzylidene acetone from Benzaldehyde & Acetone. | 55-56 | } Duly |
| 12 | 03/08/24 | Preparation of Benzoic acid from Benzalimide. | 57-58 | |
| 13 | 10/08/24 | Preparation of Picric acid from Phenol | 59-60 | } Duly |
| 14 | 17/08/24 | Preparation of Meta Dinitro Benzene from Nitrobenzene. | 61-62 | |
| 15 | 24/08/24 | Preparation Of Acetanilide from Aniline. | 63 | Duly |



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JYOTI PHARMACY COLLEGE(A)
SURAMPALAM-533 437

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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ADITYA PHARMACY COLLEGE

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

Department of
Biochemistry

Name: M. Poojitha

PIN No. 2336120054

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

Mr./Ms. Marisetty Poojitha

a student of I-II B Pharmacy with Regd. No. 2336120054

in the Bio chemistry Laboratory during the year 2023-24

No. of Experiments Conducted 19

No. of Experiments Attended 19

Signature - Faculty incharge

Signature-Head of the Department



Submitted for the practical examination held on Aditya Pharmacy College

PRINCIPAL

SURAMPATEM-533 437

Examiner-1

Examiner-2

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPATEM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| | 01/05/24 | Introduction to carbohydrates | 01 - 02 | 39. |
| | 01/05/24 | Systematic procedure for quantitative analysis of given carbohydrate samples. | 03 - 05 | |
| 01 | 03/05/24 | Quantitative Analysis for unknown Sample - 1 | 06 - 08 | 10/5 |
| 02 | 03/05/24 | Quantitative Analysis for unknown Sample - 2. | 09 - 11 | 10/5 |
| 03 | 10/05/24 | Quantitative Analysis for unknown Sample - 3. | 12 - 14 | 12/5 |
| 04 | 10/05/24 | Quantitative Analysis for unknown Sample - 4 | 15 - 17 | 10/5 |
| 05 | 17/05/24 | Quantitative Analysis for unknown Sample - 5 | 18 - 20 | 10/5 |
| 06 | 17/05/24 | Quantitative Analysis for unknown Sample - 6. | 21 - 23 | |
| | 07/06/24 | Procedure for systematic Qualitative Analysis of given protein Sample. | 24 - 27 | 14/6 |
| 07 | 14/06/24 | Qualitative analysis for protein Sample - 1 | 28 - 31 | 21/6 |
| 08 | 14/06/24 | Qualitative Analysis for protein Sample - 2. | 32 - 35 | |
| | 21/06/24 | Detection of abnormal constituents Present in urine Sample. | 36 - 38 | 28/6 |
| 09 | 28/06/24 | Determination of abnormal Constituents in Sample - A. | 39 - 40 | 19/7 |
| 10 | 19/07/24 | Determination of abnormal Constituents in sample - B | 41 - 42 | 20/7 |



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SURAMPALAM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| 11 | 26/07/24 | Determination of abnormal constituents in Sample - c. | 43-44 | 2/8 |
| 12 | 02/08/24 | Estimation of Glucose by colorimetry by using DNSA. | 45-46 | 9/8 |
| 13 | 09/08/24 | Estimation of creatinine in the given Urine Sample. | 47-48 | 16/8 |
| 14 | 16/08/24 | Determination of total serum in cholesterol. | 49-51 | 11/8 |
| 15 | 19/08/24 | Preparation of Buffer solution and measurement of pH | 52-54 | 23/8 |
| 16 | 19/08/24 | To Demonstrate the study of Enzymatic hydrolysis of starch. | 55-56 | 28/8 |
| 17 | 23/08/24 | Study the Effect of Temperature (or) Salivary Amylase activity. | 57-58 | 28/8 |
| 18 | 23/08/24 | Study the Effect of effect of Substrate concentration on Salivary Amylase Activity. | 59 | 28/8 |
| 19 | 23/08/24 | Study of Salivary Amylase. | 60-61 | 28/8 |



PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPAL-533 437

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



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ADITYA PHARMACY COLLEGE

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

Department of Computer Applications

Name: D. Vasaviya

PIN No. 23361R0028

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

Mr. / Ms. Durgapu Meena Lakshmi Vasaviya

a student of 1st year B. pham. with Regd. No. 23361R0028

*in the Computer Laboratory during the year 2023-2024
Applications*

No. of Experiments Conducted 14

No. of Experiments Attended 14

Signature - Faculty incharge

Signature - Head of the Department

Aditya Pharmacy College
SURAMPALAM-593 437

Submitted for the practical examination held on 26/7/24

Examiner-1

Examiner-2

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|--|----------|---------|
| 1 | 6/5/24 | An Example of Patient Questionnaire | 1 | ✓ |
| 2 | 13/5/24 | Creation of Webpage (biodata) Using HTML. | 2-6 | ✓ |
| 3 | 3/6/24 | Retrieval of drug information from internet. | 7 | ✓ |
| 4 | 10/6/24 | Mailing labels in Ms. Word. | 8-9 | ✓ |
| 5 | 24/6/24 | Patient database | 10-11 | ✓ |
| 6 | 1/7/24 | Patient information from in Ms Access. | 12-13 | ✓ |
| 7 | 18/7/24 | Patient information Reports in Ms Access | 14-15 | ✓ |
| 8 | 22/7/24 | Invoice Tabel | 16 | ✓ |
| 9 | 29/7/24 | Drug information storages Retrieval | 17 | ✓ |
| 10 | 5/8/24 | Patient Information Queries in Ms Access. | 18-19 | ✓ |

Painter

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|-----------------------------------|----------|---------|
| 11 | 12/8/24 | Exporting Database to Web pages | 20 | ✓ |
| 12 | 12/8/24 | Exporting database to XML page | 21-22 | ✓ |
| 13 | 19/8/24 | Generation of Student Marklist | 23-24 | ✓ |
| 14 | 19/8/24 | Creation Power Point Presentation | 25-26. | ✓ |

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-naphthol from Aniline by diazotization and coupling reactions.
- Benzil from Benzoin by oxidation reaction.
- Dibenzal acetone from Benzaldehyde by Claisen Schmidt reaction
- Cinnamic 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.



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Aditya Pharmacy College
SURAMPALAM-533 437



ADITYA PHARMACY COLLEGE

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

Department of
pharmaceutical organic chemistry-II

Name: *M.V.B. Prasad*

PIN No.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 2 | 3 | G | I | R | 0 | 0 | 6 | 1 |
|---|---|---|---|---|---|---|---|---|---|

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

Mr./Ms. *Matta Venkata Bhavani Prasad*

a student of *B. Pharmacy* with Regd. No. *223GIR0061*

in the *Organic Chemistry* Laboratory during the year *2023-2024*

No. of Experiments Conducted

| |
|----|
| 12 |
|----|

No. of Experiments Attended

| |
|----|
| 12 |
|----|

Signature - Faculty incharge

[Signature]
06/02/2024

Signature-Head of the Department

PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 437

Submitted for the practical examination held on

Examiner-1

[Signature]
24/2/24

Examiner-2

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ADITYA PHARMACY COLLEGE
SURAMPALAM-533 437
[Signature]



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|------------------|
| 1. | 20/10/23 | Basic Laboratory techniques used for separation & purification of organic compound. | 1-5 | At (HP) 20/10/23 |
| 1. | 20/10/23 | Recrystallisation. | 6-7 | At (HP) 27/10/23 |
| 2. | 27/10/23 | Preparation of phenyl Azobenzene Naphthal. | 8-9 | At (HP) 13/11/23 |
| 3. | 3/11/23 | Preparation of acetanilide from aniline. | 10-12 | At (HP) 10/11/23 |
| 4. | 10/11/23 | Synthesis of Benzil from Benzoin | 13-14 | At (HP) 17/11/23 |
| 5. | 17/11/23 | Preparation of dibenzylidene acetone from Benzaldehyde. | 15-16 | At (HP) 29/11/23 |
| 6. | 29/11/23 | Preparation of Benzoic acid. | 17-19 | At (HP) 8/12/23 |
| 7. | 8/12/23 | Preparation of para iodo benzoic acid. | 20-21 | At (HP) 15/12/23 |
| 8. | 15/12/23 | Preparation of Cinnamic acid. | 22-24 | At (HP) 22/12/23 |
| 9. | 22/12/23 | Preparation of 2,4,6 tribromo aniline. | 25-26 | At (HP) 29/12/23 |



PRINCIPAL
SRIYA PHARMACY COLLEGE(A)
SURAMPALAM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|----------------|
| 10. | 29/12/23 | Preparation of Benzoic acid from Benzyl chloride. | 27-28 | At (W) |
| 11. | 5/1/24 | Preparation of m-dinitro Benzene. | 29-30 | At (W) 6/2/24. |
| 12. | 12/1/24 | Determination of Acid value. | 32-33 | At (W) 6/2/24. |
| 13. | 23/1/24 | Determination of saponification value. | 34-35 | At (W) 6/2/24. |
| 14. | 23/1/24 | Determination of iodine value. | 36-37. | At (W) 6/2/24. |



PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

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 CCl₄ 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 Pharmacy, by Gaurav Jain & Roop K. Khar





ADITYA PHARMACY COLLEGE

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

Department of
Pharmaceutics

Name: K. Sujitha

PIN No. 2236180040

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

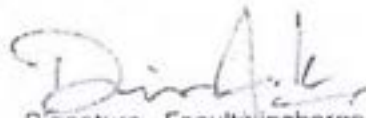
Mr./Ms. K. Sujitha


a student of 2nd B.Pharmacy with Regd. No. 2236180040

in the Physical Pharmaceutics Laboratory during the year 2023-24

No. of Experiments Conducted 12

No. of Experiments Attended 12


Signature - Faculty incharge


Signature-Head of the Department
PRINCIPAL

Aditya Pharmacy College
SURAMPALM-533 437

Submitted for the practical examination held on


Examiner-1


Examiner-2




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Aditya Pharmacy College
SURAMPALM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| 1 | 04/11/23 | Determination of Solubility of Drug at room temperature | 1 | DA |
| 2 | 11/11/23 | Determination of pKa value by half neutralization method | 3 | DA |
| 3 | 16/11/23 | Determination of Partition coefficient of benzoic acid in benzene & water | 6 | DA |
| 4 | 12/11/23 | Determination of Surface tension of given liquid by using drop Count method | 8 | DA |
| 5 | 25/11/23 | Determination of Surface tension of given liquid by using drop weight method | 11 | DA |
| 6 | 02/12/23 | Determination of composition of NaCl in a solution by phenol water system by CST method | 14 | DA |
| 7 | 07/12/23 | Determination of Critical micelle concentration of Surfactant | 17 | DA |
| 8 | 16/12/23 | Determination of partition coefficient of CCl ₄ & water | 20 | DA |



PRINCIPAL

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| 9 | 23/2/23 | Determination of HLB number of a surfactant by saponification method. | 23 | PA |
| 10 | 6/1/24 | Determination of freundlich & langmuir constants using activated charcoal. | 27 | PA |
| 11 | 12/1/24 | Determination of stability constant & donor-acceptor ratio of PABA-caffeine complex by solubility method. | 31 | PA |
| 12 | 12/01/24 | Determination of stability constant & donor-acceptor ratio of cupric complex by pH titration method. | 35 | PA |

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SIRAMPALEM-533 437



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. LP., 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



Recommended Books: (Latest Editions)

1. Introduction to chemical engineering – Walter L Badger & Julius Banchero, Latest edition.
2. Solid phase extraction, Principles, techniques and applications by Nigel J.K. Simpson- Latest edition.
3. Unit operation of chemical engineering – McCabe Smith, Latest edition.
4. Pharmaceutical engineering principles and practices – C.V.S Subrahmanyam et al., Latest edition.
5. Remington practice of pharmacy- Martin, Latest edition.
6. Theory and practice of industrial pharmacy by Lachmann., Latest edition.
7. Physical pharmaceutics- C.V.S Subrahmanyam et al., Latest edition.
8. Cooper and Gunn's Tutorial pharmacy, S.J. Carter, Latest edition.





ADITYA PHARMACY COLLEGE

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

Department of PHARMACEUTICAL MICROBIOLOGY

Name: T.K. Annapurna

PIN No. 22361R0032

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

Mr./Ms. Juvvala Kasi Annapurna

a student of Dnd B. Pharmacy with Regd. No. 22361R0032

in the Microbiology Laboratory during the year 2023-2024

No. of Experiments Conducted 17

No. of Experiments Attended 15

Signature - Faculty incharge

Signature-Head of the Department

PRINCIPAL

Aditya Pharmacy College
SURAMPATEM-533 437

Submitted for the practical examination held on

Examiner-1

S. Sruathi
29/02/24

Examiner-2

[Signature]
29/02/24






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SURAMPATEM-533 437

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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| | 18/10/23 | Introduction to Microbiology. | 1-4 | } S |
| | 18/10/23 | Common laboratory rules & regulations for safety. | 5-7 | |
| 1. | 18/10/23 | Study of apparatus & equipments used in pharmaceutical microbiology. | 8-12/16 | |
| 2. | 1/11/23 | Preparation & sterilization of nutrient broth. | 13-18 | S |
| 3. | 1/11/23 | Preparation & sterilization of nutrient agar. | 19-21 | S |
| 4. | 8/11/23 | Culture transfer Technique. | 22-25 | S |
| 5. | 15/11/23 | Techniques for isolation of pure culture from mixed culture. | 26-29 | S |
| 6. | 22/11/23 | Preparation of Bacterial smear. | 30-31 | } S |
| 7. | 22/11/23 | Simple staining. | 32-34 | |
| 8. | 29/11/23 | Gram's staining. | 35-36 | S |
| 9. | 9/12/23 | Acid fast staining. | 37-38 | S |
| 10. | 13/12/23 | Microscopic observation of living Bacteria by Hanging drop method. | 39-40 | S |
| 11. | 20/12/23 | Imvic test. | 41-45 | S |
| 12. | 27/12/23 | Sterilization by autoclave & Test for sterility. | 46-47 | S |
| 13. | 27/12/23 | Sterilization by dry heat & test for sterility. | 48-49 | S |
| 14. | 27/12/23 | Test for sterility of Surgical dressing. | 50-51 | S |

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|--|----------|---|
| 15. | 3/01/24 | Microbial assay of Tobramycin by Turbidometric method. | 52-53 |  |
| 16. | 3/01/24 | Microbial assay of amikacin by Cup plate Method. | 54-55 |  |
| 17. | 10/1/24 | Viable Count. | 56-57. |  |

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 and logarithmic 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 other major 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 Pharmacy College
SURAMPALAM-533 057



ADITYA PHARMACY COLLEGE

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

Department of PHARMACEUTICAL ENGINEERING

Name: T. SWATHI REVATHI NAGAI LAKSHMI PIN No. 22361R00A8

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

Mr./Ms. TEKI SWATHI REVATHI NAGAI LAKSHMI

a student of B-pharmacy IInd year with Regd. No. 22361R00A8

in the ph-Engineering Laboratory during the year 2023-2024

No. of Experiments Conducted 17

No. of Experiments Attended 17

Signature - Faculty-in-charge

Signature-Head of the Department

PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 437

Submitted for the practical examination held on

Examiner-1

Examiner-2



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Aditya Pharmacy College
SURAMPALAM-533 437

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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|----------|
| | 17/10/23 | Introduction | 1-3 | ✓ |
| 1. | 17/10/23 | Determination of Radiation constant of Iron. | 4-6 | 17/10/23 |
| 2. | 31/10/23 | Determination of Radiation constant of Brass | 7-9 | 21/11/23 |
| 3. | 7/11/23 | Determination of Radiation constant of painted glass. | 10-12 | 14/11/23 |
| 4. | 14/11/23 | Determination of Radiation constant of unpainted glass | 13-15 | 21/11/23 |
| 5. | 21/11/23 | Construction of drying rate curve of calcium carbonate | 16-18 | 28/11/23 |
| 6. | 21/11/23 | Construction of drying rate curve of Starch | 19-21 | 5/12/23 |
| 7. | 28/11/23 | Evaluation of factors effecting rate of evaporation. | 22-24 | 12/12/23 |
| 8. | 28/11/23 | Determination of absolute and relative humidity by dew point | 25-27 | 19/12/23 |
| 9. | 5/12/23 | Determination of crystallization of KNO_3 by Shock cooling technique | 28-31 | 21/12/23 |
| 10. | 12/12/23 | Evaluation of various factors affecting on rate of filtration on $CaCO_3$ suspension | 32-36 | 2/1/24 |
| 11. | 19/12/23 | Determination of overall heat transfer coefficient | 37-40 | 2/1/24 |
| 12. | 26/12/23 | particle size distribution of a powder by using sieving method | 41-46 | 6/1/24 |
| 13. | 2/1/24 | Determination of Size Reduction. | 47-49 | ✓ |



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|--------|--|----------|-------------|
| 14. | 6/1/24 | Demonstration of pharmaceutical Equipments-I | | 2 9/1/24 |
| | | Colloid mill | 50-51 | |
| | | planetary mixer | 52-53 | |
| | | Fluidised bed dryer (FBD) | 54-55 | |
| | | Freeze dryer | 56-59 | |
| | | Ball mill | 60-61 | |
| | | Multiple effect evaporator | 62-64 | |
| 15. | 6/1/24 | Demonstration of pharmaceutical Equipments-II | | 2 9/1/24 |
| | | Rotatory tablet machine | 65-67 | |
| | | Fluidized bed coater | 68-70 | |
| | | Fluid energy mill | 71-72 | |
| | | Dehumidifier | 73-75 | |
| 16. | 9/1/24 | Determination of efficiency of Steam distillation using turpentine oil | 76-78 | 2 5/1/24 |
| 17. | 9/1/24 | Determination of mixing index of blender for Salicylic acid and lactose. | 79-81 | |



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 437

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. (ARIES)
4. Introduction to principles of drug design- Smith and Williams.
5. Remington's Pharmaceutical Sciences.
6. Martindale's extra pharmacopoeia.



- 7/ Organic Chemistry by I.L. Finar, Vol. II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. 1-5.
- 9/ Indian Pharmacopoeia.
10. Text book of practical organic chemistry- A.I Vogel.





ADITYA PHARMACY COLLEGE

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

Department of

Medicinal chemistry - I

Name: ...K. Vaishnavi.....

PIN No. 99301R0046

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

Mr./Ms. ...K. Vaishnavi.....

a student of Ind B. Pharmacy with Regd. No. 99301R0046

in the Medicinal Laboratory during the year 2023-2024
chemistry - I

No. of Experiments Conducted 13

No. of Experiments Attended 13

Signature - Faculty incharge

Signature-Head of the Department

PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 437

Submitted for the practical examination held on

Examiner-1

Examiner-2



PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALAM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|---------|
| 1. | 6/3/24 | Preparation of Benzocaine | 1-2 | At (LP) |
| 2. | 13/3/24 | Preparation of 2,3 diphenyl Quinoxaline | 03 | At (LP) |
| 3. | 20/3/24 | Preparation of Benzimidazole | 4-5 | At (LP) |
| 4. | 20/3/24 | Synthesis of 1,3 pyrazole | 6-7 | At (LP) |
| 5. | 27/3/24 | Preparation of Benzotriazole | 8-9 | At (LP) |
| 6. | 3/4/24 | Assay of furosemide | 10 | At (LP) |
| 7. | 24/4/24 | Assay of Aspirin | 11-12 | At (LP) |
| 8. | 1/5/24 | Assay of Atropine | 13-14 | At (LP) |
| 9. | 8/5/24 | Assay of Ibuprofen | 15-16 | At (LP) |
| 10. | 15/5/24 | Assay of chlorpromazine | 17-18 | At (LP) |
| 11. | 5/6/24 | Determination of partition coefficient of Benzoic acid. | 19-21 | At (LP) |
| 12. | 12/6/24 | Preparation of 5,5 diphenyl hydantoin [Phenytoin] | 22-23 | At (LP) |
| 13. | 12/6/24 | Preparation of Phenothiazine | 24-25 | At (LP) |



PRINCIPAL
DITP PHARMACY COLLEGE(A)
SURAMPalem-533 437

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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ADITYA PHARMACY COLLEGE

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

Department of PHYSICAL PHARMACEUTICS -II

Name: Mr. Abhinaya sai

PIN No. 22361R0062

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

Mr./Ms. MEDAPATI ABHINAYA SAI

a student of B- pharmacy with Regd. No. 22361R0062

in the physical pharmaLaboratory during the year 2023-24
ceutics -II

No. of Experiments Conducted 12

No. of Experiments Attended 11

T. Deyaswamy
19/6/24
Signature - Faculty incharge

[Signature]
Signature-Head of the Department

PRINCIPAL

Aditya Pharmacy College

Submitted for the practical examination held on SURAMPALEM-533 437

[Signature]
Examiner-1

[Signature]
Examiner-2



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PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|---------------------|
| 1. | 16/3/24 | Determination of viscosity by brook field method. | 1 - 4 | } $\frac{60}{245}$ |
| 2. | 23/3/24 | Determination of particle size, size distribution by using sieving method. | 5 - 8 | |
| 3. | 30/3/24 | Determination of particle size, size distribution (globule size) in An emulsion by microscopy | 9 - 11 | } $\frac{60}{104}$ |
| 4. | 6/4/24 | Estimation of true density of zinc oxide powder. | 12 - 13 | |
| 5. | 13/4/24 | Determination of bulk density and percentage porosity | 14 - 15 | } $\frac{60}{515}$ |
| 6. | 27/4/24 | Determination of viscometer using OSTWALD viscometer. | 16 - 17 | |
| 7. | 04/5/24 | Determine the influence of lubricant on angle of repose | 18 - 20 | } $\frac{60}{1415}$ |
| 8. | 11/5/24 | Determination of sedimentation volume of suspension using suspending agents | 21 - 23 | |



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SURAMPALM 533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|--|----------|---------------------|
| 9. | 8/5/24 | Determination of sedimenta- -tion volume with effect of different suspending agents. | 24-26 | } $\frac{12}{27/5}$ |
| 10. | 25/5/24 | Determination of reaction rate constant of pseudo first order reaction of Acid Hydrolysis of esters. | 27-29 | |
| 11. | 18/5/24 | Determination of reaction rate constant of second order reaction of Alkaline Hydrolysis of Ethyl Acetate. | 30-31 | } $\frac{12}{18/6}$ |
| 12. | 15/6/24 | Accelerated stability testing based on Arrhenius principle. | 32-35 | |

PRINCIPAL
Aditya Pharmacy College
SIRAMPALAM-533 437



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, Churchill 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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PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 657

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. VallabhPrakashan,




PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 457



ADITYA PHARMACY COLLEGE

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

Department of
pharmacology - I

Name: K.K.N.S.S. Dharani Devi

PIN No. 22361R0047

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

Mr./Ms. K.K.N.S.S. Dharani Devi

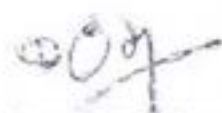
a student of I-B pharmacy with Regd. No. 22361R0047

in the pharmacology-I Laboratory during the year 2023-24

No. of Experiments Conducted 12

No. of Experiments Attended 12


Signature - Faculty incharge


Signature-Head of the Department

Submitted for the practical examination held on


Examiner-1


Examiner-2



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PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALAM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|--|----------|-----------|
| 1 | 5/3/24 | Introduction to Experimental pharmacology | 1 | Yk / 12/3 |
| 2 | 5/3/24 | Commonly used Instruments in Experimental pharmacology | 2 | Yk / 12/3 |
| 3 | 12/3/24 | Study of Common Laboratory Animals | 8 | Yk / 19/3 |
| 4 | 19/3/24 | Maintenance & Laboratory animals as per CPCSEA Guidelines. | 16 | Yk / 26/3 |
| 5 | 26/3/24 | Common Laboratory Techniques | 22 | Yk / 2/4 |
| 6 | 2/4/24 | Study of different routes of drug administration in mice or rats. | 28 | Yk / 2/4 |
| 7 | 23/4/24 | Study of effect of Hepatic microsomal enzyme inducers on the phenobarbitone sleeping time in mice. | 34 | Yk / 23/4 |
| 8 | 23/4/24 | Effect of drug on Ciliary motility of frog oesophagus | 36 | Yk / 23/4 |



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|--------|---|----------|--------------------|
| 9 | 4/5/24 | Effect of drugs on Rabbit eye [Mydriatic & Miotic effect] | 38 | $\frac{Y_k}{7/5}$ |
| 10 | 4/5/24 | Skeletal muscle relaxant property of Diazepam using ROTA-ROD Apparatus | 40 | $\frac{Y_k}{7/5}$ |
| 11 | 7/5/24 | Evaluation of CNS depressant property of Chlorpromazine on locomotor activity of mice by using Actophotometer | 42 | $\frac{Y_k}{11/6}$ |
| 12 | 7/5/24 | Anti Convulsant effect of drugs by MES & PTZ method | 44 | $\frac{Y_k}{11/6}$ |



PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALAM-532 437

BP409 P. PHARMACOGNOSY AND PHYTOCHEMISTRY I (Practical)

4 Hours/Week

1. Analysis of crude drugs by chemical tests: (i) Tragacanth (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 palisade 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. Saunders & 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, Gokhale (2007), 37th Edition, Nirali Prakashan, New Delhi.
6. Herbal drug industry by R.D. Choudhary (1996), 1st Edn, Eastern Publisher, New Delhi.
7. Essentials of Pharmacognosy, Dr. S.H. Ansari, 1st edition, Birla publications, New Delhi, 2007
8. Practical Pharmacognosy: C.K. Kokate, Purohit, Gokhale
9. Anatomy of Crude Drugs by M.A. Iyengar




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CHIKAMPANELEM-533 437



ADITYA PHARMACY COLLEGE

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

Department of

PHARMACOGNOSY & PHYTOCHEMISTRY - I

Name: N. Bhavya sri

PIN No. 22361R0071

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

Mr./Ms. Nandipati. Bhavya sri

a student of 2nd B.Pharmacy with Regd. No. 22361R0071

Pharmacognosy &
in the Phytochemistry - I Laboratory during the year 2023-24

No. of Experiments Conducted 11

No. of Experiments Attended 10

G. Sowjanya
Signature - Faculty incharge

[Signature]
Signature-Head of the Department
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the practical examination held on



[Signature]
Examiner-1

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

[Signature]
Examiner-2





Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| 01. | | Analysis of crude drugs by Chemical Tests | | |
| | 15/03/24 | A. chemical tests for Tragacanth | 1 - 3 | |
| | 15/03/24 | B. Chemical tests for Acacia | 4 - 6 | |
| | 15/03/24 | C. chemical tests for Starch | 7 - 8 | |
| | 20/03/24 | D. chemical tests for Honey | 9 - 10 | |
| | 20/03/24 | E. chemical tests for Agar | 11 - 12 | |
| | 20/03/24 | F. chemical tests for Gelatin | 13 | |
| | 20/03/24 | G. chemical tests for Castor oil | 14 | |
| 02. | 22/03/24 | Determination of Swelling Factor | 15 - 16 | |
| 03. | 10/04/24 | Determination of Foaming Index | 17 - 18 | |
| 04. | 12/04/24 | Determination of Moisture content | 19 - 20 | |
| 05. | 24/04/24 | Determination of Total Ash value | 21 - 22 | |
| 06. | 26/04/24 | Determination of Extractive value of crude drugs | 23 - 25 | |
| 07. | 03/05/24 | Determination of Stomatal number and stomatal Index of datura leaf | 26 - 28 | |



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SURAMPALAM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---|
| 08. | 10/05/24 | Determination of vein -islets and vein-termination numbers of Datura leaf. | 29-30 |  |
| 09. | 17/05/24 | Determination of size of starch grains by using eye piece micrometer. | 31-33 |  |
| 10. | 07/06/24 | Determination of Length and width of Cinchona fibers. | 34-36 |  |
| 11. | 14/06/24 | Determination of Number of starch by Lycopodium Spore Method. | 37-39 |  |




 PRINCIPAL
 ADITYA PHARMACY COLLEGE(A)
 SURAMPALEM-533 437

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. Quality 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-1

Name: D. LUKHITHA.....

PIN No. 213G1R0016

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

Mr./Ms. D. LUKHITHA.....

a student of IIIrd-Ist Semest-with Regd. No. 213G1R0016
er

in the Industrial Phar-Laboratory during the year 2023-2024
macy-1

No. of Experiments Conducted 18

No. of Experiments Attended 18

Signature - Faculty incharge

Signature-Head of the Department
PRINCIPAL

Aditya Pharmacy College
SURAMPALAM-533 437

Submitted for the practical examination held on

Examiner-1

Examiner-2

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| 01. | 08/08/23 | INTRODUCTION TO PHARMACEUTICAL FORMULATIONS. | 01-04 | Phani |
| 02. | 08/08/23 | FORMULATION OF PARACETAMOL TABLET BY WET GRANULATION METHOD. | 05-07 | Phani |
| 03. | 08/08/23 | FORMULATION OF SOLUBLE ACETYL SALICYLIC ACID TABLETS. | 08-10 | Phani |
| 04. | 22/08/23 | EVALUATION OF FORMULATED PARACETAMOL TABLETS. | 11-15 | Phani |
| 05. | 22/08/23 | EVALUATION OF FORMULATED ACETYL SALICYLIC ACID TABLETS. | 16-20 | Phani |
| 06. | 12/09/23 | EVALUATION OF MARKETING PARACETAMOL TABLETS. | 21-25 | Phani |
| 07. | 12/09/23 | PREPARATION AND EVALUATION OF TETRACYCLINE CAPSULES. | 26-30 | Phani |
| 08. | 14/09/23 | EVALUATION OF MARKETING LOPERAMIDE CAPSULES. | 31-32 | Phani |
| 09. | 14/09/23 | PREPARATION AND EVALUATION OF CHLORAMPHENICOL EYE OINTMENT. | 33-34 | Phani |



PRINCIPAL
Aditya Pharmacy College
HAMPALE-533 407

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| 10. | 10/10/23 | FORMULATION OF ASCORBIC ACID INJECTION. | 35-37 | Phani |
| 11. | 10/10/23 | FORMULATION OF CALCIUM GLUCONATE INJECTION. | 38-40 | Phani |
| 12. | 17/10/23 | INTRODUCTION TO COSMETICS. | 41-42 | Phani |
| 13. | 17/10/23 | PREPARATION OF COLD CREAM. | 43 | Phani |
| 14. | 17/10/23 | PREPARATION OF VANISHING CREAM. | 44 | Phani |
| 15. | 17/10/23 | PREPARATION OF FACE POWDER. | 45-46 | Phani |
| 16. | 17/10/23 | PREPARATION AND EVALUATION OF PILOCARPINE EYE DROPS. | 47-49 | Phani |
| 17. | 07-11-23 | FILM COATING OF PREPARED TABLETS. | 50-55 | Phani |
| 18. | 07-11-23 | EVALUATION OF GLASS CONTAINERS. | 56-58. | Phani |



PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

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 Schild's 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, Churchill Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill.
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs, The Point Lippincott Williams & Wilkins.
5. Mycek M.J., Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews- Pharmacology.
6. K.D.Tripathi. Essentials of Medical Pharmacology, , JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher
8. Modern Pharmacology with clinical Applications, by Charles R.Craig & Robert.
9. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.
10. Kulkarni SK. Handbook of experimental pharmacology. Vallabh Prakashan.





ADITYA PHARMACY COLLEGE

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

Department of
pharmacology - II

Name: *K. Tejaswini*

PIN No. *213GIR0029*

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

Mr./Ms. K. Tejaswini

a student of III-B pharmacy with Regd. No. 213GIR0029

in the pharmacology-I Laboratory during the year 2023-2024

No. of Experiments Conducted *15*

No. of Experiments Attended *15*

H. Lakshmi
Signature - Faculty incharge

[Signature]
Signature-Head of the Department

Submitted for the practical examination held on *21/03/2024*

[Signature]
Examiner-1

[Signature]
Examiner-2



PRINCIPAL
ADITYA PHARMACY COLLEGE
SURAMPAL-533 437


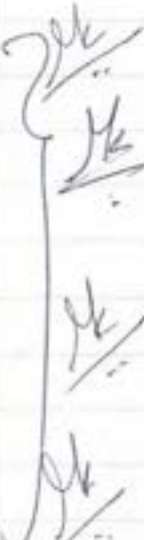

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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|--------------------|
| 1. | 17/8/23 | Introduction to invitro pharm -acology and physiological Salt solutions. | 1-6 | <i>[Signature]</i> |
| 2. | 24/8/23 | Effect of Drugs on isolated frog heart | 7-11 | <i>[Signature]</i> |
| 3. | 31/8/23 | Effect of various drugs on blood pressure and heart rate of dog. | 12-15 | <i>[Signature]</i> |
| 4. | 7/9/23 | Study of Diuretic activity of drugs using rats/mice. | 16-17 | <i>[Signature]</i> |
| 5. | 14/9/23 | Dose response curve of Acetylcholine on frog rectus abdominal muscle. | 18-20 | <i>[Signature]</i> |
| 6. | 21/9/23 | Effect of physostigmine and Atropine on DRC of Acetylcholine using frog's rectus abdominal muscle and rats ileum. | 21-23 | <i>[Signature]</i> |
| 7. | 5/10/23 | Bio assay of histamine using Guinea pig ileum using by matching method. | 24-26 | <i>[Signature]</i> |
| 8. | 5/10/23 | Bio assay of Oxytocin using rat uterine horn by Interpolation method. | 27-30 | <i>[Signature]</i> |



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---|
| 9. | 12/10/23 | Bio assay of Serotonin using rat fundus strip by three point bio assay. | 31-33 |  |
| 10. | 12/10/23 | Bioassay of Acetylcholine using Rat ileum by four point bio assay. | 34-36 | |
| 11. | 19/10/23 | Determination of PA_2 values of prazosin using rats Aortic smooth muscle by Schilder's plot method. | 37-40 | |
| 12. | 2/11/23 | Determination of PD_2 value using guinea pig ileum | 41-44 |  |
| 13. | 9/11/23 | Effect of Spasmogens & Spasmolytics using rabbit jejunum | 45-47 | |
| 14. | 16/11/23 | Anti-inflammatory activity of drugs using Carrageenan induced paw oedema. | 48-51 | |
| 15. | 16/11/23 | Analgesic activity of drug using Central and peripheral methods. | 52-54. |  |



ADITYA PHARMACY COLLEGE
SURAMPALAM-533 437

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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 phytoconstituents 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. Saunders & Co., London, 2009.
2. Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers & Distribution, New Delhi.
3. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhale (2007), 37th Edition, Nirali Prakashan, New Delhi.
4. Herbal drug industry by R.D. Choudhary (1996), 1st Edn, Eastern Publisher, New Delhi.
5. Essentials of Pharmacognosy, Dr.SH.Ansari, 11nd 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.



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-538 437



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

PHARMACOGNOSY AND PHYTOCHEMISTRY-II.

Name K. Geethika Sri Devi Iswarya PIN No. 21361R0073

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

Mr. / Ms. K. Geethika Sri Devi Iswarya

a student of 3rd B. Pharmacy Sec. B with Regd. No. 21361R0073

in the pharmacognosy and Laboratory during the year 2022-23
phytochemistry - II

No. of Experiments Conducted 30

No. of Experiments Attended 20

C. V. Madhava

Signature - Faculty incharge

C. V. Madhava

Signature - Head of the Department

Aditya Pharmacy College
SURAMPALEM-533 437



Submitted for the Practical examination held on 7/12/2023

EXAMINER-1

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

EXAMINER-2

POINTER

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|-----------|
| 1. | 7/8/23 | Morphology, Histology & powder characteristics & extraction & detection of cinchona. | 1-4 | <u>Ja</u> |
| 2. | 9/8/23 | Morphology, Histology & powder characteristics & extraction & detection of cinnamon. | 5-9 | <u>Ja</u> |
| 3. | 14/8/23 | Morphology, Histology & powder characteristics & extraction & detection of senna. | 10-13 | <u>Ja</u> |
| 4. | 16/8/23 | Morphology, Histology & powder characteristics & extraction & detection of clove. | 14-17 | <u>Ja</u> |
| 5. | 21/8/23 | Morphology, Histology & powder characteristics & extraction & detection of Ephedra. | 18-21 | <u>Ja</u> |
| 6. | 23/8/23 | Morphology, Histology & powder characteristics & extraction & detection of coriander. | 22-25 | <u>Ja</u> |
| 7. | 28/8/23 | Morphology, Histology & powder characteristics & extraction & detection of Fennel. | 26-30 | <u>Ja</u> |
| 8. | 30/8/23 | Isolation and Detection of caffeine from tea dust. | 31-32 | <u>Ja</u> |
| 9. | 4/9/23 | Isolation and Detection of Diosgenin from Dioscorea. | 33-34 | <u>Ja</u> |
| 10. | 8/9/23 | Isolation and detection of Atropine from Belladonna. | 35-36 | <u>Ja</u> |
| 11. | 13/9/23 | Isolation and detection of Sennosides from senna. | 37-38 | <u>Ja</u> |
| 12. | 18/9/23 | Separation of sugars by paper chromatography. | 39-41 | <u>Ja</u> |
| 13. | 4/10/23 | TLC of herbal extract. | 42-43 | <u>Ja</u> |
| 14. | 9/10/23 | Distillation of volatile oil. | 44-45 | <u>Ja</u> |
| 15. | 11/10/23 | Detection of phytoconstituents by TLC. | 46-49 | <u>Ja</u> |



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POINTER

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|------|------------------------|----------|---------|
|-------|------|------------------------|----------|---------|

| | | | | |
|----|----------|------------------------------|-------|--------------------|
| 16 | 16/10/23 | chemical test for Asefoetida | 50 | <i>[Signature]</i> |
| 17 | 18/10/23 | chemical test for benzoin | 51 | <i>[Signature]</i> |
| 18 | 30/10/23 | chemical test for colophony | 52 | <i>[Signature]</i> |
| 19 | 1/11/23 | chemical test for Aloe | 53-54 | <i>[Signature]</i> |
| 20 | 6/11/23 | chemical test for Myrrh | 55 | <i>[Signature]</i> |



PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALAM-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 Pharmacy
SURAMPALAM-533 037

7. Organic Chemistry by I.L. Finar, Vol. II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. 1-5.
9. Indian Pharmacopoeia.
10. Text book of practical organic chemistry- A.I.Vogel.




PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 457



ADITYA PHARMACY COLLEGE

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

Department of

Medicinal chemistry - III

Name: K. Supriya

PIN No. 213GIR0064

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

Mr./Ms. K. Supriya

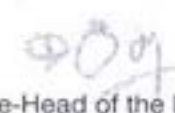
a student of B.Pharmacy with Regd. No. 213GIR0064

in the Medicinal Chemistry Laboratory during the year 2023-2024

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 12/04/2024

PRINCIPAL

Aditya Pharmacy College
SURAMPALM-533 437


Examiner-1




Examiner-2

PRINCIPAL

ADITYA PHARMACY COLLEGE(A)
SURAMPALM-533 437



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|---------|
| 1. | 21/1/24 | Synthesis of 7-Hydroxy 4-Methyl Coumarin. | 1-2 | At (10) |
| 2. | 9/1/24 | Synthesis of Chlorobutanol | 3- | At (10) |
| 3. | 23/1/24 | Synthesis of Hexamine | 4 | At (10) |
| 4. | 31/1/24 | Synthesis of 2,4,5 Triphenyl Imidazole. | 5-6 | At (10) |
| 5. | 6/2/24 | Synthesis of Benzoic Acid | 7-8 | At (10) |
| 6. | 13/2/24 | Assay of Isoniazid | 9-10 | At (10) |
| 7. | 22/2/24 | Microwave Assisted synthesis of 7-Hydroxy 4-Methyl Coumarin | 11- | At (10) |
| 8. | 22/2/24 | Microwave Assisted of 2,4,5 Triphenyl Imidazole. | 12- | At (10) |
| 9. | 27/2/24 | Assay of Metronidazole | 13-14. | At (10) |
| 10. | 12/3/24 | Assay of chlorpheniramine Maleate | 15-16. | At (10) |
| 11. | 15/3/24 | Assay of Dapsone | 17-18 | At (10) |
| 12. | 19/3/24 | Assay of chloroquine Phosphate | 19-20 | At (10) |
| 13. | 26/3/24 | Synthesis of Tolbutamide | 21 | At (10) |
| 14. | 2/4/24 | Synthesis of fluorescein | 22-23 | At (10) |
| 15. | 10/4/24 | Synthesis of Sulphonamide | 24-26 | At (10) |
| 16. | 10/4/24 | Physicochemical properties | 27-31 | At (10) |



PRINCIPAL
DITYA PHARMACY COLLEGE(A)
SURAMPALAM-533 437

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, Churchill 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.





ADITYA PHARMACY COLLEGE

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

Department of

PHARMACOLOGY - III

Name: K. Supriya

PIN No. 21361R0064

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

Mr./Ms. K. Supriya


a student of III B Pharmacy with Regd. No. 21361R0064

in the Pharmacology - III Laboratory during the year 2023-2024

No. of Experiments Conducted 15

No. of Experiments Attended 15


Signature - Faculty incharge


Signature-Head of the Department

PRINCIPAL
Aditya Pharmacy College
SURAMPALAM, 531437

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. | 8/1/24 | Dose calculation in pharmacological experiments. | 1-3 | 9 6/12/24 |
| 2. | 22/1/24 | Anti-allergic activity by mast cells stabilization assay | 4-5 | |
| 3. | 29/1/24 | Anti-ulcer activity of a drug pylorus ligand (shay) rat model & NSAIDs induced ulcer model | 6-9 | |
| 4. | 5/2/24 | Study of effect of drug on GI motility. | 10-12 | 9 6/13/24 |
| 5. | 12/2/24 | Effect of agonist & antagonist on guinea pig ileum | 13-16 | |
| 6. | 17/2/24 | Effect of saline purgative on frog intestine | 17-20 | |
| 7. | 24/2/24 | Estimation of serum biochemical parameters by using semi-auto analyser. | 21-24 | 9 13/3/24 |
| 8. | 4/3/24 | Insulin hypoglycemic effect in Rabbit | 25-27 | |
| 9. | 9/3/24 | Test for pyrogens (Rabbit method) | 28-30 | |
| 10. | 11/3/24 | Determination of acute oral toxicity of drug given data | 31-33 | 9 13/3/24 |
| 11. | 16/3/24 | Determination of acute skin irritation/corrosion of a test substance. | 34-37 | |
| 12. | 18/3/24 | Determination of acute eye irritation of a test substance. | 38-40 | |



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|------------------|
| 13. | 23/3/24 | Calculation of pharmacokinetics parameters from a given data. | 41-43 | } <i>written</i> |
| 14. | 30/3/24 | Biostatistical method in experimental pharmacology | 44-50 | |
| 15. | 1/4/24 | Biostatistical method in experimental pharmacology. | 51-55 | |



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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.





ADITYA PHARMACY COLLEGE

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

Department of

Name: T. Prasanna

PIN No. 2136120067

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

Mr./Ms. T. Prasanna

a student of IIIrd B Pharmacy with Regd. No. 2136120067

in the Herbal Biotechnology Laboratory during the year 2023-2024

No. of Experiments Conducted 24

No. of Experiments Attended 24

Signature - Faculty incharge

Signature-Head of the Department
Aditya Pharmacy College
SURAMPALAM-533 437



Submitted for the practical examination held on

Prasanna
Examiner-1

Principal
ADITYA PHARMACY COLLEGE(A)
SURAMPALAM-533 437

Prasanna
Examiner-2

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|--|----------|---------|
| | 4/1/24 | Preliminary phytochemical screening of Noca drug | 1-8 | } ps |
| 1 | 4/1/24 | Preliminary phytochemical screening of unknown crude drug Sample-1 | 9-15 | |
| 2 | 4/1/24 | Preliminary phytochemical screening of unknown crude drug Sample-2 | 16-22 | |
| 3 | 25/1/24 | Determination of alcohol content in Aconia & Aristia | 23-24 | ps |
| 4 | 1/2/24 | Evaluation of Excipients of Natural origin - Agar | 25-26 | } ps |
| 5 | 1/2/24 | Evaluation of Excipients of Natural origin - Acacia | 27-30 | |
| 6 | 1/2/24 | Evaluation of Excipients of Natural origin - Starch | 31-32 | |
| 7 | 8/2/24 | Evaluation of Excipients of Natural origin - Honey | 33-34 | } ps |
| 8 | 8/2/24 | Evaluation of Excipients of Natural origin - Benzoin | 35-36 | |
| 9 | 8/2/24 | Evaluation of Excipients of Natural origin - Talc | 37-38 | |
| 10 | 13/2/24 | Evaluation of excipients of Natural origin - Gelatin | 39-40 | } ps |
| 11 | 15/2/24 | Monograph analysis of ^{Herbaldrug} from recent pharmacopeia | 41-43 | |
| 12 | 15/2/24 | Monograph analysis of Targacanth from recent pharmacopeia | 44-46 | |
| 13 | 29/2/24 | Monograph analysis of Castil oil from recent pharmacopeia | 47-48 | ps |



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|---------|
| 14 | 29/2/24 | Monograph analysis of HARIDRA from recent pharmacopeia | 49-51 | js |
| 15 | 7/3/24 | Formulation & Evaluation of Vasaka Syrup | 52-53 | } ps |
| 16 | 7/3/24 | Preparation, formulation, Evaluation of Cinnamon tablets | 54-55 | |
| 17 | 14/3/24 | Preparation, formulation, evaluation of Senna tablets | 56-57 | |
| 18 | 14/3/24 | Preparation of Methishitakayashampa | 58-59 | } ps |
| 19 | 21/3/24 | Preparation of chuzna powder | 60-61 | |
| 20 | 21/3/24 | Preparation & Evaluation of turmeric topical cream | 62-63 | |
| 21 | 28/3/24 | Preparation of lemon hand lotion | 64 | } ps |
| 22 | 28/3/24 | Determination of phenol content in clove oil. | 65 | |
| 23 | 4/4/24 | Determination of total alkaloid in cinchona. | 66-67 | |
| 24 | 4/4/24 | Determination of aldehyde content | 68 | ps |



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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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ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF
PHARMACEUTICAL ANALYSIS

Name ALLU. KESAVARDHINI PIN No. 2036120005

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

Mr. / Ms. ALLU. KESAVARDHINI

a student of H-1 B. PHARMACY with Regd. No. 2036120005

in the INSTRUMENTAL METHODS OF ANALYSIS Laboratory during the year 2023-24.

No. of Experiments Conducted 91

No. of Experiments Attended 91

Signature - Faculty Incharge

Signature - Head of the Department

Submitted for the Practical examination held on 20/11/2023

EXAMINER-1

EXAMINER-2

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SURAMPALEM-533 437

WIKAS. NILP

POINTER

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|--------------|
| | 22/6/23 | Introduction to Spectroscopical Analysis | 1-2 | B 20/07/2023 |
| 1 | 22/6/23 | Calibration of UV-visible spectrophotometer | A+ 3-7 | B 20/07/2023 |
| 2 | 6/7/23 | Determination of Absorption maxima for potassium permanganate | A+ 8-9 | B 20/07/2023 |
| 3 | 13/7/23 | Effect of solvent on Absorption spectrum of phenol using UV-visible spectrophotometer | A+ 10-12 | B 23/7/2023 |
| 4 | 13/7/23 | Assay of paracetamol by using Chemical derivitisation method Specific absorbance ($A_{1cm}^{1\%}$) | A+ 13-15 | B 23/07/2023 |
| 5 | 27/7/23 | Assay of paracetamol by chemical Derivitisation method | A+ 16-18 | B 02/08/2023 |
| 6 | 2/8/23 | Estimation of Sulphanilamide eye drops by calorimetry | A+ 19-21 | B 02/08/2023 |
| 7 | 3/8/23 | Estimation of Salicylic acid by calibration curve by calorimetry | A+ 22-23 | B 09/08/2023 |
| 8 | 4/8/23 | Assay of Salicylic acid by using Direct comparison or single point method | A+ 24-26 | B 09/08/2023 |
| 9 | 7/8/23 | Estimation of Quinine Sulphate by Fluorimetry | A+ 27-29 | B 10/08/2023 |
| 10 | 10/8/23 | Estimation of Sulphates by Nephelometry. | A+ 30-33 | B 28/08/2023 |
| 11 | 24/8/23 | Determination of Sodium ion concentration in unknown sample by Flame photometry | A+ 34-35 | B 28/08/2023 |

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WIRAS-NLR

POINTER

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|--|---------|---|----------------------|----------------|
| 12. | 24/8/23 | Determination of potassium ion concentration in unknown sample by Flame photometry | A ⁺ 36-37 | (B) 29/09/2023 |
| | | Introduction to Chromatography | 38-41 | (B) 14/9/2023 |
| 13. | 31/8/23 | Identification of Amino acids by using Ascending paper chromatography | 42-45 | (B) 14/9/2023 |
| 14. | 31/8/23 | Identification of Amino acids by using Radial chromatography | 46-49 | (B) 14/9/2023 |
| 15. | 4/9/23 | Identification of Metronidazole in a given sample by using Ascending paper chromatography | 50-52 | (B) 14/9/2023 |
| 16. | 7/9/23 | Preparation of thin layer chromatographic plates | 53-54 | |
| 17. | 14/9/23 | Identification & Separation of Sugars by TLC | 55-58 | (B) 26/9/2023 |
| 18. | 21/9/23 | Separation & Identification of Sulphanilamide by thin layer chromatography | 59-60 | (B) 28/9/2023 |
| 19. | 27/9/23 | Demo on column chromatography | 61-62 | (B) 28/9/2023 |
| 20. | 29/9/23 | Demo on HPLC | 63-64 | (B) 10/10/2023 |
| 21. | 5/10/23 | Demo on Gas chromatography | 65-66 | (B) 10/10/2023 |
| <p style="text-align: center;">Verified Completely B. Sujin 10/10/2023</p> | | | | |



Second year

2.1 PATHOPHYSIOLOGY (THEORY)

Theory : 3 Hrs. /Week

1. **Scope of the Subject:** This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic Pathophysiological mechanisms. Hence it will not only help to study the syllabus of pathology, but also to get baseline knowledge of its application in other subject of pharmacy.
2. **Objectives of the Subject :** Upon completion of the subject student shall be able to –
 - a. describe the etiology and pathogenesis of the selected disease states;
 - b. name the signs and symptoms of the diseases; and
 - c. mention the complications of the diseases.

Text books (Theory)

- a. Pathologic basis of disease by- Cotran, Kumar, Robbins
- b. Text book of Pathology- Harsh Mohan
- c. Text book of Pathology- Y.M. Bhide

Reference books (Theory)

- a. Clinical Pharmacy and Therapeutics; Second edition; Roger Walker; Churchill Livingstone publication

3. Detailed syllabus and lecture wise schedule :

Chapter

- 1 **Basic principles of cell injury and Adaptation**
 - a) Causes, Pathogenesis and morphology of cell injury
 - b) Abnormalities in lipoproteinaemia, glycogen infiltration and glycogen infiltration and glycogen infiltration and glycogen storage diseases
- 2 **Inflammation**
 - a) Pathogenesis of acute inflammation, Chemical mediators in inflammation, Types of chronic inflammation
 - b) Repairs of wounds in the skin, factors influencing healing of wounds
- 3 **Diseases of Immunity**
 - a) Introduction to T and B cells
 - b) MHC proteins or transplantation antigens
 - c) Immune tolerance
 - Hypersensitivity
Hypersensitivity type I, II, III, IV, Biological significance, Allergy due to food, chemicals and drugs
 - Autoimmunity
Criteria for autoimmunity, Classifications of autoimmune diseases in man, mechanism of autoimmunity, Transplantation and immunologic tolerance, allograft rejections, transplantation antigens, mechanism of rejection of allograft.
 - Acquired immune deficiency syndrome (AIDS)



PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 457

FOE OR ALLY: UNRAVELING THE ROLE OF NSAIDS IN
THE FRACTURE HEALING

The thesis work submitted to



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-
KAKINADA

In partial fulfilment for the award of the Degree of
DOCTOR OF PHARMACY

Submitted by

| | |
|-----------------------------|--------------|
| ESHITA LAL | (193G1T0009) |
| NIRMALYA ROY | (193G1T0015) |
| KALIGITHI SUNANDA | (193G1T0026) |
| KONIDENA VENKATA SAI CHARAN | (193G1T0029) |

Under the esteemed guidance of

HOSPITAL GUIDE

Dr. P.Surya Prakash Naidu

MBBS, MS(Ortho)FIJR,FOAI

Consultant Orthopaedic & Joint Replacement Surgeon
Trust Multispeciality Hospitals, Kakinada

INSTITUTIONAL GUIDE

Dr. M. Karthik Mohan

Pharm.D

Assistant Professor
Aditya Pharmacy College (A)



DEPARTMENT OF PHARMACY PRACTICE

ADITYA PHARMACY COLLEGE (A)

Accredited by NAAC with 'A' Grade, Affiliated to JNTUK, Approved by AICTE, PCI, UGC & ISO

Aditya Nagar, ADB Road, Surampalem-533437, Andhra Pradesh, India

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2024



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Approved by AICTE, PCI, UGC & ISO
Aditya Nagar, ADB Road, Surampalem-533437, Andhra Pradesh, India

DECLARATION

We hereby declare that the thesis entitled "FOE OR ALLY: UNRAVELING THE ROLE OF NSAIDS IN THE FRACTURE HEALING" is a bonafide project work carried out by us under the guidance of Dr. M. Karthik Mohan, Assistant Professor, Aditya Pharmacy College (A) and Dr. P. Surya Prakash Naidu, Consultant Orthopedic and Joint Replacement Surgeon at Trust Multispeciality Hospitals, Kakinada, in partial fulfillment of the requirements for the Award of the Degree of Doctor of Pharmacy in the Department of Pharmacy Practice to Jawaharlal Nehru Technological University-Kakinada (JNTU-K). The work embodied in this thesis is original and has not been submitted in part or in full for any degree of this or any other university.

Place: Surampalem

Date: 01-05-2024

Eshita Lal

Eshita Lal.

Nirmalya Roy

Nirmalya Roy.

Kaligithi Sunanda

K. Sunanda

Konidena Venkata Sai Charan

K.V. Saicharan.



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SURAMPATEM-533 437



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Aditya Nagar, ADB Road, Surampalem-533437, Andhra Pradesh, India

CERTIFICATE BY THE GUIDES

This is to certify that the thesis work entitled "FOE OR ALLY: UNRAVELING THE ROLE OF NSAIDS IN THE FRACTURE HEALING" is a bonafide Project work carried out by ESHITA LAL (Reg. No. 193GIT0009), NIRMALYA ROY (Reg. No. 193GIT0015), KALIGITHI SUNANDA (Reg. No. 193GIT0026) & KONIDENA VENKATA SAI CHARAN (Reg. No. 193GIT0029), under the guidance of us at the Department of Pharmacy Practice, Aditya Pharmacy College (A), and Dept. of Orthopaedics, Trust Multispeciality Hospitals, Kakinada. In our opinion, this work has reached the standards in fulfillment of the partial requirement for the award of the degree of Doctor of Pharmacy per the regulations of the University.

Place: Surampalem & Kakinada

Date: 01-05-2024


HOSPITAL GUIDE

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MS (ORTHO), FIJR (COIMBATORE), FOAI

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Time:




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CERTIFICATE BY THE PRINCIPAL

This is to certify that the thesis work entitled, "FOR OR ALLY: UNRAVELING THE ROLE OF NSAIDS IN THE FRACTURE HEALING" is being submitted by ESHITA LAL (Reg. No. 193GIT0009), NIRMALYA ROY (Reg. No. 193GIT0015), KALIGITHI SUNANDA (Reg. No. 193GIT0026) & KONIDENA VENKATA SAI CHARAN (Reg. No. 193GIT0029) to Jawaharlal Nehru Technological University, Kakinada (JNTUK), in partial fulfilment for the award of the degree of DOCTOR OF PHARMACY in the **Department of Pharmacy Practice** under the guidance of Dr. M. Karthik Mohan, Pharm.D., **Assistant** Professor, is the bonafide project work carried out by them at Aditya Pharmacy College (A), Surampalem & Trust Multispeciality Hospitals, Kakinada.

The results incorporated in this work have not been submitted to any other university or institute for the award of any degree.

Place: Surampalem

Date: 4/5/24



Dr. D. Sathis Kumar,

M. Pharm, Ph. D.

Principal,

Aditya Pharmacy College (A),

Surampalem-533437

PRINCIPAL

Aditya Pharmacy College

SURAMPALEM-533 437

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Aditya Nagar, ADB Road, Surampalem-533437, Andhra Pradesh, India

EVALUATION CERTIFICATE

This is to certify that the thesis work entitled, "FOE OR ALLY: UNRAVELING THE ROLE OF NSAIDS IN THE FRACTURE HEALING" is a bonafide Project work done by ESHITA LAL (Reg. No. 193GIT0009), NIRMALYA ROY (Reg. No. 193GIT0015), KALIGITHI SUNANDA (Reg. No. 193GIT0026) & KONIDENA VENKATA SAI CHARAN (Reg. No. 193GIT0029) submitted in partial fulfilment for the award of the degree of DOCTOR OF PHARMACY in the Department of Pharmacy Practice to Jawaharlal Nehru Technological University, Kakinada (JNTUK).

Place: Surampalem

Date: 10-05-2024

Internal Examiner

Sign:

External Examiner

Sign:



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The study provides a comprehensive understanding of the fracture healing process across various bones, shedding the light on the intricate stages involved in the bone restoration, it was elucidated that fracture healing follows a sequential pattern, starting from hematoma formation and culminating in bone remodeling.

In conclusion, this study has provided valuable insights into the complex interplay between NSAID use, fracture healing, and pain assessment scores based on radiological examinations across various types of fractures in different body parts. We observed the trends indicating that frequent usage of NSAIDs may be associated with slower healing rates and pain scores variations particularly in certain types of fractures or when administered at higher doses.

Furthermore, our study highlights the importance of ongoing monitoring and assessment throughout the healing process with regular radiological evaluation and pain assessments. Substances ranging from vitamins and minerals to medications and supplements, underscore the complexity of the bone healing process and the diverse array of factors that influence it. Each of these substances plays a distinct role in bone metabolism, tissue repair, and overall bone health.



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4.2 HOSPITAL PHARMACY (THEORY)

Theory : 2 Hrs. /Week

1. **Scope:** In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug dispensing, manufacturing of parenteral preparations, drug information, patient counselling, and therapeutic drug monitoring for improved patient care.
2. **Objectives:** Upon completion of the course, the student shall be able to –
 - a. know various drug distribution methods;
 - b. know the professional practice management skills in hospital pharmacies;
 - c. provide unbiased drug information to the doctors;
 - d. know the manufacturing practices of various formulations in hospital set up;
 - e. appreciate the practice based research methods; and
 - f. appreciate the stores management and inventory control.

Text books: (latest editions)

- a. Hospital pharmacy by William .E. Hassan
- b. A text book of Hospital Pharmacy by S.H.Merchant & Dr. J.S. Qadry. Revised by R.K.Goyal & R.K. Parikh

References:

- a. WHO consultative group report.
- b. R.P.S. Vol.2. Part –B; Pharmacy Practice section.
- c. Handbook of pharmacy – health care. Edt. Robin J Harman. The Pharmaceutical press.

3. Lecture wise programme :

Topics

- 1 **Hospital - its Organisation and functions**
- 2 **Hospital pharmacy-Organisation and management**
 - a) Organizational structure-Staff, Infrastructure & work load statistics
 - b) Management of materials and finance
 - c) Roles & responsibilities of hospital pharmacist
- 3 **The Budget – Preparation and implementation**
- 4 **Hospital drug policy**
 - a) Pharmacy and Therapeutic committee (PTC)
 - b) Hospital formulary
 - c) Hospital committees
 - Infection committee
 - Research and ethical committee
 - d) developing therapeutic guidelines
 - e) Hospital pharmacy communication - Newsletter



8

PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 437

**A PROSPECTIVE OBSERVATIONAL STUDY ON
UNVEILING THE CONVENTIONAL AND
UNCONVENTIONAL RISK FACTORS IN MYOCARDIAL
INFARCTION PATIENTS AT A TERTIARY CARE
HOSPITAL.**

The thesis work submitted to



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-
KAKINADA**

*In partial fulfillment for the award of the Degree of
DOCTOR OF PHARMACY*

Submitted by

| | |
|------------------------|--------------|
| BATHULA AMULYA | (193G1T0003) |
| DHANDUPROLU SATISH | (193G1T0007) |
| LALAM MOUNIKA | (193G1T0013) |
| KALLEPALLI DEEVENA DAS | (193G1T0027) |

Under the esteemed guidance of

| | |
|---|---------------------------------|
| HOSPITAL GUIDE | INSTITUTIONAL GUIDE |
| Dr. B. D. PAVAN KUMAR | Dr. J. BHARGAVA NARENDRA |
| MBBS, MD, DM, AFESC | PharmD |
| Interventional cardiologist | Assistant Professor |
| Trust Multispeciality Hospitals, Kakinada | Aditya Pharmacy College (A) |



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2024



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SURAMPALM-533 437**



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Approved by AICTE, PCI, UGC & ISO
Aditya Nagar, ADB Road, Surampalem-533437, Andhra Pradesh, India

DECLARATION

We hereby declare that the thesis entitled *A PROSPECTIVE OBSERVATIONAL STUDY ON UNVEILING THE CONVENTIONAL AND UNCONVENTIONAL RISK FACTORS IN MYOCARDIAL INFARCTION PATIENTS AT A TERTIARY CARE HOSPITAL* is a bonafide project work carried out by us under the guidance of *Dr. J. BHARGAVA NARENDRA, Assistant professor, Aditya Pharmacy College (A)* and *Dr. B. D. PAVAN KUMAR, Interventional cardiologist and physician at Trust Multispecialty Hospitals, Kakinada*, in partial fulfillment of the requirements for the Award of the Degree of Doctor of Pharmacy in the Department of Pharmacy Practice to Jawaharlal Nehru Technological University-Kakinada (JNTU-K). The work embodied in this thesis is original and has not been submitted in part or in full for any degree of this or any other university.

Place: Surampalem

Date: 06-05-2024

Bathula Amulya

Dhanduprolu Satish

Lalam Mounika

Kallepalli Deevena Das

B. Amulya

D. Satish

L. Mounika

K. Deevena-Das



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CERTIFICATE BY THE GUIDES

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Place: Surampalem & Kakinada

Date: 06-05-2024

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CERTIFICATE BY THE PRINCIPAL

This is to certify that the thesis work entitled, *A PROSPECTIVE OBSERVATIONAL STUDY ON UNVEILING THE CONVENTIONAL AND UNCONVENTIONAL RISK FACTORS IN MYOCARDIAL INFARCTION PATIENTS AT A TERTIARY CARE HOSPITAL* is being submitted by BATHULA AMULYA (Reg. No. 193G1T0003), DHANDUPROLU SATISH (Reg. No. 193G1T0007), LALAM MOUNIKA (Reg. No. 193G1T0013) & KALLEPALLI DEEVENA DAS (Reg. No. 193G1T0027) to Jawaharlal Nehru Technological University, Kakinada (JNTUK), in partial fulfillment for the award of the degree of DOCTOR OF PHARMACY in the Department of Pharmacy Practice under the guidance of Dr. J. BHARGAVA NARENDRA, PharmD., Assistant Professor, is the bonafide project work carried out by them at Aditya Pharmacy College (A), Surampalem & Trust Multispecialty Hospitals, Kakinada.

The results incorporated in this work have not been submitted to any other university or institute for the award of any degree.

Dr. D. Sathis Kumar,
M. Pharm, Ph. D.
Principal,
Aditya Pharmacy College (A),
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Place: Surampalem
Date: 6/5/24



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EVALUATION CERTIFICATE

This is to certify that the thesis work entitled, *A PROSPECTIVE OBSERVATIONAL STUDY ON UNVEILING THE CONVENTIONAL AND UNCONVENTIONAL RISK FACTORS IN MYOCARDIAL INFARCTION PATIENTS AT A TERTIARY CARE HOSPITAL* is a bonafide Project work done by BATHULA AMULYA (Reg. No. 193G1T0003), DHANDUPROLU SATISH (Reg. No. 193G1T0007), LALAM MOUNIKA (Reg. No. 193G1T0013) & KALLEPALLI DEEVENA DAS (Reg. No. 193G1T0027) submitted in partial fulfillment for the award of the degree of DOCTOR OF PHARMACY in the Department of Pharmacy Practice to Jawaharlal Nehru Technological University, Kakinada (JNTUK).

Place: Surampalem

Date: 19/05/24

Internal Examiner

Sign:

External Examiner

Sign:



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CONCLUSION:

This study highlights several significant findings regarding the conventional and unconventional risk factors. In this context, it describes the relationship between various risk factors of myocardial infarction.¹ So, our study shows that the male category is more prone to myocardial infarction than the female category.

Hypertension is the highest risk in males than females in conventional risk factors. In unconventional risk factors, a family history of CVD is more prone to risk causing myocardial infarction. In this context, we studied and found the relationship between each unconventional risk factor and with conventional risk factor.

In this comparison, 93(66%) patients with hypertension have sleep disturbance with less than 6 hours, and 38(27%) patients observed with hyperlipidemia who have been consuming alcohol for above 10 years.

In this observation, 82(58%) patients with hyperlipidemia observed a family history of CVD. Furthermore, Dental Caries are observed in populations with hypertension, diabetes mellitus, and hyperlipidemia.



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APPENDIX-A

(See regulation 8)

PHARM.D. SYLLABUS

First Year

1.1 HUMAN ANATOMY & PHYSIOLOGY (THEORY)

Theory : 3 Hrs. /Week

1. **Scope and Objectives:** This course is designed to impart a fundamental knowledge on the structure and functions of the human body. It also helps in understanding both homeostasis mechanisms and homeostatic imbalances of various body systems. Since a medicament, which is produced by pharmacist, is used to correct the deviations in human body, it enhances the understanding of how the drugs act on the various body systems in correcting the disease state of the organs.
2. **Upon completion of the course the student shall be able to:**
 - a. describe the structure (gross and histology) and functions of various organs of the human body;
 - b. describe the various homeostatic mechanisms and their imbalances of various systems;
 - c. identify the various tissues and organs of the different systems of the human body;
 - d. perform the hematological tests and also record blood pressure, heart rate, pulse and Respiratory volumes;
 - e. appreciate coordinated working pattern of different organs of each system; and
 - f. appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body

3. Course materials:

Text books

- a. Tortora Gerard J. and Nicholas, P. Principles of anatomy and physiology
Publisher Harpercollins college New York.
- b. Wilson, K.J.W. Ross and Wilson's foundations of anatomy and physiology.
Publisher: Churchill Livingstone, Edinburg.

Reference books

- a. Guyton arthur, C. *Physiology of human body*. Publisher: Holtsaunders.
- b. Chatterjee, C.C. *Human physiology*. Volume I&II. Publisher: medical allied agency, Calcutta.
- c. Peter L. Williams, Roger Warwick, Mary Dyson and Lawrence, H.
- d. *Gray's anatomy*. Publisher: Churchill Livingstone, London.



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4. Lecture wise program :

Topics

- 1 Scope of anatomy and physiology, basic terminologies used in this subject
(Description of the body as such planes and terminologies)
- 2 Structure of cell – its components and their functions.
- 3 Elementary tissues of the human body: epithelial, connective, Muscular and nervous tissues-their sub-types and characteristics
- 4 a) Osseous system - structure, composition and functions of the Skeleton. (done in practical classes - 6hrs)
b) Classification of joints, Types of movements of joints and disorders of joints
(Definitions only)
- 5 Haemopoetic System
a) Composition and functions of blood
b) Haemopoiesis and disorders of blood components (definition of disorder)
c) Blood groups
d) Clotting factors and mechanism
e) Platelets and disorders of coagulation
- 6 Lymph
a) Lymph and lymphatic system, composition, formation and circulation.
b) Spleen: structure and functions, Disorders
c) Disorders of lymphatic system (definition only)
- 7 Cardiovascular system
a) Anatomy and functions of heart
b) Blood vessels and circulation (Pulmonary, coronary and systemic circulation)
c) Electrocardiogram (ECG)
d) Cardiac cycle and heart sounds
e) Blood pressure – its maintenance and regulation
f) Definition of the following disorders
Hypertension, Hypotension, Arteriosclerosis, Atherosclerosis, Angina, Myocardial infarction, Congestive heart failure, Cardiac arrhythmias
- 8 Respiratory system
a) Anatomy of respiratory organs and functions
b) Mechanism / physiology of respiration and regulation of respiration
c) Transport of respiratory gases
d) Respiratory volumes and capacities, and Definition of: Hypoxia, Asphyxia, Dybarism, Oxygen therapy and resuscitation.
- 9 Digestive system
a) Anatomy and physiology of GIT
b) Anatomy and functions of accessory glands of GIT
c) Digestion and absorption
d) Disorders of GIT (definitions only)



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**BEYOND THE PRESCRIPTIONS: ENHANCING
QUALITY OF LIFE AND MEDICATION ADHERENCE
THROUGH PATIENT COUNSELLING IN PATIENTS
WITH CARDIOVASCULAR DISEASE**

The thesis work submitted to



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-
KAKINADA**

*In partial fulfillment of the requirements for the Degree of
DOCTOR OF PHARMACY*

Submitted by

| | |
|-----------------------|--------------|
| CHIKKALA BHAGYA ARUNA | (193G1T0005) |
| MANISHA LAHKAR | (193G1T0014) |
| SONGA PREMCHAND | (193G1T0019) |
| YOGANANDAM SUHARIKA | (193G1T0025) |

Under the esteemed guidance of

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Dr. M. S. Chandramouli

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Consultant Cardiologist and Electrophys iologist

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Aditya Nagar, ADB Road, Surampalem-533437, Andhra Pradesh, India

DECLARATION

We hereby declare that the thesis entitled "*BEYOND THE PRESCRIPTIONS: ENHANCING QUALITY OF LIFE AND MEDICATION ADHERENCE THROUGH PATIENT COUNSELLING IN PATIENTS WITH CARDIOVASCULAR DISEASE*" is a bonafide project work carried out by us, under the guidance of *Dr. P. S. S. Sai Kiran, Associate Professor, Aditya Pharmacy College (A)* and *Dr. M. S. Chandra Mouli, EP Specialist, Consultant Cardiologist and Electrophysiologist at Trust Multispecialty Hospitals, Kakinada*, in partial fulfillment of the requirements for the degree of Doctor of Pharmacy in the Department of Pharmacy Practice to Jawaharlal Nehru Technological University-Kakinada (JNTU-K). The work embodied in this thesis is original and has not been submitted in part or in full for any degree of this or any other university.

Place: Surampalem

Date:

Chikkala Bhagya Aruna

Manisha Lahkar

Songa PremChand

Yoganandam Suharika

ch. Bhagya Aruna
Manisha Lahkar
S. Premchand
Y. Suharika



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Place: Surampalem & Kakinada

Date: 03-05-24

Dr. Chandra Mouli S Manravadi

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Consultant Cardiologist & Electrophysiologist

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Dr. M. S. Chandramouli

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

Place: Surampalem
Date: 3/5/20



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Place: Surampalem

Date: 24/11/2024

Internal Examiner

External Examiner

Sign:

Sign:



Principal

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CONCLUSION

Cardiovascular diseases are the primary cause of death worldwide. They represent one of the most prevalent chronic illnesses and a significant contributor to disability. The overall health of cardiovascular patients is greatly influenced by their quality of life. Research indicates that cardiovascular disorders have a significant negative impact on the quality of life for both men and women. However, the best approach to managing the disease is by maintaining a healthy lifestyle and following a proper diet. This is achieved through patient counseling, which has been shown to have minimal negative effects. The study was conducted over a six-month period at a single-centered hospital. Data were collected from 110 patients and counseling was provided in collaboration with our clinical guide and dietician. Patients were counseled about medication adherence and the importance of their well-being according to their health condition, resulting in a slight improvement in their quality of life. While the study duration was short, there was a noticeable but not complete improvement in quality of life.



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5.3 CLINICAL PHARMACOKINETICS AND PHARMACOTHERAPEUTIC DRUG MONITORING (THEORY)

Theory : 2 Hrs. /Week

1. **Introduction to Clinical pharmacokinetics.**
2. **Design of dosage regimens:**
Nomograms and Tabulations in designing dosage regimen, Conversion from intravenous to oral dosing, Determination of dose and dosing intervals, Drug dosing in the elderly and pediatrics and obese patients.
3. **Pharmacokinetics of Drug Interaction:**
 - a. Pharmacokinetic drug interactions
 - b. Inhibition and Induction of Drug metabolism
 - c. Inhibition of Biliary Excretion.
4. **Therapeutic Drug monitoring:**
 - a. Introduction
 - b. Individualization of drug dosage regimen (Variability – Genetic, Age and Weight, disease, Interacting drugs).
 - c. Indications for TDM. Protocol for TDM.
 - d. Pharmacokinetic/Pharmacodynamic Correlation in drug therapy.
 - e. TDM of drugs used in the following disease conditions: cardiovascular disease, Seizure disorders, Psychiatric conditions, and Organ transplantations.
5. **Dosage adjustment in Renal and hepatic Disease.**
 - a. Renal impairment
 - b. Pharmacokinetic considerations
 - c. General approach for dosage adjustment in Renal disease.
 - d. Measurement of Glomerular Filtration rate and creatinine clearance.
 - e. Dosage adjustment for uremic patients.
 - f. Extracorporeal removal of drugs.
 - g. Effect of Hepatic disease on pharmacokinetics.
6. **Population Pharmacokinetics.**
 - a. Introduction to Bayesian Theory.
 - b. Adaptive method or Dosing with feed back.
 - c. Analysis of Population pharmacokinetic Data.
7. **Pharmacogenetics**
 - a. Genetic polymorphism in Drug metabolism: Cytochrome P-450 Isoenzymes.
 - b. Genetic Polymorphism in Drug Transport and Drug Targets.
 - c. Pharmacogenetics and Pharmacokinetics/Pharmacodynamic considerations



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ENHANCING RESILIENCE: UNDERSTANDING AND
MITIGATING THE PHYSICAL AND MENTAL
CHALLENGES OF HEMODIALYSIS IN PATIENTS WITH
END-STAGE RENAL DISEASE

The thesis work submitted to



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-
KAKINADA

*In partial fulfillment of the requirements for the award of the Degree of
DOCTOR OF PHARMACY*

Submitted by

| | |
|-----------------------------|--------------|
| Ms. Duda Shakina | (193G1T0008) |
| Ms. Gidla Hepzibah Rani | (193G1T0010) |
| Mr. Rishav | (193G1T0017) |
| Mr. Ulisi L. S. V. Narayana | (193G1T0030) |

Under the esteemed guidance of

HOSPITAL GUIDE

Dr. D. V. S. Somayajulu

MBBS, MD, DM

Sr. Consultant Nephrologist

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Dr. D. Sathis Kumar

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Professor & Principal

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MAY 2024



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DECLARATION

We hereby declare that the thesis entitled "ENHANCING RESILIENCE: UNDERSTANDING AND MITIGATING THE PHYSICAL AND MENTAL CHALLENGES OF HEMODIALYSIS IN PATIENTS WITH END-STAGE RENAL DISEASE" is a bonafide project work carried out by us, under the guidance of Dr. D. Sathis Kumar, **Professor & Principal, Aditya Pharmacy College (A)** and Dr. D. V. S. Somayajulu, **Senior Consultant Nephrologist & Renal Transplant Physician at Trust Multispeciality Hospitals, Kakinada**, in partial fulfillment of the requirements for the award of the degree of Doctor of Pharmacy in the Department of Pharmacy Practice to Jawaharlal Nehru Technological University-Kakinada (JNTU-K). The work embodied in this thesis is original and has not been submitted in part or in full for any degree of this or any other university.

Place: Surampalem

Date: 6/5/2024

Duda Shakina

D. Shakina

Gidla Hepzibah Rani

G. Hepzibah Rani

Rishav

Rishav

Ulisi Lakshmi Sri Venkata Narayana

U.L.S.V. Narayana



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Date:

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EVALUATION CERTIFICATE

This is to certify that the thesis work entitled, "ENHANCING RESILIENCE: UNDERSTANDING AND MITIGATING THE PHYSICAL AND MENTAL CHALLENGES OF HEMODIALYSIS IN PATIENTS WITH END-STAGE RENAL DISEASE" is a bonafide Project work done by Ms. Duda Shakina (Reg. No. 193G1T0008), Ms. Gidla Hepzibah Rani (Reg. No. 193G1T0010), Mr. Rishav (Reg. No. 193G1T0017) & Mr. Ulisi Lakshmi Sri Venkata Narayana (Reg. No. 193G1T0030) submitted in partial fulfillment of the requirements for the award of the degree of DOCTOR OF PHARMACY in the Department of Pharmacy Practice to Jawaharlal Nehru Technological University, Kakinada (JNTUK).

Place: Surampalem

Date:

Internal Examiner

External Examiner

Sign:

Sign:



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CONCLUSION

End-stage renal disease (ESRD) significantly diminishes the quality of life (QOL) for patients undergoing Hemodialysis, as evidenced by the Pre-Score values obtained before the given intervention. This decline manifests in both physical limitations such as fatigue, and pain, and mental health challenges such as depression, and anxiety, as reported by patients themselves. However, by incorporating supportive interventions into treatment plans, healthcare providers have the potential to significantly improve patient well-being.

Social support groups can foster social connections and reduce isolation, while psychosocial counseling can address mental health issues. Intradialytic exercises can improve physical limitations and fatigue. Providing education to the Patients with ESRD undergoing Hemodialysis on what is the condition they are suffering from, what is about Hemodialysis, debunking the myths, and providing much more insights into the problems and the strategies to overcome them might help them enhance their overall well-being. These interventions, grounded in theories like Social Support Theory, can not only enhance patient resilience and QOL but also lead to improved clinical outcomes such as treatment adherence and potentially reduce healthcare costs in the long run.

Overall, this study provided preliminary evidence that a combination of Intradialytic exercise, support groups, and patient education counseling may improve the quality of life of ESRD patients undergoing hemodialysis. However, the single-arm design and short follow-up period limit the generalizability and strength of the conclusions. Future research with a control group, a longer follow-up period, and a more diverse participant pool is warranted to confirm these findings and explore the long-term sustainability of these interventions in improving patient resilience and QOL.



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4.4 BIOSTATISTICS AND RESEARCH METHODOLOGY (THEORY)

Theory : 2 Hrs. /Week

1. Detailed syllabus and lecture wise schedule

1 Research Methodology

- a) Types of clinical study designs:
Case studies, observational studies, interventional studies,
- b) Designing the methodology
- c) Sample size determination and Power of a study
Determination of sample size for simple comparative experiments, determination of sample size to obtain a confidence interval of specified width, power of a study
- d) Report writing and presentation of data

2 Biostatistics

2.1 a) Introduction

- b) Types of data distribution
- c) Measures describing the central tendency distributions- average, median, mode
- d) Measurement of the spread of data-range, variation of mean, standard deviation, variance, coefficient of variation, standard error of mean.

2.2 Data graphics

Construction and labeling of graphs, histogram, piecharts, scatter plots, semilogarithmic plots

2.3 Basics of testing hypothesis

- a) Null hypothesis, level of significance, power of test, P value, statistical estimation of confidence intervals.
- b) Level of significance (Parametric data)- students t test (paired and unpaired), chi Square test, Analysis of Variance (one-way and two-way)
- c) Level of significance (Non-parametric data)- Sign test, Wilcoxon's signed rank test, Wilcoxon rank sum test, Mann Whitney U test, Kruskal-Wallis test (one way ANOVA)
- d) Linear regression and correlation- Introduction, Pearson's and Spearman's correlation and correlation co-efficient.
- e) Introduction to statistical software: SPSS, Epi Info, SAS.



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2.4 Statistical methods in epidemiology

Incidence and prevalence, relative risk, attributable risk

3. Computer applications in pharmacy

Computer System in Hospital Pharmacy: Patterns of Computer use in Hospital Pharmacy – Patient record database management, Medication order entry – Drug labels and list – Intravenous solution and admixture, patient medication profiles, Inventory control, Management report & Statistics.

Computer In Community Pharmacy

Computerizing the Prescription Dispensing process

Use of Computers for Pharmaceutical Care in community pharmacy

Accounting and General ledger system

Drug Information Retrieval & Storage :

Introduction – Advantages of Computerized Literature Retrieval

Use of Computerized Retrieval

Reference books:

- Pharmaceutical statistics- practical and clinical applications, Sanford Bolton 3rd edition, publisher Marcel Dekker Inc. NewYork.
- Drug Information- A Guide for Pharmacists, Patrick M Malone, Karen L Kier, John E Stanovich , 3rd edition, McGraw Hill Publications 2006



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ASSESSMENT OF PREVALENCE OF FIBROSIS IN NON-ALCOHOLIC FATTY LIVER DISEASE PATIENTS USING FIBROSCAN: INTEGRATING PATIENT EDUCATION' FOR EFFECTIVE DISEASE MANAGEMENT IN A TERTIARY CARE HOSPITAL

The thesis work submitted to



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-
KAKINADA**

*In partial fulfillment for the award of the Degree of
DOCTOR OF PHARMACY*

Submitted by

| | |
|--------------------|--------------|
| ALLAVARAPU MANOGNA | (193G1T0002) |
| BOKKA PRADEEPTHI | (193G1T0004) |
| JAKKULA SUPRIYA | (193G1T0012) |
| NISAR AHMED | (193G1T0016) |

Under the esteemed guidance of

CLINICAL GUIDE

Dr. R. SRINIVAS MURTY

MBBS, MD, DM

*Sr. Consultant Gastroenterologist
Trust Multispeciality Hospitals, Kakinada*

ACADEMIC GUIDE

Ms. P. RATNA KUMARI, M. Pharm

Associate Professor

Aditya Pharmacy College (A), Surampalem



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2024



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DECLARATION

We hereby declare that the thesis entitled "ASSESSMENT OF PREVALENCE OF FIBROSIS IN NON-ALCOHOLIC FATTY LIVER DISEASE PATIENTS USING FIBROSCAN: INTEGRATING PATIENT EDUCATION FOR EFFECTIVE DISEASE MANAGEMENT IN A TERTIARY CARE HOSPITAL" is a bonafide project work carried out by us under the guidance of *Ms. P. Ratna Kumari, Associate Professor, Department of Pharmacy Practice, Aditya Pharmacy College (A)* and *Dr. R. Srinivas Murty, Senior Consultant Gastroenterologist and Hepatologist at Trust Multispecialty Hospitals, Kakinada*, in partial fulfillment of the requirements for the Award of the Degree of Doctor of Pharmacy in the Department of Pharmacy Practice to Jawaharlal Nehru Technological University-Kakinada (JNTU-K). The work embodied in this thesis is original and has not been submitted in part or in full for any degree of this or any other university.

Place: Surampalem

Date:

Allavarapu Manogna
Bokka Pradeepthi
Jakkula Supriya
Nisar Ahmed

A. Manogna
B. Pradeepthi
J. Supriya
Nisar Ahmed




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CERTIFICATE BY THE GUIDES

This is to certify that the thesis work entitled "ASSESSMENT OF PREVALENCE OF FIBROSIS IN NON-ALCOHOLIC FATTY LIVER DISEASE PATIENTS USING FIBROSCAN: INTEGRATING PATIENT EDUCATION FOR EFFECTIVE DISEASE MANAGEMENT IN A TERTIARY CARE HOSPITAL" is a bonafide Project work carried out by ALLAVARAPU MANOGNA (Reg. No. 193G1T0002), BOKKA PRADEEPTHI (Reg. No. 193G1T0004), JAKKULA SUPRIYA (Reg. No. 193G1T0012) & NISAR AHMED (Reg. No. 193G1T0016), under the guidance of us at the Department of Pharmacy Practice, Aditya Pharmacy College (A), and Dept. of Gastroenterology and Hepatology, Trust Multispecialty Hospitals, Kakinada. In our opinion, this work has reached the standards in fulfillment of the partial requirement for the award of the degree of Doctor of Pharmacy per the regulations of the University.

Place: Surampalem & Kakinada

Date:

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CERTIFICATE BY THE PRINCIPAL

This is to certify that the thesis work entitled, "ASSESSMENT OF PREVALENCE OF FIBROSIS IN NON-ALCOHOLIC FATTY LIVER DISEASE PATIENTS USING FIBROSCAN: INTEGRATING PATIENT EDUCATION FOR EFFECTIVE DISEASE MANAGEMENT IN A TERTIARY CARE HOSPITAL" is being submitted by ALLAVARAPU MANOGNA (Reg. No. 193G1T0002), BOKKA PRADEEPTHI (Reg. No. 193G1T0004), JAKKULA SUPRIYA (Reg. No. 193G1T0012) NISAR AHMED (Reg. No. 193G1T0016) to Jawaharlal Nehru Technological University, Kakinada (JNTUK), in partial fulfillment for the award of the degree of DOCTOR OF PHARMACY in the Department of Pharmacy Practice under the guidance of Dr. D. Sathis Kumar, M. Pharm., Ph. D., Professor & Principal, is the bonafide project work carried out by them at Aditya Pharmacy College (A), Surampalem & Trust Multispeciality Hospitals, Kakianda.

The results incorporated in this work have not been submitted to any other university or institute for the award of any degree.

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Dr. D. Sathis Kumar,
M. Pharm, Ph. D.
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Place: Surampalem

Date: 10/5/24



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Place: Surampalem

Date:

11/12/24

Internal Examiner Signature

External Examiner Signature



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9) CONCLUSION

Our prospective observational study aimed to assess the prevalence of fibrosis in NAFLD patients. We found a high prevalence of both fibrosis and NAFLD in our study sample, largely attributed due to the higher prevalence of overweight/obesity and sedentary lifestyle. The correlation between obesity, as indicated by BMI, and the severity of liver involvement accentuates the importance of weight management interventions in mitigating the progression of NAFLD. Patients with conditions like diabetes and high blood pressure are also more likely to develop NAFLD, our findings align with existing literature, emphasizing the global burden of NAFLD and the necessity for tailored interventions to address its multifactorial etiology.

The high prevalence rates of NAFLD and fibrosis emphasize the urgent need for increased awareness and proactive screening strategies, particularly among populations with associated risk factors such as obesity, diabetes mellitus, hypertension, and metabolic syndrome.



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2.2 PHARMACEUTICAL MICROBIOLOGY (THEORY)

Theory : 3 Hrs. /Week

1. **Scope of the Subject:** Microbiology has always been an essential component of pharmacy curriculum. This is because of the relevance of microbiology to pharmaceutical sciences and more specifically to pharmaceutical industry. Pharmaceutical biotechnology is the logical extension of pharmaceutical microbiology, which is expected to change the complete drug product scenario in the future.

This course deals with the various aspects of microorganisms, its classification, morphology, laboratory cultivation identification and maintenance. It also discusses with sterilization of pharmaceutical products, equipment, media etc. The course further discusses the immunological preparations, diseases its transmission, diagnosis, control and immunological tests.

2. **Objectives of the Subject :**

Upon completion of the subject student shall be able to –

- a. know the anatomy, identification, growth factors and sterilization of microorganisms;
- b. know the mode of transmission of disease causing microorganism, symptoms of disease, and treatment aspect;
- c. do estimation of RNA and DNA and there by identifying the source;
- d. do cultivation and identification of the microorganisms in the laboratory;
- e. do identification of diseases by performing the diagnostic tests; and
- f. appreciate the behavior of motility and behavioral characteristics of microorganisms.

Text books (Theory)

- a. Vanitha Kale and Kishor Bhusari “ Applied Microbiology ” Himalaya Publishing house Mumbai.
- b. Mary Louis Turgeon “ Immunology and Serology in Laboratory Medicines” 2nd edition, 1996 Mosby- Year book inc St. Louis Missouri 63146.
- c. Harsh Mohan, “ Text book of Pathology” 3rd edition, 1998, B-3 Ansari road Darya ganj N. Delhi.

Reference books (Theory)

- a. Prescott L.M., Jarley G.P Klein D.A “Microbiology” 2nd- edition Mc Graw Hill Company Inc
- b. Rawlins E.A. “Bentley’s Text Book of Pharmaceutics” B ailliere Tindals 24-28 London 1988
- c. Forbisher “ Fundamentals of Microbiology” Philadelphia W.B. Saunders.
- d. Prescott L.M. Jarley G.P., Klein.D.A. “ Microbiology.” 2nd edition WMC Brown Publishers, Oxford. 1993
- e. War Roitt, Jonathan Brostoff, David male, “ Immunology” 3rd edition 1996, Mosby-year book Europe Ltd, London.
- f. Pharmacopoeia of India, Govt of India, 1996.



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3. Detailed syllabus and lecture wise schedule :

Title of the topic

- 1 Introduction to the science of microbiology. Major divisions of microbial world and Relationship among them.
- 2 Different methods of classification of microbes and study of Bacteria, Fungi, virus, Rickettsiae, Spirochetes.
- 3 Nutritional requirements, growth and cultivation of bacteria and virus. Study of different important media required for the growth of aerobic and anaerobic bacteria & fungi. Differential media, enriched media and selective media, maintenance of lab cultures.
- 4 Different methods used in isolation and identification of bacteria with emphasis to different staining techniques and biochemical reactions. Counting of bacteria -Total and Viable counting techniques.
- 5 Detailed study of different methods of sterilization including their merits and demerits. Sterilization methods for all pharmaceutical products. Detailed study of sterility testing of different pharmaceutical preparations . Brief information on Validation.
- 6 Disinfectants- Study of disinfectants, antiseptics, fungicidal and virucidal agents factors affecting their activation and mechanism of action. Evaluation of bactericidal, bacteristatic, , virucidal activities, evaluation of preservatives in pharmaceutical preparations.
- 7 Immunology- Immunity, Definition, Classification, General principles of natural immunity, Phagocytosis, acquired immunity(active and passive) . Antigens, chemical nature of antigens structure and formation of Antibodies, Antigen-Antibody reactions. Bacterial exotoxins and endotoxins. Significance of toxoids in active immunity, Immunization programme, and importance of booster dose.
- 8 Diagnostic tests : Schick's Test, Elisa test, Western Blot test, Southern Blot PCR Widal, QBC, Mantoux Peripheral smear. Study of malarial parasite.
- 9 Microbial culture sensitivity Testing: Interpretation of results Principles and methods of different microbiological assays, microbiological assay of Penicillin, Streptomycin and vitamin B₂ and B₁₂. Standardisation of vaccines and sera.
- 10 Study of infectious diseases: Typhoid, Tuberculosis, Malaria, Cholera, Hepatitis, Meningitis, Syphilis & Gonorrhea and HIV.

2.2 PHARMACEUTICAL MICROBIOLOGY (PRACTICAL)

Practical : 3 Hrs./Week

Title of the Experiment:

- 1 Study of apparatus used in experimental microbiology*.
- 2 Sterilisation of glass ware's. Preparation of media and sterilisation.*
- 3 Staining techniques – Simple staining ; Gram's staining ; Negative staining**
- 4 Study of motility characters*.
- 5 Enumeration of micro-organisms (Total and Viable)*
- 6 Study of the methods of isolation of pure culture.*
- 7 Bio chemical testing for the identification of micro*-organisms.



ASSESSING THE EFFECTIVENESS OF NUTRITIONAL
COUNSELLING ON QUALITY OF LIFE IN HAEMODIALYSIS
PATIENTS : AN OBSERVATIONAL STUDY

The thesis work submitted to



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-
KAKINADA

In partial fulfillment for the award of the Degree of
DOCTOR OF PHARMACY

Submitted by

| | |
|----------------------------------|--------------|
| Gudivada Sankeerthana | (193G1T0011) |
| Sankhanil Panda | (193G1T0018) |
| Vanarasi Sri Satya Manojna Naidu | (193G1T0022) |
| Yati Raj | (193G1T0024) |

Under the esteemed guidance of

HOSPITAL GUIDE

Dr. Sana Praveen

MRCP (UK), CCT (Nephrology)

Senior Consultant, Nephrology

Trust Multispeciality Hospitals, Kakinada

INSTITUTIONAL GUIDE

Dr. Pavan Kumar Yanamadala

PharmD

Associate Professor

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DECLARATION

I hereby declare that the thesis entitled "ASSESSING THE EFFECTIVENESS OF NUTRITIONAL COUNSELLING ON QUALITY OF LIFE IN HAEMODIALYSIS PATIENTS : AN OBSERVATIONAL STUDY" is a bonafide project work carried out by me under the guidance of *Dr. Pavan Kumar Yanamadala, Professor, Aditya Pharmacy College (A)* and *Dr. Sana Praveen, Senior Consultant Nephrologist at Trust Multispeciality Hospitals, Kakinada*, in partial fulfillment of the requirements for the Award of the Degree of Doctor of Pharmacy in the Department of Pharmacy Practice to Jawaharlal Nehru Technological University-Kakinada (JNTU-K). The work embodied in this thesis is original and has not been submitted in part or in full for any degree of this or any other university.

Place: Surampalem

Date: 10/05/2024

Gudivada Sankeerthana
Sankhanil Panda
Vanarasi Sri Satya Manojna Naidu
Yati Raj

G. Sankeerthana
Sankhanil Panda
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CERTIFICATE BY THE GUIDES

This is to certify that the thesis work entitled "ASSESSING THE EFFECTIVENESS OF NUTRITIONAL COUNSELLING ON QUALITY OF LIFE IN HAEMODIALYSIS PATIENTS: AN OBSERVATIONAL STUDY" is a bonafide Project work carried out by Gudivada Sankeerthana (193GIT0011), Sankhanil Panda (193GIT0018), Vanarasi Sri Satya Manojna Naidu (193GIT0022), Yati Raj (193GIT0024), under the guidance of us at the Department of Pharmacy Practice, Aditya Pharmacy College (A), and Dept. of Nephrology, Trust Multispeciality Hospitals, Kakinada. In our opinion, this work has reached the standards in fulfillment of the partial requirement for the award of the degree of Doctor of Pharmacy per the regulations of the University.

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The results incorporated in this work have not been submitted to any other university or institute for the award of any degree.


Dr. D. Sathis Kumar
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Principal
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Place: Surampalem

Date: 16/5/24



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Place: Surampalem

Date: 11/5/24

Internal Examiner

External Examiner

Sign:

Sign:



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CONCLUSION: -

The study conducted aimed at finding out the impact and the effectiveness of nutritional counselling which was being provided to the patients as a method of improving their quality of life. The difference in the quality of life of the patients undergoing regular haemodialysis before they were provided with the nutritional counselling and after they were provided with the nutritional counselling acts as the parameter of measuring the difference in quality of life and to check if there is any improvement which was statistically significant.

Based upon the results obtained from the statistical analysis, it can be concluded that since the calculated p value at 0.05 level of significance (α) is less than the critical p value at the same level of significance, the null hypothesis is rejected.

Therefore, the alternate hypothesis is accepted and the statistical analysis leads to the conclusion that there is a statistically significant difference between the Quality-of-Life scores obtained prior to the patient receiving nutritional and dietary counselling and the Quality-of-Life scores obtained subsequent to the patient receiving such counselling.

Thus, it can be concluded that the nutritional counselling provided to the patient is having a statistically significant impact and is effective in Improving the Quality of Life of patients undergoing regular Haemodialysis.



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1.3 MEDICINAL BIOCHEMISTRY (THEORY)

Theory : 3 Hrs. /Week

- 1. Scope of the Subject:** Applied biochemistry deals with complete understanding of the molecular level of the chemical process associated with living cells. Clinical chemistry deals with the study of chemical aspects of human life in health and illness and the application of chemical laboratory methods to diagnosis, control of treatment, and prevention of diseases.

- 2. Objectives of the Subject (Know, do, appreciate) :**

The objective of the present course is providing biochemical facts and the principles to the students of pharmacy. Upon completion of the subject student shall be able to –

- understand the catalytic activity of enzymes and importance of isoenzymes in diagnosis of diseases;
- know the metabolic process of biomolecules in health and illness (metabolic disorders);
- understand the genetic organization of mammalian genome; protein synthesis; replication; mutation and repair mechanism;
- know the biochemical principles of organ function tests of kidney, liver and endocrine gland; and
- do the qualitative analysis and determination of biomolecules in the body fluids.

Text books (Theory)

- Harpers review of biochemistry - Martin
- Text book of biochemistry – D.Satyanarayana
- Text book of clinical chemistry- Alex kaplan & Laverve L.Szabo

Reference books (Theory)

- Principles of biochemistry -- Lehninger
- Text book of biochemistry -- Ramarao
- Practical Biochemistry-David T.Plummer.
- Practical Biochemistry-Pattabhiraman.

- 3. Lecture wise programme:**

Topics

- 1 Introduction to biochemistry:** Cell and its biochemical organization, transport process across the cell membranes. Energy rich compounds; ATP, Cyclic AMP and their biological significance.
- 2 Enzymes:** Definition; Nomenclature; IUB classification; Factor affecting enzyme activity; Enzyme action; enzyme inhibition. Isoenzymes and their therapeutic and diagnostic applications; Coenzymes and their biochemical role and deficiency diseases.
- 3 Carbohydrate metabolism:** Glycolysis, Citric acid cycle (TCA cycle), HMP shunt, Glycogenolysis, gluconeogenesis, glycogenesis. Metabolic disorders of carbohydrate metabolism (diabetes mellitus and glycogen storage diseases); Glucose, Galactose tolerance test and their significance; hormonal regulation of carbohydrate metabolism.



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**DIABETES IN FOCUS: INVESTIGATING THE PREVALENCE AND
ASSESSING RISK FACTORS FOR THE DEVELOPMENT OF MICRO
AND MACROVASCULAR COMPLICATIONS IN PATIENTS WITH
DIABETES MELLITUS**

The thesis work submitted to



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-
KAKINADA**

*In partial fulfilment for the award of the Degree of
DOCTOR OF PHARMACY*

Submitted by

| | |
|-------------------------------|--------------|
| AKASAPU MADHURI | (193G1T0001) |
| CHILAKA SWARNAKISHORE | (193G1T0006) |
| THOTA THANMAYI SAI LAKSHMI | (193G1T0021) |
| VEMANA HEMA RATNA SAI LAKSHMI | (193G1T0023) |

Under the esteemed guidance of

CLINICAL GUIDE

Dr. M. Phani Ramana Bhushan

MBBS, MD

Sr. Consultant General Physician

Trust Multispeciality Hospitals, Kakinada

INSTITUTIONAL GUIDE

Dr. P. S.V. M. Deepika

PharmD

Assistant professor

Aditya Pharmacy College (A)



DEPARTMENT OF PHARMACY PRACTICE

ADITYA PHARMACY COLLEGE (A)

Accredited by NAAC with 'A' Grade, Affiliated to JNTUK, Approved by AICTE, PCI, UGC & ISO

Aditya Nagar, ADB Road, Surampalem-533437, Andhra Pradesh, India

Email: office@adityapharmacy.edu.in, Web: www.adityapharmacy.edu.in

2024



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Aditya Nagar, ADB Road, Surampalem-533437, Andhra Pradesh, India

DECLARATION

We hereby declare that the thesis entitled "DIABETES IN FOCUS: INVESTIGATING THE PREVALENCE AND ASSESSING RISK FACTORS FOR THE DEVELOPMENT OF MICRO AND MACROVASCULAR COMPLICATIONS IN PATIENTS WITH DIABETES MELLITUS" is a bonafide project work carried out by us under the guidance of Dr. P. S. V. M. Deepika, Assistant Professor, Aditya Pharmacy College (A) and Dr. M. Phani Ramana Bhushan, Senior Consultant General Physician at Trust Multispeciality Hospitals, Kakinada, in partial fulfillment of the requirements for the Award of the Degree of Doctor of Pharmacy in the Department of Pharmacy Practice to Jawaharlal Nehru Technological University-Kakinada (JNTU-K). The work embodied in this thesis is original and has not been submitted in part or in full for any degree of this or any other university.

Place: Surampalem

Date: 06-05-2024

Akasapu Madhuri

Chilaka Swarna Kishore

Thota Thanmayi Sai Lakshmi

Vemana Hema Ratna Sai Lakshmi

A. Madhuri

Ch. Swarna Kishore

Thota Thanmayi Sai Lakshmi

V.H.R. Sai Lakshmi




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Approved by AICTE, PCI, UGC & ISO

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CERTIFICATE BY THE GUIDES

This is to certify that the thesis work entitled "DIABETES IN FOCUS: INVESTIGATING THE PREVALENCE AND ASSESSING RISK FACTORS FOR THE DEVELOPMENT OF MICRO AND MACROVASCULAR COMPLICATIONS IN PATIENTS WITH DIABETES MELLITUS" is a bonafide Project work carried out by AKASAPU MADHURI (Reg.No.193G1T0001), CHILAKA SWARNA KISHORE (Reg.No.193G1T0006), THOTA THANMAYI SAI LAKSHMI (Reg. No. 193G1T0021) & VEMANA HEMA RATNA SAI LAKSHMI (Reg. No. 193G1T0023), under the guidance of us at the Department of Pharmacy Practice, Aditya Pharmacy College (A), and Dept. of General Medicine, Trust Multispecialty Hospitals, Kakinada. In our opinion, this work has reached the standards in fulfillment of the partial requirement for the award of the degree of Doctor of Pharmacy per the regulations of the University.

Place: Surampalem & Kakinada

Date: 06-05-2024

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Reg. No.40781 MD (Manipal)
Consultant Physician
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Aditya Nagar, ADB Road, Surampalem-533437, Andhra Pradesh, India

CERTIFICATE BY THE PRINCIPAL

This is to certify that the thesis work entitled, "DIABETES IN FOCUS: INVESTIGATING THE PREVALENCE AND ASSESSING RISK FACTORS FOR THE DEVELOPMENT OF MICRO AND MACROVASCULAR COMPLICATIONS IN PATIENTS WITH DIABETES MELLITUS" is being submitted by AKASAPU MADHURI (Reg.No.193G1T0001), CHILAKA SWARNA KISHORE (Reg.No.193G1T0006), THOTA THANMAYI SAI LAKSHMI (Reg. No. 193G1T0021) & VEMANA HEMA RATNA SAI LAKSHMI (Reg. No. 193G1T0023) to Jawaharlal Nehru Technological University, Kakinada (JNTUK), in partial fulfilment for the award of the degree of DOCTOR OF PHARMACY in the Department of Pharmacy Practice under the guidance of Dr. P.S.V.M. Deepika, Pharm. D, Assistant Professor, is the bonafide project work carried out by them at Aditya Pharmacy College (A), Surampalem & Trust Multispeciality Hospitals, Kakianda.

The results incorporated in this work have not been submitted to any other university or institute for the award of any degree.

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

Principal,

Aditya Pharmacy College (A),
Surampalem-533437

Place: Surampalem

Date: 01/5/20

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EVALUATION CERTIFICATE

This is to certify that the thesis work entitled, "DIABETES IN FOCUS: INVESTIGATING THE PREVALENCE AND ASSESSING RISK FACTORS FOR THE DEVELOPMENT OF MICRO AND MACROVASCULAR COMPLICATIONS IN PATIENTS WITH DIABETES MELLITUS" is a bonafide Project work done by AKASAPU MADHURI (Reg.No.193G1T0001), CHILAKA SWARNA KISHORE (Reg.No.193G1T0006), THOTA THANMAYI SAI LAKSHMI (Reg. No. 193G1T0021) & VEMANA HEMA RATNA SAI LAKSHMI (Reg. No. 193G1T0023) submitted in partial fulfilment for the award of the degree of DOCTOR OF PHARMACY in the Department of Pharmacy Practice to Jawaharlal Nehru Technological University, Kakinada (JNTUK).

Place: Surampalem

Date: 01/05/23

Internal Examiner

External Examiner

Sign:

Sign:



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CONCLUSION

From our study we can conclude that the prevalence of macrovascular complications is more when compared to microvascular complications. CAD and Diabetic Nephropathy are highly prevalent. The study shows the prevalence of vascular complications is higher in the subjects with age within the range of 61-70 years, subjects with prolonged duration of diabetes of 6-10 years, positive family history of diabetes, lack of sleep, medical history of hypertension and subjects with uncontrolled blood glucose levels and males are found to be most affected with vascular complications. Early DM screening and investigation are recommended to identify risk factors, target them with tailored treatment and management strategies and prevent complications. To fully analyze and comprehend the potential danger and causative elements, more research investigations must be done. Therefore, there is a need for further study in the field of Diabetes.

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1.1 HUMAN ANATOMY & PHYSIOLOGY (PRACTICAL)

Practical : 3 Hrs./Week

General Requirements: Dissection box, Laboratory Napkin, muslin cloth, record, Observation book(100pages), Stationary items, Blood lancet.

Course materials:

Text books

Goyal, R. K, Natvar M.P, and Shah S.A, Practical anatomy, physiology and biochemistry, latest edition, Publisher: B.S Shah Prakashan, Ahmedabad.

Reference books

Ranade VG, Text book of practical physiology, Latest edition, Publisher: PVG, Pune
Anderson Experimental Physiology, Latest edition, Publisher: NA

List of Experiments:

1. Study of tissues of human body
 - (a) Epithelial tissue.
 - (b) Muscular tissue.
2. Study of tissues of human body
 - (a) Connective tissue.
 - (b) Nervous tissue.
3. Study of appliances used in hematological experiments.
4. Determination of W.B.C. count of blood.
5. Determination of R.B.C. count of blood.
6. Determination of differential count of blood.
7. Determination of
 - (a) Erythrocyte Sedimentation Rate.
 - (b) Hemoglobin content of Blood.
 - (c) Bleeding time & Clotting time.
8. Determination of
 - (a) Blood Pressure.
 - (b) Blood group.
9. Study of various systems with the help of charts, models & specimens
 - (a) Skeleton system part I-axial skeleton.
 - (b) Skeleton system part II- appendicular skeleton.
 - (c) Cardiovascular system.
 - (d) Respiratory system.



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- (e) Digestive system.
- (f) Urinary system.
- (g) Nervous system.
- (h) Special senses.
- (i) Reproductive system.

10. Study of different family planning appliances.
11. To perform pregnancy diagnosis test.
12. Study of appliances used in experimental physiology.
13. To record simple muscle curve using gastrocnemius sciatic nerve preparation.
14. To record simple summation curve using gastrocnemius sciatic nerve preparation.
15. To record simple effect of temperature using gastrocnemius sciatic nerve preparation.
16. To record simple effect of load & after load using gastrocnemius sciatic nerve preparation.
17. To record simple fatigue curve using gastrocnemius sciatic nerve preparation.

Scheme of Practical Examination:

| | Sessionals | Annual |
|------------------|--------------|--------------|
| Identification | 04 | 10 |
| Synopsis | 04 | 10 |
| Major Experiment | 07 | 20 |
| Minor Experiment | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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

Department of
Human Anatomy and physiology

Name: B: Dhanu Sri

PIN No. 23361T0004

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

Mr./Ms. Bhupathi Dhanu Sri

a student of 1st Pharm-D with Regd. No. 23361T0004

in the HUMAN ANATOMY & PHYSIOLOGY - I
HAP - Laboratory during the year 2023-2024

No. of Experiments Conducted 22

No. of Experiments Attended 22

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 |
|-------|----------|---|----------|--------------------|
| 01 | 23-11-23 | Compound Microscope | 01-4 | Cypr 30-11-2023 |
| 02 | 30-11-23 | Estimation of Bleeding Time | 5-6 | Cypr 7-12-2023 |
| 03 | 7-12-23 | Estimation of clotting Time | 7-8 | Cypr 14-12-2023 |
| 04 | 14-12-23 | Determination of Breath holding Time | 09 | Cypr 21-12-2023 |
| 05 | 21-12-23 | Determination of Rate of Respiration | 10 | Cypr 04-01-2024 |
| 06 | 28-12-23 | Determination of Human Blood group | 11-12 | Cypr 11-01-2024 |
| 07 | 04-1-24 | Estimation of Haemoglobin Content | 13-15 | Cypr 21/3/24 |
| 08 | 29-2-24 | Study of Haemocytometry | 16-19 | 9 21/3/24 |
| 09 | 7-3-24 | Enumeration of Red blood Cells | 20-23 | |
| 10 | 14-3-24 | Enumeration of White blood Cells | 24-28 | |
| 11 | 21-3-24 | Determination of Erythrocyte Sedimentation Rate | 29-32 | |



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|----------|
| 12. | 21-3-24 | Determination of Blood pressure | 32-36 | 9 |
| 13. | 28-3-24 | Determination of Differential Leucocytes. | 37-41 | |
| 14. | 9-4-24 | Identification of slides. | 42-47 | |
| 15. | 11-4-24 | A- Skeletal system (1) Axial | 48-50 | 11/11/24 |
| | | B- Skeletal system (2) Appendicular | 51-54 | |
| | | C- Cardiovascular system | 55-56 | |
| 16. | 18-4-24 | D- Respiratory system | 57-58 | 28/11/24 |
| | | E- Digestive system | 59-62 | |
| | | F- Urinary system | 63-64 | |
| 17. | 28-4-24 | G- Nervous system | 65-66 | |
| | | H- special Senses | 67-69 | |
| | | I - Reproductive System | | |
| | | • Male | 70-71 | 11/5/24 |
| | | • Female | 72-73 | |
| 18. | 02-5-24 | study of different Family Planning Appliances. | 74-78 | |
| 19. | 09-5-24 | Pregnancy diagnosis Test. | 79-81 | 9 |
| 20. | 16-5-24 | Appliances used in the Experimental physiology. | 82-83 | |
| 21. | 16-5-24 | Recording simple Muscle Twitch | 84-86 | |
| 22. | 6-6-24 | Phenomenon of Fatigue | 87-89 | 24/6/24 |



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- 7 Biphase dosage forms: Suspensions and emulsions, Definition, advantages and disadvantages, classification, test for the type of emulsion, formulation, stability and evaluation.
- 8 Suppositories and pessaries: Definition, advantages and disadvantages, types of base, method of preparation, Displacement value and evaluation.
- 9 Galenicals: Definition, equipment for different extraction processes like infusion, Decoction, Maceration and Percolation, methods of preparation of spirits, tinctures and extracts.
- 10 Pharmaceutical calculations.
- 11 Surgical aids: Surgical dressings, absorbable gelatin sponge, sutures, ligatures and medicated bandages.
- 12 Incompatibilities: Introduction, classification and methods to overcome the incompatibilities.

1.2 PHARMACEUTICS (PRACTICAL)

Practical : 3 Hrs./Week

List of Experiments:

1. **Syrups**
 - a. Simple Syrup I.P
 - b. Syrup of Ephedrine Hcl NF
 - c. Syrup Vasaka IP
 - d. Syrup of ferrous Phosphate IP
 - e. Orange Syrup
2. **Elixir**
 - a. Piperizine citrate elixir BP
 - b. Cascara elixir BPC
 - c. Paracetamol elixir BPC
3. **Linctus**
 - a. Simple Linctus BPC
 - b. Pediatric simple Linctus BPC
4. **Solutions**
 - a. Solution of cresol with soap IP
 - b. Strong solution of ferric chloride BPC
 - c. Aqueous Iodine Solution IP
 - d. Strong solution of Iodine IP
 - e. Strong solution of ammonium acetate IP



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5. **Liniments**
 - a. Liniment of turpentine IP*
 - b. Liniment of camphor IP
6. **Suspensions***
 - a. Calamine lotion
 - b. Magnesium Hydroxide mixture BP
7. **Emulsions***
 - a. Cod liver oil emulsion
 - b. Liquid paraffin emulsion
8. **Powders***
 - a. Eutectic powder
 - b. Explosive powder
 - c. Dusting powder
 - d. Insufflations
9. **Suppositories***
 - a. Boric acid suppositories
 - b. Chloral suppositories
10. **Incompatibilities**
 - a. Mixtures with Physical
 - b. Chemical & Therapeutic incompatibilities

* colourless bottles required for dispensing * Paper envelope (white), butter paper and white paper required for dispensing.

Scheme of Practical Examination:

| | Sessionals | Annual |
|------------------|--------------|--------------|
| Synopsis | 05 | 15 |
| Major Experiment | 10 | 25 |
| Minor Experiment | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note: Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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Department of

PHARMACEUTICS

Name: V. Vahini

PIN No. 23361T0029

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

Mr./Ms. VEERANALA VAHINI

a student of 1st PHARM.D with Regd. No. 23361T0029

in the PHARMACEUTICS Laboratory during the year 2023-24

No. of Experiments Conducted 31

No. of Experiments Attended 31

G. Saidevi
Signature - Faculty incharge

[Signature]
Signature-Head of the Department

Submitted for the practical examination held on 20-04-2024

A. Anand
Examiner-1


[Signature]
Examiner-2



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|--|
| 0 | 25/11/23 | simple syrup (I.P) | 6-7 |  |
| 1) | 2/12/23 | orange syrup (I.P) | pg-8-9 | |
| 2) | 9/12/23 | vasaka syrup (I.P) | pg-10-11 | |
| 3) | 16/12/23 | compound ferrous phosphate (B.P.C) | 12-14 | |
| 5) | 16/12/23 | ephedrine hydrochloride syrup (I.P) | 15-16 | |
| 6) | 23/12/23 | paracetamol pediatric elixir (B.P.C) | 18-19 | |
| 7) | 30/12/23 | pipenzazine citrate elixir (B.P.C) | 20-21 | |
| 8) | 6/1/24 | cascara elixir (B.P.C) | 22-23 | |
| 9) | 27/1/24 | simple linctus (B.P.C) | 25-26 | |
| 10) | 27/1/24 | Pediatric simple linctus | 27- | |
| 11) | 3/2/24 | Aqueous iodine solution | 29-30 | |
| 12) | 10/2/24 | strong iodine solution | 31-32 | |
| 13) | 17/2/24 | CRESOL SOAP SOLUTION (I.P) | 33-34 | |
| 14) | 2/3/24 | STRONG AMMONIUM ACETATE SOLUTION (I.P) | 35-36 | |
| 15) | 16/3/24 | CAMPBOR LINIMENT (I.P) | 38-39 | |
| 16) | 16/3/24 | TURPENTINE LINIMENT (I.P) | 40-41 | |
| 17) | 23/3/24 | CALAMINE LOTION | 42-43 | |
| 18) | 6/4/24 | MAGNESIUM HYDROXIDE MIXTURE (B.P.C) | 44-46 | |
| 19) | 20/4/24 | LIQUID PARAFFIN EMULSION | 47-48 | |
| 20) | 27/4/24 | COD LIVER OIL EMULSION | 49-50 | |
| 21) | 27/4/24 | ZINC OXIDE STARCH DUSTING POWDER (NFI) | 53- | |
| 22) | 11/5/24 | EUTECTIC POWDER | 54 | |
| 23) | 18/5/24 | EXPLOSIVE POWDER | 55 | |
| 24) | 8/6/24 | BORIC ACID SUPPOSITORIES | 58-59 | |
| 25) | 15/6/24 | CHLORAL HYDRATE SUPPOSITORIES | 60-61 | |
| 26) | 22/6/24 | EMULSION | 62 | |
| 27) | 22/6/24 | MIXTURE - I | 64 | |
| 28) | 29/6/24 | MIXTURE - II | 65 | |



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Painter

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1.3 MEDICINAL BIOCHEMISTRY (PRACTICAL)

Practical : 3 Hrs./Week

Title of the Experiment:

- 1 Qualitative analysis of normal constituents of urine.*
- 2 Qualitative analysis of abnormal constituents of urine.*
- 3 Quantitative estimation of urine sugar by Benedict's reagent method.**
- 4 Quantitative estimation of urine chlorides by Volhard's method.**
- 5 Quantitative estimation of urine creatinine by Jaffe's method.**
- 6 Quantitative estimation of urine calcium by precipitation method.**
- 7 Quantitative estimation of serum cholesterol by Libermann Burchard's method.**
- 8 Preparation of Folin Wu filtrate from blood.*
- 9 Quantitative estimation of blood creatinine.**
- 10 Quantitative estimation of blood sugar Folin-Wu tube method.**
- 11 Estimation of SGOT in serum.**
- 12 Estimation of SGPT in serum.**
- 13 Estimation of Urea in Serum.**
- 14 Estimation of Proteins in Serum.**
- 15 Determination of serum bilirubin**
- 16 Determination of Glucose by means of Glucoseoxidase.**
- 17 Enzymatic hydrolysis of Glycogen/Starch by Amylases.**
- 18 Study of factors affecting Enzyme activity. (pH & Temp.)**
- 19 Preparation of standard buffer solutions and its pH measurements (any two)*
- 20 Experiment on lipid profile tests**
- 21 Determination of sodium,calcium and potassium in serum.**

** indicate major experiments & * indicate minor experiments

Assignments:

Format of the assignment

1. Minimum & Maximum number of pages.
2. It shall be computer draft copy.
3. Reference(s) shall be included at the end.
4. Name and signature of the student.
5. Assignment can be a combined presentation at the end of the academic year.
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination:

| | Sessionals | Annual |
|------------------|--------------|--------------|
| Synopsis | 05 | 15 |
| Major Experiment | 10 | 25 |
| Minor Experiment | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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Department of

Name: DEVYANI SINGH

PIN No. 2336170010

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

Mr./Ms. Devyani Singh

a student of 1st PharmD with Regd. No. 2336170010

in the Medicinal ~~Biochemistry~~ Laboratory during the year 2023-2024

No. of Experiments Conducted 22

No. of Experiments Attended 22

C. V. Muthu

Signature - Faculty incharge

2024

Signature-Head of the Department

Submitted for the practical examination held on 23/7/2024

Examiner-1

Examiner-2



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|-----------|
| 1. | 25/11/23 | Introduction (General Instruction) | 1-2 | <u>I.</u> |
| 2. | 28/11/23 | Qualitative analysis of normal constituents of urine. | 3-8 | <u>I.</u> |
| 3. | 9/12/23 | Qualitative analysis of abnormal constituents of urine. | 9-15 | <u>I.</u> |
| 4. | 23/12/23 | Quantitative estimation of Urine chloride by Volhard Arnold method. | 16-18 | <u>I.</u> |
| 5. | 16/12/23 | Quantitative estimation of glucose in urine by Benedict's Reagent method. | 19-20 | <u>I.</u> |
| 6. | 30/12/23 | Quantitative Estimation of Creatinine by Jaffe's method | 21-23 | <u>I.</u> |
| 7. | 6/1/24 | Quantitative Estimation of Urine Calcium by Precipitation method. | 24-25 | <u>I.</u> |
| 8. | 20/1/24 | Quantitative estimation of Serum Cholesterol (By Libermann Burchard's Method) | 26-27 | <u>I.</u> |
| 9. | 27/1/24 | Quantitative estimation of Blood Creatinine | 28-29 | <u>I.</u> |
| 10. | 03/2/24 | Preparation of Folin-Wu filtrate from Blood | 30-31 | <u>I.</u> |
| 11. | 03/2/24 | Quantitative estimation of Blood Sugar Folin-Wu tube Method. | 32-34 | <u>I.</u> |
| 12. | 10/2/24 | Estimation of ⁶⁶⁰⁷ in Serum | 35-37 | <u>I.</u> |



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|----------|
| 13. | 2/3/24 | Estimation of SGPT in Serum | 38 - 39 | <u>l</u> |
| 14. | 9/3/24 | Estimation of urea in Serum | 40 - 42 | <u>l</u> |
| 15. | 16/3/24 | Estimation of protein in Serum | 43 - 45 | <u>l</u> |
| 16. | 23/3/24 | Estimation of cholesterol in Serum. | 46 - 48 | <u>l</u> |
| 17. | 30/3/24 | Determination of Serum Bilirubin | 49 | <u>l</u> |
| 18. | 6/4/24 | Determination of Glucose by means of glucose oxidase | 50 - 51 | <u>l</u> |
| 19. | 20/4/24 | Enzymatic hydrolysis of glycogen / starch by amylases | 52 - 54 | <u>l</u> |
| 20. | 27/4/24 | Study of temperature effecting enzyme activity | 55 - 57 | <u>l</u> |
| 21. | 27/4/24 | Preparation of Standard Buffer solution and its pH measurement. | 58 - 60 | <u>l</u> |
| 22. | 11/5/24 | Determination of Calcium in Serum | 61 - 63 | <u>l</u> |
| 23. | 18/5/24 | Determination of Sodium and potassium in serum. | 64 - 66 | <u>l</u> |



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- 12 Mechanism of aldol condensation, claisen condensation, cannizzaro reaction, crossed aldol condensation, crossed cannizzaro reaction, benzoin condensation, perkin condensation. Knoevenagel, Reformatsky reaction, Wittig reaction, Michael addition.
- 13 Hoffman rearrangement: Migration to electron deficient nitrogen, Sandmeyer's reaction, basicity of amines, diazotisation and coupling, acidity of phenols, Williamson synthesis, Fries rearrangement, Kolbe reaction, Reimer tieman's reactions.
- 14 Nucleophilic aromatic substitution: Bimolecular displacement mechanisms, orientation, comparison of aliphatic nucleophilic substitution with that of aromatic.
- 15 Oxidation reduction reaction.
- 16 Study of the following official compounds- preparation, test for purity, assay and medicinal uses of Chlorbutol, Dimercaprol, Glyceryl trinitrate, Urea, Ethylene diamine dihydrate, Vanillin, Paraldehyde, Ethylene chloride, Lactic acid, Tartaric acid, citric acid, salicylic acid, aspirin, methyl salicylate, ethyl benzoate, benzyl benzoate, dimethyl phthalate, sodium lauryl sulphate, saccharin sodium, mephensin.

1.4 PHARMACEUTICAL ORGANIC CHEMISTRY (PRACTICAL)

Practical : 3 Hrs./Week

I. Introduction to the various laboratory techniques through demonstration involving synthesis of the following compounds (at least 8 compounds to be synthesised):

1. Acetanilide / aspirin (Acetylation)
2. Benzanilide / Phenyl benzoate (Benzoylation)
3. P-bromo acetanilide / 2,4,6 – tribromo aniline (Bromination)
4. Dibenzylidene acetone (Condensation)
5. 1-Phenylazo-2-naphthol (Diazotisation and coupling)
6. Benzoic acid / salicylic acid (Hydrolysis of ester)
7. M-dinitro benzene (Nitration)
8. 9, 10 – Anthraquinone (Oxidation of anthracene) / preparation of benzoic acid from toluene or benzaldehyde
9. M-phenylene diamine (Reduction of M-dinitrobenzene) / Aniline from nitrobenzene
10. Benzophenone oxime
11. Nitration of salicylic acid
12. Preparation of picric acid
13. Preparation of O-chlorobenzoic acid from O-chlorotoluene
14. Preparation of cyclohexanone from cyclohexanol



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SURAMPALEM-531 437



ADITYA PHARMACY COLLEGE

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

Department of
Organic Chemistry

Name: P. Jyothirmai Sai Satya Sri

PIN No. 23361T0023

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

Mr./Ms. P. Jyothirmai Sai Satya Sri

a student of 1st pharm-D *with Regd. No.* 23361T0023

in the Organic Chemistry *laboratory during the year* 2023-24

No. of Experiments Conducted 28

No. of Experiments Attended 28

Signature [Signature] Faculty Incharge

Signature [Signature] Head of the Department

PRINCIPAL

Aditya Pharmacy College

Submitted for the practical examination held on SURAMPALAM, 25/3/24

Examiner [Signature]

Examiner [Signature]



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ADITYA PHARMACY COLLEGE(A)
SURAMPALAM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| 1. | 4/12/23 | Chemistry laboratory rules and Safety precautions | 01 | |
| 2. | 11/12/23 | Basic laboratory Techniques for Separation & purification | 02 - 10 | |
| 3. | 18/12/23 | ACETYLATION | 11 | |
| 4. | 8/1/24 | preparation of Aspirin | 12 - 13 | |
| 5. | 22/1/24 | preparation of Acetanilide | 14 - 15 | |
| 6. | 29/1/24 | BENZYLATION | 16 | |
| 7. | 5/2/24 | preparation of Benzanilide | 17 - 18 | |
| 8. | 12/2/24 | preparation of Benzophenone Oxime | 19 - 20 | |
| 9. | 26/2/24 | BROMINATION | 21 | |
| 10. | 4/3/24 | preparation of p-Bromo Acetanilide | 22 - 23 | |
| 11. | 11/3/24 | NITRATION | 24 | |
| 12. | 18/3/24 | preparation of nitrobenzene | 25 - 26 | |
| 13. | 11/4/24 | ACETYLATION | 27 | |
| 14. | 8/4/24 | preparation of Benzoic acid from Benzanilide | 27 - 28 | |
| 15. | 15/4/24 | preparation of phenyl Azo β -naphthol | 28 - 29 | |
| 16. | 22/4/24 | preparation of Dibenzylidene Acetone | 30 - 31 | |
| 17. | 6/5/24 | Systematic Quantitative Analysis of organic Compound | 32 - 53 | |
| 18. | 6/5/24 | Sample - I | 54 - 56 | |
| 19. | 13/5/24 | Sample - II | 57 - 58 | |



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SURAMPALAM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|------------------------|----------|--------------------|
| 20 | 31/6/24 | Sample - III | 59 - 60 | <i>[Signature]</i> |
| 21 | 10/6/24 | Sample - IV | 61 - 63 | <i>[Signature]</i> |
| 22 | 24/6/24 | Sample - V | 64 - 65 | <i>[Signature]</i> |
| 23 | 1/7/24 | Sample - VI | 66 - 67 | <i>[Signature]</i> |
| 24 | 1/7/24 | Sample - VII | 68 - 70 | <i>[Signature]</i> |
| 25 | 8/7/24 | Sample - VIII | 71 - 72 | <i>[Signature]</i> |
| 26 | 8/7/24 | Sample - IX | 73 - 74 | <i>[Signature]</i> |
| 27 | 8/7/24 | Sample - X | 75 - 76 | <i>[Signature]</i> |
| 28. | 8/7/24 | STEREO MODELS | 77 - 79 | <i>[Signature]</i> |

[Signature]

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- 16 Essential Trace elements
- 17 Antimicrobials
- 18 Pharmaceutical aids
- 19 Dental Products
- 20 Miscellaneous compounds
- 21 Radio Pharmaceuticals

1.5 PHARMACEUTICAL INORGANIC CHEMISTRY (PRACTICAL)

Practical : 3 Hrs./Week

1. Limit test (6 exercises)

- a. Limit test for chlorides
- b. Limit test for sulphates
- c. Limit test for iron
- d. Limit test for heavy metals
- e. Limit test for arsenic
- f. Modified limit tests for chlorides and sulphates

2. Assays (10 exercises)

- a. Ammonium chloride- Acid-base titration
- b. Ferrous sulphate- Cerimetry
- c. Copper sulphate- Iodometry
- d. Calcilugluconate- Complexometry
- e. Hydrogen peroxide – Permanganometry
- f. Sodium benzoate – Nonaqueous titration
- g. Sodium chloride – Modified volhard's method
- h. Assay of KI – KIO_3 titration
- i. Gravimetric estimation of barium as barium sulphate
- j. Sodium antimony gluconate or antimony potassium tartarate

3. Estimation of mixture (Any two exercises)

- a. Sodium hydroxide and sodium carbonate
- b. Boric acid and Borax
- c. Oxalic acid and sodium oxalate

4. Test for identity (Any three exercises)

- a. Sodium bicarbonate
- b. Barium sulphate
- c. Ferrous sulphate
- d. Potassium chloride



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5. Test for purity (Any two exercises)

- Swelling power in Bentonite
- Acid neutralising capacity in aluminium hydroxide gel
- Ammonium salts in potash alum
- Adsorption power heavy Kaolin
- Presence of Iodates in KI

6. Preparations (Any two exercises)

- Boric acids
- Potash alum
- Calcium lactate
- Magnesium sulphate

Scheme of Practical Examination :

| | Sessionals | Annual |
|----------------------|--------------|--------------|
| Synopsis | 05 | 15 |
| Major Experiment | 10 | 25 |
| Minor Experiment 1&2 | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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SURAMPALAM-533 437

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ADITYA PHARMACY COLLEGE

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

Department of Inorganic Chemistry

Name: P. Tyothirmai

PIN No. 23341T0023

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

Mr. / Ms. P. Tyothirmai Sai Satya Sri

a student of Pharm.D with Regd. No. 23341T0023

in the Inorganic Chem Laboratory during the year 2023-24

No. of Experiments Conducted 35

No. of Experiments Attended 35

Signature - Faculty incharge

Signature-Head of the Department

Submitted for the practical examination held on

Examiner-1

Examiner-2

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALAM-533 437



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| 1. | 14/12/23 | Apparatus used in Volumetric Analysis | 1 - 7 | |
| | | Calibration of Analytic Apparatus | 8 - 9 | |
| 2. | 21/12/23 | Standardization of Hydrochloric Acid | 10 - 11 | |
| 3. | 28/12/23 | ASSAY of Borax | 12 - 13 | |
| 4. | 4/1/24 | Standardization of Sodium Hydroxide | 14 - 15 | |
| 5. | 11/1/24 | ASSAY of Ammonium chloride | 16 - 17 | |
| 6. | 18/1/24 | ASSAY of Sodium Bicarbonate | 18 - 19 | |
| 7. | 1/2/24 | ASSAY of Boric acid | 20 - 21 | |
| 8. | 8/2/24 | ASSAY of Calcium Bicarbonate | 22 - 23 | |
| | | NON - AQUEOUS TITRATIONS | 24 | |
| 9. | 15/2/24 | Standardization of perchloric acid | 25 - 26 | |
| 10. | 29/2/24 | ASSAY of Sodium Benzoate | 27 - 28 | |
| | | COMPLEXOMETRIC TITRATIONS | 29 | |
| 11. | 7/3/24 | Standardization of Disodium EDTA | 30 - 31 | |
| 12. | 14/3/24 | ASSAY of Calcium Gluconate | 32 - 33 | |
| | | REDOX TITRATIONS | 34 | |
| | | CERIMETRY | 35 | |
| 13. | 21/3/24 | ASSAY of Ferrous Sulphate | 36 - 37 | |
| | | PERMANGANOMETRY | 38 | |
| 14. | 28/3/24 | ASSAY of Hydrogen peroxide | 39 - 40 | |
| | | IODIMETRY | 41 | |
| 15. | 4/4/24 | Standardization of 0.05M of I_2 Solution using As_2O_3 | 42 - 43 | |
| 16. | 4/4/24 | ASSAY of Sodium ThioSulphate | 44 - 45 | |
| 17. | 18/4/24 | Standardization of Sodium ThioSulphate Solution (0.1M) | 46 - 47 | |



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|--------------------|
| 18. | 18/4/24 | ASSay of Copper Sulphate | 48-49 | <i>[Signature]</i> |
| 19. | 9/5/24 | ASSay of NaCl | 50-53 | <i>[Signature]</i> |
| | | POTASSIUM IODATE TITRATION | 54 | <i>[Signature]</i> |
| 20. | 9/5/24 | ASSay of potassium Iodide | 55-56 | <i>[Signature]</i> |
| 21. | 16/5/24 | Gravimetric Estimation of Barium as Barium Sulphate | 57-58 | <i>[Signature]</i> |
| 22. | 16/5/24 | preparation of potash Alum | 59 | <i>[Signature]</i> |
| 23. | 30/5/24 | preparation of magnesium Sulphate | 60 | <i>[Signature]</i> |
| 24. | 30/5/24 | preparation of Boric acid | 61-62 | <i>[Signature]</i> |
| 25. | 6/6/24 | Swelling power of Bentonite | 63 | <i>[Signature]</i> |
| 26. | 6/6/24 | Neutralisation Capacity of $Al(OH)_3$ | 64-65 | <i>[Signature]</i> |
| 27. | 13/6/24 | Determination of mixture of Sodium carbonate in Sodium Hydroxide. | 66-67 | <i>[Signature]</i> |
| 28. | 13/6/24 | Identification of Barium Sulphate | 68 | <i>[Signature]</i> |
| 29. | 20/6/24 | Identification of ferrous Sulphate | 69 | <i>[Signature]</i> |
| 30. | 20/6/24 | Identification of potassium Chloride | 70 | <i>[Signature]</i> |
| | | LIMIT TESTS | 71-72 | <i>[Signature]</i> |
| 31. | 27/6/24 | limit test for chlorides | 73-74 | <i>[Signature]</i> |
| 32. | 27/6/24 | limit test for Sulphates | 75-76 | <i>[Signature]</i> |
| 33. | 4/7/24 | limit test for Iron | 77-78 | <i>[Signature]</i> |
| 34. | 4/7/24 | limit test for Heavy metals | 79-82 | <i>[Signature]</i> |
| 35. | 11/7/24 | limit test for Arsenic | 83-85 | <i>[Signature]</i> |



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1.6 BIOLOGY (PRACTICAL)

Practical : 3 Hrs./Week

Title:

1. Introduction of biology experiments
2. Study of cell wall constituents and cell inclusions
3. Study of Stem modifications
4. Study of Root modifications
5. Study of Leaf modifications
6. Identification of Fruits and seeds
7. Preparation of Permanent slides
8. T.S. of Senna, Cassia, Ephedra, Podophyllum.
9. Simple plant physiological experiments
10. Identification of animals
11. Detailed study of Frog
12. Computer based tutorials

Scheme of Practical Examination :

| | Sessionals | Annual |
|------------------|-------------------|---------------|
| Identification | 04 | 10 |
| Synopsis | 04 | 10 |
| Major Experiment | 07 | 20 |
| Minor Experiment | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance.



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SURAMPALAM-533 437



ADITYA PHARMACY COLLEGE

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

Department of

M. Biology

Name: Prasant Das

PIN No. 2334170024

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

Mr./Ms. PRASANT DAS

a student of 1st Pharm-D with Regd. No. 2334170024

in the 1st Pharm-D BIOLOGY Laboratory during the year 2023-2024

No. of Experiments Conducted 18

No. of Experiments Attended 18

Katlik.
Signature - Faculty in charge
19/11/2024.

Katlik.
Signature-Head of the Department

Submitted for the practical examination held on 19/11/2024



Katlik.
Examiner-1

Katlik.
PRINCIPAL
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SURAMPALAM-533 437

Katlik.
Examiner-2

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|-------------|
| 1. | 6/12/13 | Introduction to Pharmacological Biology Practicals | 01 to 07 | <i>Kath</i> |
| 2. | 13/12/23 | Study of compound microscope | 08 to 14 | <i>Kath</i> |
| 3. | 27/12/23 | Study of cell wall constituents And cell Inclusions | 15 to 23 | <i>Kath</i> |
| 4. | 3/1/24 | Study OF Different modifications of Root | 24 to 28 | <i>Kath</i> |
| 5. | 29/1/24 | Study of Different modification of Stem | 29 to 32 | <i>Kath</i> |
| 6. | 11/2/24 | Study of different Modifications of Leaf | 33 to 39 | <i>Kath</i> |
| 7. | 8/2/24 | Microscopic Study of Senna Leaf | 35 to 38 | <i>Kath</i> |
| 8. | 28/2/24 | Internal Structure of Dicot Root | 39 to 42 | <i>Kath</i> |
| 9. | 6/3/24 | Internal Structure of Monocot Root | 43 to 46 | <i>Kath</i> |
| 10. | 13/3/24 | Internal Structure of Dicot Stem | 47 to 50 | <i>Kath</i> |



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---------------------------------------|----------|---------------|
| 11. | 13/3/24 | Transverse Section of a Monocot Stem | 51 to 53 | <u>Keetha</u> |
| 12. | 20/3/24 | Microscopic Study of Cassia Cinnamon | 54 to 56 | <u>Keetha</u> |
| 13. | 27/03/24 | Microscopic Study of Ephedra Stem | 57 to 58 | <u>Keetha</u> |
| 14. | 03/4/24 | Microscopic Study of Podophyllum | 59 to 60 | <u>Keetha</u> |
| 15. | 17/4/24 | Detailed Study of Fhog | 61 to 65 | <u>Keetha</u> |
| 16. | 29/4/24 | Preparation of Permanent Slide | 66-68 | <u>Keetha</u> |
| 17. | 01/5/24 | Simple Plant Physiological Experiment | 69 to | <u>Keetha</u> |
| 18. | 8/5/24 | Computer based tutorial | 70 to 72 | <u>Keetha</u> |



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3. Detailed syllabus and lecture wise schedule :

Title of the topic

- 1 Introduction to the science of microbiology. Major divisions of microbial world and Relationship among them.
- 2 Different methods of classification of microbes and study of Bacteria, Fungi, virus, Rickettsiae, Spirochetes.
- 3 Nutritional requirements, growth and cultivation of bacteria and virus. Study of different important media required for the growth of aerobic and anaerobic bacteria & fungi. Differential media, enriched media and selective media, maintenance of lab cultures.
- 4 Different methods used in isolation and identification of bacteria with emphasis to different staining techniques and biochemical reactions. Counting of bacteria -Total and Viable counting techniques.
- 5 Detailed study of different methods of sterilization including their merits and demerits. Sterilization methods for all pharmaceutical products. Detailed study of sterility testing of different pharmaceutical preparations. Brief information on Validation.
- 6 Disinfectants- Study of disinfectants, antiseptics, fungicidal and virucidal agents- factors affecting their activation and mechanism of action. Evaluation of bactericidal, bacteristatic, virucidal activities, evaluation of preservatives in pharmaceutical preparations.
- 7 Immunology- Immunity, Definition, Classification, General principles of natural immunity, Phagocytosis, acquired immunity(active and passive). Antigens, chemical nature of antigens structure and formation of Antibodies, Antigen-Antibody reactions. Bacterial exotoxins and endotoxins. Significance of toxoids in active immunity. Immunization programme, and importance of booster dose.
- 8 Diagnostic tests : Schick's Test, Elisa test, Western Blot test, Southern Blot PCR Widai, QBC, Mantoux Peripheral smear. Study of malarial parasite.
- 9 Microbial culture sensitivity Testing: Interpretation of results Principles and methods of different microbiological assays, microbiological assay of Penicillin, Streptomycin and vitamin B₂ and B₁₂. Standardisation of vaccines and sera.
- 10 Study of infectious diseases: Typhoid, Tuberculosis, Malaria, Cholera, Hepatitis, Meningitis, Syphilis & Gonorrhea and HIV.

2.2 PHARMACEUTICAL MICROBIOLOGY (PRACTICAL)

Practical : 3 Hrs/Week

Title of the Experiment:

- 1 Study of apparatus used in experimental microbiology*.
- 2 Sterilisation of glass ware's. Preparation of media and sterilisation.*
- 3 Staining techniques – Simple staining. ; Gram's staining ; Negative staining**
- 4 Study of motility characters*.
- 5 Enumeration of micro-organisms (Total and Viable)*
- 6 Study of the methods of isolation of pure culture.*
- 7 Bio chemical testing for the identification of micro*-organisms.



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- 8 Cultural sensitivity testing for some micro-organisms.*
- 9 Sterility testing for powders and liquids.*
- 10 Determination of minimum inhibitory concentration.*
- 11 Microbiological assay of antibiotics by cup plate method.*
- 12 Microbiological assay of vitamins by Turbidometric method**
- 13 Determination of RWC.**
- 14 Diagnostic tests for some common diseases, Widal, malarial parasite.**

* Indicate minor experiment & ** indicate major experiment

Assignments:

- 1 Visit to some pathological laboratories & study the activities and equipment/instruments used and reporting the same.
2. Visit to milk dairies (Pasturization) and microbial laboratories (other sterilization methods) & study the activities and equipment/instruments used and reporting the same.
3. Library assignments
 - a. Report of recent microbial techniques developed in diagnosing some common diseases.
 - b. Latest advancement developed in identifying, cultivating & handling of microorganisms.

Format of the assignment:

1. Minimum & Maximum number of pages.
2. It shall be computer draft copy.
3. Reference(s) shall be included at the end.
4. Name and signature of the student.
5. Assignment can be a combined presentation at the end of the academic year.
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination:

| | Sessionals | Annual |
|------------------|------------|--------|
| Synopsis | 05 | 15 |
| Major Experiment | 10 | 25 |
| Minor Experiment | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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ADITYA PHARMACY COLLEGE

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

Department of Pharmaceutical Microbiology

Name: Amalakota Lalasa

PIN No. 223G1T0002

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

Mr./Ms. Amalakota Lalasa

a student of Pharm-D with Regd. No. 223G1T0002

in the Pharmaceutical Microbiology
Laboratory during the year 2023-2024

No. of Experiments Conducted 27

No. of Experiments Attended 26

G. Sujanya
Signature - Faculty incharge

G. Sujanya
Signature-Head of the Department

Submitted for the practical examination held on

Henslatte
Examiner-1

G. Sujanya
Examiner-2



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| 1) | 9-10-23 | Introduction to microbiology | 1 to 4 | S |
| 2) | 16-10-23 | Common Laboratory rules & regulations for safety. | 5 to 7 | S |
| 3) | 30-10-23 | Study of apparatus used in pharmaceutical microbiology laboratory. | 8 to 17 | S |
| 4) | 6-11-23 | Preparation and sterilization of Nutrient Broth. | 18 to 20 | S |
| 5) | 20-11-23 | Preparation and sterilization of Nutrient Agar. | 21 to 23 | S |
| 6) | 27-11-23 | Culture transfer techniques. | 24 to 27 | S |
| 7) | 4-12-23 | Techniques for isolation of pure culture from mixed culture. | 28 to 31 | S |
| 8) | 11-12-23 | Preparation of Bacterial Smear. | 32 to 33 | S |
| 9) | 18-12-23 | Simple staining | 34 to 36 | S |
| 10) | 8-1-24 | Grams staining | 37 to 38 | S |
| 11) | 22-1-24 | Acid fast staining | 39 to 40 | S |
| 12) | 29-1-24 | IMViC Test | 41 to 45 | S |
| 13) | 5-2-24 | Microscopic Examination of living bacteria by hanging drop method. | 46 to 47 | S |
| 14) | 12-2-24 | Sterilization by autoclave & test for sterility. | 48 to 49 | S |
| 15) | 19-2-24 | Sterilization by autoclave dry heat and test for sterility. | 50 to 51 | S |



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|---------|
| 16) | 26-2-24 | Test for sterility of surgical dressing. | 52 to 53 | S |
| 17) | 4-3-24 | Viable Count. | 54 to 55 | S |
| 18) | 11-3-24 | Microbial assay of Amikacin by cup plate method. | 56 to 57 | S |
| 19) | 18-3-24 | Microbial assay of Terramycin by turbidometric method. | 58 to 60 | S |
| 20) | 1-4-24 | ELISA | 61 to 63 | S |
| 21) | 8-4-24 | Western blotting | 64 to 67 | S |
| 22) | 15-4-24 | Vaccines and general requirements. | 68 to 69 | S |
| 23) | 22-4-24 | Widal test. | 70 to 72 | S |
| 24) | 29-4-24 | Diagnosis tests for determination of Malarial parasite. | 73 to 80 | S |
| 25) | 6-5-24 | Gelatin liquefaction | 81 to 82 | S |
| 26) | 13-5-24 | Starch hydrolysis | 83 to 84 | S |
| 27) | 20-5-24 | Nitrate reduction test | 85 to 87 | S |



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2.3 PHARMACOGNOSY & PHYTOPHARMACEUTICALS (PRACTICAL)

Practical : 3 Hrs./Week

General Requirements: Laboratory Napkin, Observation Book 150 pages Zero brush, Needle, Blade, Match box.

List of experiments:

- 1 Introduction of Pharmacognosy laboratory and experiments.
- 2 Study of cell wall constituents and cell inclusions.
- 3 Macro, powder and microscopic study of Datura.
- 4 Macro, powder and microscopic study of Senna.
- 5 Macro, powder and microscopic study of Cassia.cinnamon.
- 6 Macro, powder and microscopic study of Cinchona.
- 7 Macro, powder and microscopic study of Ephedra.
- 8 Macro, powder and microscopic study of Quassia.
- 9 Macro, powder and microscopic study of Clove
- 10 Macro, powder and microscopic study of Fennel.
- 11 Macro, powder and microscopic study of Coriander.
- 12 Macro, powder and microscopic study of Isapgol.
- 13 Macro, powder and microscopic study of Nux vomica.
- 14 Macro, powder and microscopic study of Rauwolfia.
- 15 Macro, powder and microscopic study of Liquorice.
- 16 Macro, powder and microscopic study of Ginger.
- 17 Macro, powder and microscopic study of Podophyllum.
- 18 Determination of Iodine value.
- 19 Determination of Saponification value and unsaponifiable matter.
- 20 Determination of ester value.
- 21 Determination of Acid value.
- 22 Chemical tests for Acacia.
- 23 Chemical tests for Tragacanth.
- 24 Chemical tests for Agar.
- 25 Chemical tests for Starch.
- 26 Chemical tests for Lipids.(castor oil,sesame oil, shark liver oil,bees wax)
- 27 Chemical tests for Gelatin.

Scheme of Practical Examination:

| | Sessionals | Annual |
|------------------|------------|--------|
| Identification | 04 | 10 |
| Synopsis | 04 | 10 |
| Major Experiment | 07 | 20 |
| Minor Experiment | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance.



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Aditya Pharmacy College
SURAMPALAM-533 437



ADITYA PHARMACY COLLEGE

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

Department of

Pharmacognosy & phytopharmaceuticals

Name: N. Thansi

PIN No. 22361T0021

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

Mr./Ms. Naganabhylna Thansi

a student of II pharm.D. with Regd. No. 22361T0021

in the pharmacognosy Laboratory during the year 2023-2024

No. of Experiments Conducted 18

No. of Experiments Attended 17

Signature - Faculty incharge

Signature-Head of the Department



Submitted for the practical examination held on

Examiner-1

Examiner-2

PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALAM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|-----------------|
| 1. | 9/10/23 | Study of compound Microscope | 1-5 | <i>12/1/23</i> |
| 2. | 17/10/23 | Macroscopy, Microscopy and powdered microscopic study of ferrel. | 6-8 | <i>10/11/23</i> |
| 3. | 24/11/23 | Macroscopy, Microscopy & powdered microscopy of clove | 9-12 | |
| 4. | 10/11/23 | Macroscopy, Microscopy and powdered microscopic study of cinnamon. | 13-16 | <i>1/2/23</i> |
| 5. | 1/12/23 | Macroscopy, Microscopy and powdered microscopic study of Datura. | 17-20 | |
| 6. | 22/12/23 | Macroscopy, Microscopy and powdered microscopic study of Senna | 21-24 | <i>2/2/24</i> |
| 7. | 2/2/24 | Macroscopy, Microscopy and powdered microscopic study of Ephedra | 25-26 | |
| 8. | 9/2/24 | Macroscopy, microscopy & powdered microscopic study of Quassia | 27-29 | <i>9/2/24</i> |
| 9. | 9/2/24 | Macroscopy, microscopy & powdered microscopic study of Nux-vomica | 30-32 | <i>9/2/24</i> |
| 10. | 16/2/24 | Macroscopy, Microscopy and powdered microscopic study of Rauwolfia | 33-35 | <i>22/3/24</i> |



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|---------|
| 110. | 22/3/24 | Determination of Soapification value (s) saponification number of given oil | 36-37 | 15/3/24 |
| 12. | 22/3/24 | Determination of Acid value of coconut oil | 38. | |
| 13. | 15/3/24 | chemical test for starch | 39 | 5/4/24 |
| 14. | 22/3/24 | chemical test for Acacia | 40-41 | |
| 15. | 5/4/24 | chemical test for Progacanth | 42-43 | 12/4/24 |
| 16. | 12/4/24 | Chemical test for Agar | 44-45 | |
| 17. | 19/4/24 | Chemical test for Gelatin | 46-47 | 20/5/24 |
| 18. | 26/4/24 | Chemical test for Lipids. | 48-49 | |



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3. Detailed syllabus and lecture wise schedule :

Etiopathogenesis and pharmacotherapy of diseases associated with following systems/ diseases

Title of the topic

- 1 **Cardiovascular system:** Hypertension, Congestive cardiac failure, Angina Pectoris, Myocardial infarction, , Hyperlipidaemias , Electrophysiology of heart and Arrhythmias
- 2 **Respiratory system :** Introduction to Pulmonary function test, Asthma, Chronic obstructive airways disease, Drug induced pulmonary diseases
Endocrine system : Diabetes, Thyroid diseases, Oral contraceptives, Hormone replacement therapy, Osteoporosis
- 3 **General prescribing guidelines for**
 - a. Paediatric patients
 - b. Geriatric patients
 - c. Pregnancy and breast feeding
- 4 **Ophthalmology:** Glaucoma, Conjunctivitis- viral & bacterial
- 5 **Introduction to rational drug use**
Definition, Role of pharmacist Essential drug concept Rational drug formulations

2.6 PHARMACOTHERAPEUTICS - I (PRACTICAL)

Practical : 3 Hrs./Week

Practicals :

Hospital postings in various departments designed to complement the lectures by providing practical clinical discussion; attending ward rounds; follow up the progress and changes made in drug therapy in allotted patients; case presentation upon discharge. Students are required to maintain a record of cases presented and the same should be submitted at the end of the course for evaluation. A minimum of 20 cases should be presented and recorded covering most common diseases.

Assignments :

Students are required to submit written assignments on the topics given to them. Topics allotted should cover recent developments in drug therapy of various diseases. A minimum of THREE assignments [1500 – 2000 words] should be submitted for evaluation.



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Format of the assignment:

1. Minimum & Maximum number of pages.
2. Reference(s) shall be included at the end.
3. Assignment can be a combined presentation at the end of the academic year.
4. It shall be computer draft copy.
5. Name and signature of the student.
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination:

| | Sessionals | Annual |
|------------------|-------------------|---------------|
| Synopsis | 05 | 15 |
| Major Experiment | 10 | 25 |
| Minor Experiment | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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ADITYA PHARMACY COLLEGE

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

Department of PHARMACOTHERAPEUTICS-I

Name: CH:VEERA VENI

PIN No. 223G1T0031

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

Mr./Ms. CHAPPIDI VEERA VENI

a student of IInd PHARM-D with Regd. No. 223G1T0031

in the pharmaco- Laboratory during the year 2023-2024
therapeutics I

No. of Experiments Conducted 20

No. of Experiments Attended 20

Signature - Faculty incharge

Signature-Head of the Department

PRINCIPAL
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SURAMPATEM-533 437

Submitted for the practical examination held on

Examiner-1

Examiner-2



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ADITYA PHARMACY COLLEGE(A)
SURAMPATEM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| 1. | 7/11/23 | Introduction to the soap format | 1-3 | } |
| 2. | 14/11/23 | Renal Calculi with Hypertension & Diabetes | 4-11 | |
| 3. | 21/11/23 | Nephrotic Syndrome | 12-16 | |
| 4. | 28/11/23 | Polyarthritis | 17-20 | |
| 5. | 5/12/23 | Cerebral Palsy with Refractory seizures | 21-23 | |
| 6. | 26/12/23 | Thalassemia | 24-25 | } |
| 7. | 2/1/24 | Bronchiolitis and respiratory distress | 26-28 | |
| 8. | 9/1/24 | Juvenile Rheumatoid arthritis | 29-32 | |
| 9. | 10/1/24 | Facial Nerve Palsy | 33-37 | } |
| 10. | 23/2/24 | colloid Goitre | 38-41 | |
| 11. | 30/2/24 | Pneumonia | 42-46 | } |
| 12. | 6/2/24 | cerebrovascular Accident | 47-50 | |
| 13. | 13/2/24 | Pulmonary Tuberculosis | 51-54 | |
| 14. | 20/2/24 | Falciparum malaria | 55-58 | |
| 15. | 27/2/24 | Diabetic ketoacidosis with seizures | 59-62 | |
| 16. | 19/3/24 | Toxic Epidermal Necrolysis | 63-66 | } |
| 17. | 26/3/24 | Thrombocytopenia | 67-70 | |
| 18. | 2/4/24 | Inguinal Hernia | 71-73 | |
| 19. | 16/4/24 | Parkinsonism | 74-76 | |
| 20. | 23/4/24 | Juvenile Osteomyelitis | 77-79 | |
| 21. | 7/5/24 | Proapsed Intervertebral Disc (PVD) | 80-82 | |



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3.1 PHARMACOLOGY – II (PRACTICAL)

Practical : 3 Hrs./Week

List of Experiments:

1. Study of laboratory animals and their handling (a. Frogs, b. Mice, c. Rats, d. Guinea pigs, e. Rabbits).
2. Study of physiological salt solutions used in experimental pharmacology.
3. Study of laboratory appliances used in experimental pharmacology.
4. Study of use of anesthetics in laboratory animals.
5. To record the dose response curve of Ach using isolated ileum/rectus abdominis muscle preparation.
6. To carry out bioassay of Ach using isolated ileum/rectus abdominis muscle preparation by interpolation method.
7. To carry out bioassay of Ach using isolated ileum/rectus abdominis muscle preparation by three point method.
8. To record the dose response curve of Histamine using isolated guinea-pig ileum preparation.
9. Study of agonistic and antagonistic effects of drugs using isolated guinea-pig ileum preparation.
10. To carry out bioassay of Histamine using isolated guinea-pig ileum preparation by interpolation method.
11. To carry out bioassay of Histamine using guinea-pig ileum preparation by three point method.
12. To study the routes of administration of drugs in animals (Rats, Mice, Rabbits).
13. Study of theory, principle, procedure involved and interpretation of given results for the following experiments:
 - a) Analgesic property of drug using analgesiometer.
 - b) Antiinflammatory effect of drugs using rat-paw edema method.
 - c) Anticonvulsant activity of drugs using maximal electroshock and pentylenetetrazole methods.
 - d) Antidepressant activity of drugs using pole climbing apparatus and pentobarbitone induced sleeping time methods.
 - e) Locomotor activity evaluation of drugs using actophotometer and rotorod.
 - f) Cardiotonic activity of drugs using isolated frog heart and mammalian heart preparations.

Scheme of Practical Examination:

| | Sessionals | Annual |
|--|-------------|-------------|
| Identification | 02 | 10 |
| Synopsis | 04 | 10 |
| Major Experiment (Bioassay) | 08 | 30 |
| Minor Experiment (Interpretation of given Graph or simulated experiment) | 04 | 10 |
| Viva | 02 | 10 |
| Max Marks | 20 | 70 |
| Duration | 3hrs | 4hrs |

Note: Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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ADITYA PHARMACY COLLEGE

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

Department of
Pharmacology

Name: A. Sri Satya Shinney

PIN No. 21361T0001

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

Mr./Ms. A. Sri Satya Shinney

a student of III - Pharm.D with Regd. No. 21361T0001

in the Pharmacology-II Laboratory during the year 2023-24

No. of Experiments Conducted 20

No. of Experiments Attended 20

Signature - Faculty incharge

Signature-Head of the Department
PRINCIPAL

Aditya Pharmacy College
SURAMPALAM-533 437

Submitted for the practical examination held on 08/5/24

PRINCIPAL

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SURAMPALAM-533 437

Examiner-2

Examiner-1



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| | 10/8/23 | Introduction | 1 | |
| 1. | 17/8/23 | Study of laboratory animals and their handling | 2-6 | } pku |
| 2. | 24/8/23 | Study of physiological salt solution used in the pharmacological experiments | 7-8 | |
| 3. | 8/9/23 | Study of Appliances used in experimental pharmacology | 9-11 | |
| 4. | 15/9/23 | Study of use of anaesthetics in laboratory animals | 12-15 | |
| 5. | 22/9/23 | Dose response curve of Ach on frog rectus abdominus muscle | 16-17 | } pku |
| 6. | 29/9/23 | Inhibition of Ach by Lidocaine on chick ileum | 18-19 | |
| 7. | 5/10/23 | Potentiation of Ach by Neostigmine on chick ileum | 20-21 | |
| 8. | 26/10/23 | BioAssay of Ach by using chick ileum by matching method | 22 | |
| 9. | 2/11/23 | BioAssay of Ach by interpolation method using chick ileum | 23-24 | } 14 |
| 10. | 16/11/23 | BioAssay of Ach by two point method using chick ileum | 25-26 | |
| 11. | 23/11/23 | BioAssay of Ach by three point method using chick ileum | 27-28 | |
| 12. | 30/11/23 | Complete inhibition of Ach by pancuronium on chick ileum | 29-30 | |
| 13. | 7/12/23 | Evaluation of muscle relaxant property of diazepam using apparatus | 31-32 | |



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| 14. | 21/12/23 | Analgesic effect of paracetamol in Mice using eddy's hot plate method | 33 - 34 | ph |
| 15. | 4/1/24 | Evaluation of CNS depressant property of chlorpromazine using actophotometer | 35 - 36 | |
| 16. | 11/2/24 | Anti-inflammatory effect of drugs using rat paw edema method | 37 - 39 | |
| 17. | 15/2/24 | Anticonvulsant activity of phenytoin against maximal electroshock induced convulsions | 40 - 42 | |
| 18. | 22/2/24 | Anticonvulsant activity of diazepam against pentylenetetrazole induced clonic convulsions | 43 - 44 | ph |
| 19. | 7/3/24 | Study of different routes of drug administration | 45 - 47 | |
| 20. | 21/3/24 | Cardiotonic activity of drugs using isolated frog heart preparation | 48 - 50 | |



- **Fluorimetric Analysis:** Theory, luminescence, factors affecting fluorescence, quenching. Instrumentation, Applications, fluorescent indicators, study of pharmaceutically important compounds estimated by fluorimetry.
- b. **Flame Photometry:** Theory, nebulisation, flame and flame temperature, interferences, flame spectrometric techniques and instrumentation and pharmaceutical applications.
- c. **Atomic Absorption Spectrometry:** Introduction, Theory, types of electrodes, instrumentation and applications.
- d. **Atomic Emission Spectroscopy:** Spectroscopic sources, atomic emission spectrometers, photographic and photoelectric detection.
- e. **NMR & ESR (introduction only):** Introduction, theoretical aspects and applications.
- f. **Mass Spectroscopy: (Introduction only)** – Fragmentation, types of ions produced mass spectrum and applications.
- g. **Polarimetry: (Introduction only)** – Introduction to optical rotatory dispersion, circular dichroism, polarimeter.
- h. **X-RAY Diffraction: (Introduction only)** – Theory, reciprocal lattice concept, diffraction patterns and applications.
- i. **Thermal Analysis:** Introduction, instrumentation, applications, and DSC and DTA.

3.2 PHARMACEUTICAL ANALYSIS (PRACTICAL)

Practical : 3 Hrs./Week

List of Experiments:

1. Separation and identification of Amino Acids by Paper Chromatography.
2. Separation and identification of Sulpha drugs by TLC technique.
3. Effect of pH and solvent on the UV spectrum of given compound.
4. Comparison of the UV spectrum of a compound with that of its derivatives.
5. Determination of dissociation constant of indicators using UV-Visible spectroscopy.
6. Conductometric titration of mixture of acids with a strong base.
7. Potentiometric titration of a acid with a strong base.
8. Estimation of drugs by Fluorimetric technique.
9. Study of quenching effect in fluorimetry.
10. Colourimetric estimation of Supha drugs using BMR reagent.



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11. Simultaneous estimation of two drugs present in given formulation.
12. Assay of Salicylic Acid by colourimetry.
13. Determination of Chlorides and Sulphates in Calcium gluconate by Nepheloturbidimetric Method.
14. Determination of Na/K by Flame Photometry.
15. Determination of pKa using pH meter.
16. Determination of specific rotation.
17. Comparison of the IR spectrum of a compound with that of its derivatives.
18. Demonstration of HPLC.
19. Demonstration of HPTLC.
20. Demonstration of GC-MS.
21. Demonstration of DSC.
22. Interpretation of NMR spectra of any one compound.

Reference Books:

1. Text Book of Pharm. Analysis by Higuchi. T and Hasen. E. B., New York Inter Science Publishers.
2. Quantitative Pharma. Analysis by Jenkins, The Blakiston division, New York.
3. Quantitative Drug Analysis, by Garrot. D, Chapman & Hall Ltd., London.
4. Undergraduate Instrumental Analysis by James. E., CBS Publishers.
5. Instrumental Analysis by Willard and Merritt, EWP, East West Press Ltd., Delhi/Madras.
6. Pharm Analysis by Skoog and West, Sounders Manipal College Publishing.
7. Text Book of Chemical Analysis, by A.I.Vogel, ELBS with Macmillan press, Hampshire.
8. Textbook of Pharm. Analysis by K.A.Connors, John Wiley & Sons, New York, Brisbane, Singapore.
9. Textbook of Pharm. Analysis (Practical) by Beckett & Stenlake, CBS Publishers, Delhi.
10. Textbook of Drug Analysis by P.D. Sethi., CBS Publishers, Delhi.
11. Spectroscopy by Silverstein, John & Wiley & Sons. Inc., Canada & Singapore.
12. How to practise GMP-A Plan for total quality control by P.P. Sharma, Vandana Publications, Agra.
13. The Science & Practice of Pharmacy by Remington Vol-I & II, Mack Publishing Co. Pennsylvania.
14. TLC by Stahl, Spring Verlay.
15. Text Book of Pharm. Chemistry by Chatten, CBS Publications.
16. Spectroscopy by William Kemp, ELBS with Macmillan Press, Hampshire.
17. LP.-1996, The Controller of Publications, New Delhi.
18. BPC- Dept. of Health, U.K. for HMSO.
19. USP - Mack Publishing Co., Easton, PA.
20. The Extra Pharmacopoeia – The Pharm. Press, London.



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ADITYA PHARMACY COLLEGE

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

Department of Pharmaceutical Analysis

Name: B. Sri Krishna Veni

PIN No. 213G1T0003

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

Mr. / Ms. B. Sri Krishna Veni

a student of III-Pharm.D *with Regd. No.* 213G1T0003

in the Pharmaceutical Analysis *Laboratory during the year* 2023-24

No. of Experiments Conducted 25

No. of Experiments Attended 25

Signature - Faculty incharge

Signature - Head of the Department

Aditya Pharmacy College

5110 4th Flr. 533 437

Submitted for the practical examination held on 09-06-24

Examiner-1

Examiner-2

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SURAMPALAM-533 437



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|--------------|
| 1. | 8/8/23 | Introduction | 1-4 | (B) 21/8/23 |
| 1. | 22/8/23 | Identification of Amino acid by Ascending paper chromatography | 5-8 At | (B) 29/8/23 |
| 2. | 29/8/23 | Identification of Amino acid by Radial paper chromatography | 9-12 At | (B) 05/9/23 |
| 3. | 5/9/23 | Identification of metronidazole in a given sample Ascending paper chromatography | 13-15 At | (B) 12/9/23 |
| 4. | 12/9/23 | Preparation of thin layer chromatographic plates | 16-17 At | (B) 19/9/23 |
| 5. | 19/9/23 | Identification of Sulphonamide by thin-layered chromatography | 18-19 At | (B) 26/9/23 |
| 16. | 26/9/23 | Introduction to UV Visible Spectroscopy | 20-25 | (B) 03/10/23 |
| 6. | 26/9/23 | Determination of absorption maxima of $KMnO_4$ | 26-27 At | (B) 3/10/23 |
| 7. | 3/10/23 | Estimation of salicylic acid by Calibration curve by colorimetry | 28-29 At | (B) 10/10/23 |
| 8. | 10/10/23 | Assay of Paracetamol by using specific absorbance | 30-31 At | (B) 19/10/23 |
| 9. | 7/11/23 | Assay of paracetamol by chemical derivatization method | 32-34 At | (B) 19/11/23 |
| 10. | 14/11/23 | Assay of salicylic acid using direct comparison method | 35-36 At | (B) 12/12/23 |

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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|--------------|
| 11. | 21/11/23 | Estimation of Sulphanilamide eye drops by colorimetry | 37-39 At | B 12/12/23 |
| 12. | 28/11/23 | Effect of PH absorption Spectrum of Sulpanilamide | 40-41 At | B 12/12/23 |
| 13. | 12/12/23 | Simultaneous estimation of Caffeine & Sodium benzoate using simultaneous equation method | 42-43 At | B 26/12/23 |
| 14. | 19/12/23 | Estimation of Quinine sulphate by Fluorimetry | 44-45 At | B 21/01/2024 |
| 15. | 26/12/23 | Determination of Nations in unknown sample by Flame photometry | 46-47 At | B 21/01/2024 |
| 16. | 21/1/24 | Determination of K ⁺ ions in unknown sample by Flame photometry | 48-49 At | B 07/02/2024 |
| 17. | 9/1/24 | Estimation of Sulphates by Nephelometry | 50-53 At | B 09/02/2024 |
| 18. | 23/1/24 | Potentiometric titration of Strong acid with strong base | 54-55 At | B 09/02/2024 |
| 19. | 8/2/24 | Determination of P ^{K^a} of Aspirin by PH meter | 56-57 At | B 24/02/2024 |
| 20. | 13/2/24 | Calibration of conductivity meter | 58-60 At | B 05/03/2024 |
| 21. | 20/2/24 | Conductometric titration of Strong Acid vs Strong base | 61-62 At | B 05/03/2024 |
| 22. | 27/2/24 | Column chromatography | 63-64 At | B 12/03/2024 |
| 23. | 5/3/24 | Standard operating procedure for HPLC | 65-67 | B 26/03/2024 |
| 24. | 12/3/24 | Standard operating procedure for GAS chromatography | 68-69 | B 26/03/2024 |
| 25. | 12/3/24 | Interpretation of IR spectra | 70-71 | B 26/03/2024 |

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- 4 **Oncology:** Basic principles of Cancer therapy, General introduction to cancer chemotherapeutic agents, Chemotherapy of breast cancer, leukemia. Management of chemotherapy nausea and emesis
- 5 **Dermatology:** Psoriasis, Scabies, Eczema, Impetigo

3.3 PHARMACOTHERAPEUTICS – II (PRACTICAL)

Practical : 3 Hrs./Week

Practicals :

Hospital postings in various departments designed to complement the lectures by providing practical clinical discussion; attending ward rounds; follow up the progress and changes made in drug therapy in allotted patients; case presentation upon discharge. Students are required to maintain a record of cases presented and the same should be submitted at the end of the course for evaluation.

The student shall be trained to understand the principle and practice involved in selection of drug therapy including clinical discussion.

A minimum of 20 cases should be presented and recorded covering most common diseases.

Assignments :

Students are required to submit written assignments on the topics given to them. Topics allotted should cover recent developments in drug therapy of various diseases. A minimum of THREE assignments [1500 – 2000 words] should be submitted for evaluation.

Format of the assignment :

1. Minimum & Maximum number of pages.
2. Reference(s) shall be included at the end.
3. Assignment can be a combined presentation at the end of the academic year.
4. It shall be computer draft copy.
5. Name and signature of the student.
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination :

| | Sessionals | Annual |
|------------------|------------|--------|
| Synopsis | 05 | 15 |
| Major Experiment | 10 | 25 |
| Minor Experiment | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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Aditya Pharmacy College
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ADITYA PHARMACY COLLEGE

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

Department of
PHARMACY PRACTICE

Name: Kavya

PIN No. 2136170014

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

Mr./[✓]Ms. Kavya Naga Praveena. J

a student of III Pharm D. with Regd. No. 2136170014

in the Therapeutics Laboratory during the year 2023-24

No. of Experiments Conducted 20

No. of Experiments Attended 20

Signature - Faculty incharge

Signature-Head of the Department
PRINCIPAL

Aditya Pharmacy College

SURAMPALEM-533 437

Submitted for the practical examination held on 02/05/2024

Examiner-1

Examiner-2



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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| 1. | 25/8/23 | A CASE STUDY ON DENGUE FEVER | 1-5 | |
| 2. | 14/9/23 | A CASE STUDY ON HCV ASSOCIATED WITH CAD | 6-9 | |
| 3. | 21/9/23 | A CASE STUDY ON INFECTIVE ENDOCARDITIS | 10-12 | |
| 4. | 5/10/23 | A CASE STUDY ON ACUTE HEPATITIS WITH FEVER | 13-17 | |
| 5. | 12/10/23 | A CASE STUDY ON ACUTE EXACERBATION OF COPD WITH TYPE-II DM | 18-21 | |
| 6. | 9/11/23 | A CASE STUDY ON LEFT KNEE OSTEOARTHRITIS | 22-24 | |
| 7. | 16/11/23 | A CASE STUDY ON ACUTE PANCREATITIS | 25-28 | |
| 8. | 23/11/23 | A CASE STUDY ON DIABETIC KETOACIDOSIS, DM | 29-34 | |
| 9. | 7/12/23 | A CASE STUDY ON COMMUNITY ACQUIRED PNEUMONIA, CABG/CAVR | 35-39 | |
| 10. | 14/12/23 | A CASE STUDY ON CHRONIC LIVER DISEASE | 40-43 | |
| 11. | 28/12/23 | A CASE STUDY ON CKD STAGE-II WITH UREMIA & METABOLIC ACIDOSIS, DEEP VEIN THROMBOSIS | 44-48 | |
| 12. | 11/01/24 | A CASE STUDY ON SEPTIC SHOCK, AKI | 49-52 | |
| 13. | 25/01/24 | A CASE STUDY ON CHOLELITHIASIS SICKLE CELL ANAEMIA | 53-56 | |
| 14. | 15/2/24 | A CASE STUDY ON ACUTE | 57-60 | |



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SURAMPALAM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|---|
| | | CORONARY SYNDROME, IAMI, MODERATE LV DYSFUNCTION | | |
| 15. | 22/2/24 | A CASE STUDY ON HYPONATREMIA, CAD, THYROID DYSFUNCTION | 61-63 |  |
| 16. | 29/2/24 | A CASE STUDY ON ACUTE NEPHROTIC SYNDROME | 64-67 |  |
| 17. | 7/3/24 | A CASE STUDY ON CHOLANGIO CARCINOMA | 68-70 |  |
| 18. | 21/3/24 | A CASE STUDY ON METASTATIC HODKIN'S LYMPHOMA | 71-74 |  |
| 19. | 4/4/24 | A CASE STUDY ON DM WITH ANEMIA | 76-77 |  |
| 20. | 18/4/24 | A CASE STUDY ON NORMAL PRESSURE HYDROCEPHALUS | 78-80 |  |



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3.5 MEDICINAL CHEMISTRY (PRACTICAL)

Practical : 3 Hrs./Week

1. Assays of important drugs from the course content.
2. Preparation of medicinally important compounds or intermediates required for synthesis of drugs.
3. Monograph analysis of important drugs.
4. Determination of partition coefficients, dissociation constants and molar refractivity of compounds for QSAR analysis.

Reference Books:

- a. Wilson and Gisvold's Text book of Organic, Medicinal and Pharmaceutical Chemistry, Lippincott-Raven Publishers-New York, Philadelphia.
- b. William.O.Foye, Principles of Medicinal Chemistry, B.I. Waverly Pvt. Ltd., New Delhi.
- c. Burgers, Medicinal Chemistry, M.E., Welly Med.Chemistry M.E. Walffed Johnwiley and Sons, Wiley-interscience Publication, New York, Toronto.
- d. A Text Book of Medicinal Chemistry Vol. I and II by Surendra N. Pandeya, S.G. Publisher, 6, Dildayal Nagar, Varanasi -10.
- e. Indian Pharmacopoeia 1985 and 1996. The Controller of Publications, Civil Lines, Delhi - 54.
- f. Current Index of Medical Specialities (CIMS) and MIMS India, MIMS, A.E. Morgan Publications (I) Pvt. Ltd, New Delhi-19.
- g. Organic Drug Synthesis-Ledniser Mitzsher Vol. I and II.
- h. Pharmaceutical Chemistry drug Synthesis Vol. I and II by H. J. Roth and A. Kleemann.
- i. The Science and Practice of Pharmacy Vol. 1 and 2, Remington, MACK Publishing Company, Easton, Pennsylvania.



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 457



ADITYA PHARMACY COLLEGE

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

Department of Medicinal Chemistry

Name: Dona

PIN No. 21341T0009

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

Mr./Ms. A. Dona Satya Sriharsha

a student of III PharmD with Regd. No. 21341T0009

in the M. Chemistry Laboratory during the year 2023-24

No. of Experiments Conducted 21

No. of Experiments Attended 20

Signature - Faculty incharge

[Signature]
13/5/24

Signature-Head of the Department

[Signature]
Principal
Aditya Pharmacy College
SURAMPALAM-533 437

Submitted for the practical examination held on

Examiner-1

[Signature]
10.05.24

Examiner-2

[Signature]

PRINCIPAL

ADITYA PHARMACY COLLEGE(A,
SURAMPALAM-533 437



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| 1. | 14/8/23 | Preparation of Benzocaine | 1-2 | Si |
| 2. | 21/8/23 | Preparation of 7-hydroxy, 4-methyl coumarin | 3-4 | Si |
| 3. | 28/8/23 | Preparation of Benzimidazole | 5-6 | Si |
| 4. | 4/9/23 | Preparation of Benzotriazole | 7-8 | Si |
| 5. | 11/9/23 | Preparation of Fluorescein | 9-10 | Si |
| 6. | 18/9/23 | Preparation of 5,5-diphenyl hydantoin | 11-11 | Si |
| 7. | 25/9/23 | Preparation of 2,3-diphenyl quinoxaline | 12-13 | Si |
| 8. | 9/10/23 | Preparation of Benzoic acid | 14-15 | Si |
| 9. | 6/11/23 | Assay of Ascorbic Acid | 16-17 | Si |
| 10. | 20/11/23 | Assay of Sulphanilamide | 18-19 | Si |
| 11. | 27/11/23 | Assay of Benzocaine | 20-21 | Si |
| 12. | 4/12/23 | Assay of Chloroquine Phosphate | 22-23 | Si |
| 13. | 11/12/23 | Assay of Dapsone | 24-26 | Si |
| 14. | 18/12/23 | Assay of Diclofenac sodium | 27-28 | Si |
| 15. | 8/1/24 | Assay of Isoniazid | 29-30 | Si |
| 16. | 22/1/24 | Assay of Metronidazole | 31-32 | Si |
| 17. | 12/2/24 | Identification of Ascorbic Acid | 33-34 | Si |
| 18. | 19/2/24 | Identification of Benzocaine | 35-35 | Si |
| 19. | 26/2/24 | Identification of Isoniazid | 36 | Si |
| 20. | 4/3/24 | Identification of Metronidazole | 37 | Si |
| 21. | 11/3/24 | Identification of Sulphanilamide | 38 | Si |
| 22. | 1/4/24 | QSAR Studies | 39-44 | Si |



3.6 PHARMACEUTICAL FORMULATIONS (PRACTICAL)

Practical : 3 Hrs./Week

List of Experiments :

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

Scheme of Practical Examination :

| | Sessionals | Annual |
|------------------|--------------|--------------|
| Synopsis | 05 | 15 |
| Major Experiment | 10 | 25 |
| Minor Experiment | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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SURAMPALEM-533 437



ADITYA PHARMACY COLLEGE

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

Department of PHARMACEUTICAL FORMULATIONS

Name: J. Kavya

PIN No. 21361T0014

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

Mr./Ms. Kavya Naga Praveena. Jakka

a student of III Pharm D with Regd. No. 21361T0014

in the Pharm. Formulation Laboratory during the year 2023 - 24

No. of Experiments Conducted 20

No. of Experiments Attended 18

Signature - Faculty Incharge

Signature-Head of the Department

PRINCIPAL

Aditya Pharmacy College

Submitted for the practical examination held on SURAMPALEM-533 437

E.usha Devi
Examiner-1

[Signature]
Examiner-2



PRINCIPAL
ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| | 19/8/23 | Introduction | 1-4 | (R) |
| 1. | 26/8/23 | Formulation of paracetamol tablets by wet granulation Method. | 5-7 | (R) |
| 2. | 2/9/23 | Evaluate the formulated paracetamol tablets. | 8-11 | (R) |
| 3. | 16/9/23 | Formulation of Diclofenac sodium tablets by direct compression Method | 12-13 | (R) |
| 4. | 30/9/23 | Formulation of soluble Acetyl salicylic acid tablets | 14-15 | (R) |
| 5. | 30/9/23 | Formulation of chewable laxative tablets. | 16-17 | (R) |
| 6. | 14/10/23 | Formulation and filling of Hard gelatin capsules | 18-20 | (R) |
| | | Introduction | 21-22 | (R) |
| 7. | 14/10/23 | Formulation of Ascorbic acid Injection | 23-25 | (R) |
| 8. | 16/10/23 | Formulation of calcium gluconate injection | 26 | (R) |
| 9. | 11/11/23 | Formulation of sodium chloride injection | 27 | (R) |
| 10. | 18/11/23 | Formulation of Dextrose and sodium chloride infusion | 28 | (R) |
| 11. | 9/12/23 | Evaluation of paracetamol syrup and Assay | 29-32 | (R) |
| 12. | 16/12/23 | Preparation of cold cream | 33 | (R) |
| 13. | 16/12/23 | Preparation of vanishing cream | 34 | (R) |
| 14. | 23/12/23 | Preparation of tooth powder | 35 | (R) |



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SURAMPALAM-533 437

Painter

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| 15. | 23/12/23 | Preparation of liquid shampoo | 36 - 37 | (R) |
| 16. | 6/1/24 | Formulation of Aluminium hydroxide gel Antacid suspension | 38 - 40 | (R) |
| 17. | 27/1/24 | Preparation of lipstick | 41 - 43 | (R) |
| 18. | 17/2/24 | Formulation of salicylic acid and benzoic acid ointment | 44 - 45 | (R) |
| 19. | 24/2/24 | Formulation of Diclofenac sodium gel and evaluation by Assay | 46 - 49 | (R) |
| 20. | 24/2/24 | Preparation of tooth paste | 50 - 51 | (R) |



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4.1 PHARMACOTHERAPEUTICS – III (PRACTICAL)

Practical : 3 Hrs./Week

Practicals:

Hospital postings for a period of at least 50 hours is required to understand the principles and practice involved in ward round participation and clinical discussion on selection of drug therapy. Students are required to maintain a record of 15 cases observed in the ward and the same should be submitted at the end of the course for evaluation. Each student should present at least two medical cases they have observed and followed in the wards.

Etiopathogenesis and pharmacotherapy of diseases associated with following systems/ diseases:

Title of the topic

- 1 **Gastrointestinal system:** Peptic ulcer disease, Gastro Esophageal Reflux Disease, Inflammatory bowel disease, Liver disorders - Alcoholic liver disease, Viral hepatitis including jaundice, and Drug induced liver disorders.
- 2 **Haematological system:** Anaemias, Venous thromboembolism, Drug induced blood disorders.
- 3 **Nervous system:** Epilepsy, Parkinsonism, Stroke, Alzheimer's disease,
- 4 **Psychiatry disorders:** Schizophrenia, Affective disorders, Anxiety disorders, Sleep disorders, Obsessive Compulsive disorders
- 5 Pain management including Pain pathways, neuralgias, headaches.
- 6 Evidence Based Medicine

Assignments:

Students are required to submit written assignments on the topics given to them. Topics allotted should cover recent developments in drug therapy of various diseases. A minimum of THREE assignments [1500 – 2000 words] should be submitted for evaluation.

Format of the assignment:

1. Minimum & Maximum number of pages
2. Reference(s) shall be included at the end.
3. Assignment can be a combined presentation at the end of the academic year
4. It shall be computer draft copy
5. Name and signature of the student
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination :

| | Sessionals | Annual |
|------------------|------------|--------|
| Synopsis | 05 | 15 |
| Major Experiment | 10 | 25 |
| Minor Experiment | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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SURAMPALM-533 437



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF
Pharmaco therapeutics - III

Name B. Mounika

PIN No.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 0 | 3 | 6 | 1 | 7 | 0 | 0 | 0 | 3 |
|---|---|---|---|---|---|---|---|---|---|

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

Mr. / Ms. B. Mounika

a student of IV Pharm D with Regd. No. 20361T0003

in the Pharmaco therapeutics-3 Laboratory during the year 2023-2024

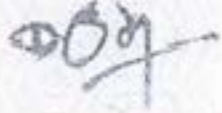
No. of Experiments Conducted

| |
|----|
| 18 |
|----|

No. of Experiments Attended

| |
|----|
| 18 |
|----|


Signature - Faculty incharge


Signature - Head of the Department
PRINCIPAL
Aditya Pharmacy College

Submitted for the Practical examination held on 08/05/24


EXAMINER-1


EXAMINER-2



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SURAMPATEM-533 437

POINTER

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ADITYA PHARMACY COLLEGE (A),
SURAMPALEM-533 437

MIDAS-MLR

5 Hospital pharmacy services

- a) Procurement & warehousing of drugs and Pharmaceuticals
- b) Inventory control
Definition, various methods of Inventory Control
ABC, VED, EOQ, Lead time, safety stock
- c) Drug distribution in the hospital
 - i) Individual prescription method
 - ii) Floor stock method
 - iii) Unit dose drug distribution method
- d) Distribution of Narcotic and other controlled substances
- e) Central sterile supply services – Role of pharmacist

6 Manufacture of Pharmaceutical preparations

- a) Sterile formulations – large and small volume parenterals
- b) Manufacture of Ointments, Liquids, and creams
- c) Manufacturing of Tablets, granules, capsules, and powders
- d) Total parenteral nutrition

7 Continuing professional development programs

Education and training

8 Radio Pharmaceuticals – Handling and packaging**9 Professional Relations and practices of hospital pharmacist****4.2 HOSPITAL PHARMACY (PRACTICAL)**

Practical : 3 Hrs./Week

1. Assessment of drug interactions in the given prescriptions
2. Manufacture of parenteral formulations, powders.
3. Drug information queries.
4. Inventory control

List of Assignments:

1. Design and Management of Hospital pharmacy department for a 300 bedded hospital.
2. Pharmacy and Therapeutics committee – Organization, functions, and limitations.
3. Development of a hospital formulary for 300 bedded teaching hospital
4. Preparation of ABC analysis of drugs sold in one month from the pharmacy.
5. Different phases of clinical trials with elements to be evaluated.
6. Various sources of drug information and systematic approach to provide unbiased drug information.
7. Evaluation of prescriptions generated in hospital for drug interactions and find out the suitable management.



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Special requirements:

1. Each college should sign MoU with nearby local hospital having minimum 150 beds for providing necessary training to the students' on hospital pharmacy activities.
2. Well equipped with various resources of drug information.

Scheme of Practical Examination:

| | Sessionals | Annual |
|------------------|-------------------|---------------|
| Synopsis | 05 | 15 |
| Major Experiment | 10 | 25 |
| Minor Experiment | 03 | 15 |
| Viva | 02 | 15 |
| Max Marks | 20 | 70 |
| Duration | 03hrs | 04hrs |

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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 Aditya Pharmacy College
 SURAMPALEM-533 437



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name BOMMETI SARA AISWARYA PIN No. 203G1T0002

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

Mr. / Ms. Bommeti Sara Aiswarya

a student of IV Pharm D with Regd. No. 203G1T0002

in the Hospital Pharmacy Laboratory during the year 2023-2024

No. of Experiments Conducted 20

No. of Experiments Attended 20

P. Lakshmi
Signature - Faculty Incharge

[Signature]
Signature - Head of the Department
PRINCIPAL

Aditya Pharmacy College
09/05/2024

Submitted for the Practical examination held on 09/05/2024

P. Lakshmi
EXAMINER-1

K. Pushra Lakshmi
EXAMINER-2

118

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ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

POINTER

S.No. Date Name of the Experiment Page No. Remarks

| | | | | |
|-----|----------|--|-------|------|
| 1. | 28/6/23 | Introduction | 01-03 | } RK |
| 2. | 5/7/23 | Drug Profile - 1 | 04-06 | |
| 3. | 12/7/23 | Drug profile - 2 | 07-09 | |
| 4. | 19/7/23 | Introduction to Parenterals | 10-12 | } RK |
| 5. | 26/7/23 | Sodium chloride Injection | 13-13 | |
| 6. | 2/8/23 | Dextrose and sodium chloride Infusion | 14 | |
| 7. | 9/8/23 | Introduction to powders | 15-17 | } RK |
| 8. | 16/8/23 | Oral Rehydration salts | 18 | |
| 9. | 23/8/23 | Medicated Gusting powder | 19-20 | |
| 10. | 6/9/23 | Introduction to Drug Information Query | 21-24 | } RK |
| 11. | 20/9/23 | Drug Information Query | 25-27 | |
| 12. | 4/10/23 | Introduction to Drug Interactions | 28-32 | |
| 13. | 18/10/23 | Drug Interaction Case Study - I | 33-34 | } RK |
| 14. | 1/11/23 | Inventory control | 35-39 | |
| 15. | 15/11/23 | Inventory case study - I | 40 | |
| 16. | 27/11/23 | Inventory case study - II | 41-42 | } RK |
| 17. | 27/12/23 | Inventory case study - III | 43-44 | |
| 18. | 10/1/24 | Drug profile - 3 | 45-47 | |
| 19. | 31/1/24 | Drug Information Query - II | 48-50 | } |
| 20. | 7/2/24 | Drug Interaction Case study - II | 51-52 | |



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SURAMPALAM-533 437

3. **Patient data analysis**
The patient's case history, its structure and use in evaluation of drug therapy & Understanding common medical abbreviations and terminologies used in clinical practices.
4. **Clinical laboratory tests used in the evaluation of disease states, and interpretation of test results**
 - a. Haematological, Liver function, Renal function, thyroid function tests
 - b. Tests associated with cardiac disorders
 - c. Fluid and electrolyte balance
 - d. Microbiological culture sensitivity tests
 - e. Pulmonary Function Tests
5. **Drug & Poison information**
 - a. Introduction to drug information resources available
 - b. Systematic approach in answering DI queries
 - c. Critical evaluation of drug information and literature
 - d. Preparation of written and verbal reports
 - e. Establishing a Drug Information Centre
 - f. Poisons information- organization & information resources
6. **Pharmacovigilance**
 - a. Scope, definition and aims of pharmacovigilance
 - b. Adverse drug reactions - Classification, mechanism, predisposing factors, causality assessment [different scales used]
 - c. Reporting, evaluation, monitoring, preventing & management of ADRs
 - d. Role of pharmacist in management of ADR.
7. Communication skills, including patient counselling techniques, medication history interview, presentation of cases.
8. Pharmaceutical care concepts
9. Critical evaluation of biomedical literature
10. Medication errors

4.3 CLINICAL PHARMACY (PRACTICAL)

Practical : 3 Hrs./Week

Students are expected to perform 15 practicals in the following areas covering the topics dealt in theory class.

- a. Answering drug information questions (4 Nos)
- b. Patient medication counselling (4 Nos)
- c. Case studies related to laboratory investigations (4 Nos)
- d. Patient medication history interview (3 Nos)



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SURAMPALEM-533 437

Assignment:

Students are expected to submit THREE written assignments (1500 – 2000 words) on the topics given to them covering the following areas dealt in theory class.

Drug information, Patient medication history interview, Patient medication counselling, Critical appraisal of recently published articles in the biomedical literature which deals with a drug or therapeutic issue.

Format of the assignment:

1. Minimum & Maximum number of pages.
2. Reference(s) shall be included at the end.
3. Assignment can be a combined presentation at the end of the academic year.
4. It shall be computer draft copy.
5. Name and signature of the student.
6. Time allocated for presentation may be 8+2 Min.



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Aditya Pharmacy College
SURAMPALEM-533 437



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF
Clinical Pharmacy

Name Mounika B PIN No. 203G1T0003

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

Mr. / Ms. Budati - Mounika

a student of N Pharm D with Regd. No. 203G1T0003

in the clinical pharmacy Laboratory during the year 2023-24

No. of Experiments Conducted 16

No. of Experiments Attended 13

Signature - Faculty incharge

Signature - Head of the Department

PRINCIPAL

Aditya Pharmacy College

Submitted for the Practical examination held on 10-5-24 SURAMPALEM-533 437

EXAMINER-1


EXAMINER-2



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ADITYA PHARMACY COLLEGE(A)
SURAMPALEM-533 437

POINTER

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|------|------------------------|----------|---------|
|-------|------|------------------------|----------|---------|

| | | | | |
|-----|----------|---|-------|--|
| | 21/7/23 | Introduction to Drug information queries | 1-4 |  |
| 1) | 23/7/23 | Drug information query-1 | 5-7 | |
| 2) | 04/8/23 | Drug information query-2 | 8-9 | |
| 3) | 13/8/23 | Drug information query-3 | 10-11 | |
| 4) | 25/8/23 | Drug information query-4 | 12-13 | |
| 5) | 22/9/23 | Patient counselling-1 | 14-17 | |
| 6) | 29/9/23 | Patient counselling-2 | 18-20 | |
| 7) | 13/10/23 | Patient counselling-3 | 21-23 | |
| 8) | 03/11/23 | Patient counselling-4 | 24-26 | |
| | 17/12/23 | Introduction to medication history interview | 27-30 | |
| 9) | 29/12/23 | Patient medication history interview-1 | 31 | |
| 10) | 5/1/24 | Patient medication history interview-2 | 32 | |
| 11) | 2/2/24 | Patient medication history interview-3 | 33 | |
| 12) | 9/2/24 | Patient medication history interview-4 | 34 | |
| | 16/2/24 | Introduction to Laboratory Data interpretations | 35-39 | |
| 13) | 23/2/24 | Laboratory Data interpretations-1 | 40-41 | |
| 14) | 1/3/24 | Laboratory Data interpretations-2 | 42-43 | |
| 15) | 15/3/24 | Laboratory Data interpretations-3 | 44-45 | |
| 16) | 22/3/24 | Laboratory Data interpretations-4 | 46-47 | |



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ADITYA PHARMACY COLLEGE(A)
SURAMPALAM-533 437

WIKAS-NLR

4.5 BIOPHARMACEUTICS AND PHARMACOKINETICS (PRACTICAL)

Practical : 3 Hrs./Week

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

References:

- a. Biopharmaceutics and Clinical Pharmacokinetics by, Milo Gibaldi
- b. Remington's Pharmaceutical Sciences, By Mack Publishing Company, Pennsylvania.
- c. Pharmacokinetics: By Milo Gibaldi Donald, R. Mercel Dekker Inc.
- d. Hand Book of Clinical Pharmacokinetics, By Milo Gibaldi and Laurie Prescott by ADIS Health Science Press.
- e. Biopharmaceutics and Pharmacokinetics; By Robert F Notari
- f. Biopharmaceutics; By Swarbrick
- g. Bio pharmaceutics and Pharmacokinetics-A Treatise, By D. M. Brahmanekar and Sunil B.Jaiswal, Vallabh Prakashan Pitampura, Delhi
- h. Clinical Pharmacokinetics, Concepts and Applications: By Malcolm Rowland and Thomas, N. Tozen, Lea and Febrger, Philadelphia, 1995.
- i. Dissolution, Bioavailability and Bioequivalence, By Abdou H.M, Mack, Publishing Company, Pennsylvania 1989.
- j. Biopharmaceutics and Clinical Pharmacokinetics-An introduction 4th edition Revised and expanded by Robert F Notari Marcel Dekker Inc, New York and Basel, 1987.
- k. Encyclopedia of Pharmaceutical Technology, Vol 13, James Swarbrick, James, C. Roylan, Marcel Dekker Inc, New York 1996.



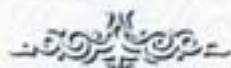
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Aditya Pharmacy College
SURAMPALAM-533 437



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.



DEPARTMENT OF

Biopharmaceutics and pharmacokinetics



Name P. Shiny PIN No. 20361T0012

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

Mr. / Ms. P. Shiny

a student of IV Pharm-D with Regd. No. 20361T0012

in the B.P.P.K. Lab Laboratory during the year 2023-2024

No. of Experiments Conducted 17

No. of Experiments Attended 16

G. Sadevi 24/2/24
Signature - Faculty incharge

[Signature]
Signature - Head of the Department

Aditya Pharmacy College

SURAMPalem-533 437

Submitted for the Practical examination held on 11-05-2024

[Signature]
EXAMINER-1

PRINCIPAL

Aditya Pharmacy College

SURAMPalem-533 437

[Signature]
EXAMINER-2



POINTER

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| | 6/6/23 | Introduction | 1-3 | 8/6/23 |
| 1. | 13/6/23 | Evaluation of dissolution rate of commercial brands of paracetamol tablets as per IP/BP/USP. | 4-20 | 8/11/23 |
| 2. | 20/6/23 | Effect of Binder on dissolution of paracetamol. | 9-12 | 8/25/23 |
| 3. | 11/7/23 | Effect of Solvent on dissolution rate of paracetamol tablets. | 13-17 | 8/1/23 |
| 4. | 25/7/23 | Effect of Superdisintegrants on dissolution rate of paracetamol. | 18-21 | 8/1/23 |
| 5. | 1/8/23 | Evaluation of hypothetical dissolution of 2 brands of PCM | 22-24 | 8/8/23 |
| 6. | 8/8/23 | Evaluation of different brands of the sustain released diclofenac sodium tablets. | 25-29 | 8/19/23 |
| 7. | 19/9/23 | Effect of solubility enhancer on dissolution rate of paracetamol | 30-33 | 8/26/23 |
| 8. | 26/9/23 | Study of protein Binding of alimesulide using a semi-permeable membrane. | 34-37 | 8/31/23 |
| | 31/10/23 | Introduction to pharmacokinetics | 38-39 | 8/31/23 |
| 9. | 17/10/23 | Estimation of different pharmacokinetic parameters from given one compartment model IV bolus data | 40-42 | 8/24/23 |
| 10. | 24/10/23 | Estimation of pharmacokinetic parameters. | 44 | 8/31/23 |

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POINTER

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|--------------|
| 11. | 31/10/23 | Determination of Mean Residence time | 45-46 | B 7/11/23 |
| 12. | 7/11/23 | Analysis of pharmacokinetic data after extravascular administration [one-compartment model]. | 47-51 | B 9/11/24 |
| 13. | 28/11/23 | Determination of Absorption rate constant by Wagner Nelson method. | 52-54 | B 23/1/24 |
| 14. | 9/01/24 | Determination of Elimination rate constant by Rate excretion method. | 55-57 | B 30/1/24 |
| 15. | 23/1/24 | Estimation of pharmacokinetic parameters of one compartment model using data by sigma-minus method | 58-64 | B 30/1/24 |
| 16. | 30/1/24 | Determination of Renal clearance of Riboflavin by using urinary excretion data. | 65-68 | B 6/2/24 |
| 17. | 6/2/24 | Determination of Renal clearance of Ascorbic acid by using Sigma Minus method. | 69-71 | B 24/2/24 |

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ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS (MPH 202T)

Scope

This course is designed to impart knowledge and skills necessary for dose calculations, dose adjustments and to apply biopharmaceutics theories in practical problem solving. Basic theoretical discussions of the principles of biopharmaceutics and pharmacokinetics are provided to help the students' to clarify the concepts.

Objectives

Upon completion of this course it is expected that students will be able understand,

- The basic concepts in biopharmaceutics and pharmacokinetics.
- The use raw data and derive the pharmacokinetic models and parameters the best describe the process of drug absorption, distribution, metabolism and elimination.
- The critical evaluation of biopharmaceutic studies involving drug product equivalency.
- The design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.
- The potential clinical pharmacokinetic problems and application of basics of pharmacokinetic

THEORY

60 Hrs

1. Drug Absorption from the Gastrointestinal Tract: 12 Hrs
Gastrointestinal tract, Mechanism of drug absorption, Factors affecting drug absorption, pH-partition theory of drug absorption, Formulation and physicochemical factors: Dissolution rate, Dissolution process, Noyes-Whitney equation and drug dissolution, Factors affecting the dissolution rate. Gastrointestinal absorption: role of the dosage form: Solution (elixir, syrup and solution) as a dosage form, Suspension as a dosage form, Capsule as a dosage form, Tablet as a dosage form, Dissolution methods, ~~Formulation~~ and processing factors, Correlation of in vivo data with in vitro dissolution data. Transport model: Permeability-Solubility-Charge State and the pH Partition Hypothesis, Properties of the Gastrointestinal Tract (GIT), pH Microclimate Intracellular pH Environment, Tight-Junction Complex.


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- 2 Biopharmaceutic considerations in drug product design and In Vitro Drug Product Performance: Introduction, biopharmaceutic factors affecting drug bioavailability, rate-limiting steps in drug absorption, physicochemical nature of the drug formulation factors affecting drug product performance, in vitro: dissolution and drug release testing, compendial methods of dissolution, alternative methods of dissolution testing, meeting dissolution requirements, problems of variable control in dissolution testing performance of drug products. In vitro-in vivo correlation, dissolution profile comparisons, drug product stability, considerations in the design of a drug product. 12 Hrs
- 3 Pharmacokinetics: Basic considerations, pharmacokinetic models, compartment modeling: one compartment model- IV bolus, IV infusion, extra-vascular. Multi compartment model: two compartment - model in brief, non-linear pharmacokinetics: cause of non-linearity, Michaelis - Menten equation, estimation of k_{max} and v_{max} . Drug interactions: Introduction, the effect of protein-binding interactions, the effect of tissue-binding interactions, cytochrome p450-based drug interactions, drug interactions linked to transporters. 12 Hrs
- 4 Drug Product Performance, In Vivo: Bioavailability and Bioequivalence: drug product performance, purpose of bioavailability studies, relative and absolute availability. methods for assessing bioavailability, bioequivalence studies, design and evaluation of bioequivalence studies, study designs, crossover study designs, evaluation of the data, bioequivalence example, study submission and drug review process. biopharmaceutics classification system, methods. Permeability: In-vitro, in-situ and In-vivo methods. generic biologics (biosimilar drug products), clinical significance of bioequivalence studies, special concerns in bioavailability and bioequivalence studies, generic substitution. 12 Hrs
- 5 Application of Pharmacokinetics: Modified-Release Drug Products, Targeted Drug Delivery Systems and Biotechnological Products. Introduction to Pharmacokinetics and pharmacodynamic, drug interactions. Pharmacokinetics and pharmacodynamics of biotechnology drugs. Introduction, Proteins and peptides, Monoclonal antibodies, Oligonucleotides, Vaccines (immunotherapy), Gene therapies. 12 Hrs




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1. Biopharmaceutics and Clinical Pharmacokinetics by Milo Gibaldi, 4th edition, Philadelphia, Lea and Febiger, 1991
2. Biopharmaceutics and Pharmacokinetics, A. Treatise, D .M. Brahmarkar and Sunil B. Jaiswal., VallabPrakashan, Pitampura, Delhi
3. Applied Biopharmaceutics and Pharmacokinetics by Shargel. Land YuABC, 2nd edition, Connecticut Appleton Century Crofts, 1985
4. Textbook of Biopharmaceutics and Pharmacokinetics, Dr. Shobha Rani R. Hiremath, Prism Book
5. Pharmacokinetics by Milo Gibaldi and D. Perrier, 2nd edition, Marcel Dekker Inc., New York, 1982
6. Current Concepts in Pharmaceutical Sciences: Biopharmaceutics, Swarbrick. J, Lea and Febiger, Philadelphia, 1970
7. Clinical Pharmacokinetics, Concepts and Applications 3rd edition by Malcolm Rowland and Thom- N. Tozer, Lea and Febiger, Philadelphia, 1995
8. Dissolution, Bioavailability and Bioequivalence, Abdou. H.M, Mack Publishing Company, Pennsylvania 1989
9. Biopharmaceutics and Clinical Pharmacokinetics, An Introduction, 4th edition, revised and expanded by Robert. E. Notari, Marcel Dekker Inc, New York and Basel, 1987.
10. Biopharmaceutics and Relevant Pharmacokinetics by John. G Wagner and M. Pamarowski, 1st edition, Drug Intelligence Publications, Hamilton, Illinois, 1971.
11. Encyclopedia of Pharmaceutical Technology, Vol 13, James Swarbrick, James. G. Boylan, Marcel Dekker Inc, New York, 1996.
12. Basic Pharmacokinetics, 1st edition, Sunil S Jambhekar and Philip J Breen, pharmaceutical press, RPS Publishing, 2009.
13. Absorption and Drug Development- Solubility, Permeability, and Charge State, Alex Avdeef, John Wiley & Sons, Inc. 2003.



**FORMULATION AND EVALUATION OF FLOATING MATRIX TABLETS OF
ASPIRIN BY USING GARLIC PEEL POWDER**

Dissertation submitted to

Jawahar Education Technological University, Kakinaid, A.P



Report of the work done by the student during the course of the

University

MASTER OF PHARMACY

IN

PHARMACEUTICS

By

NARRA SRI BHAVYA

(RegNO.213GIS0301)

Under the guidance of

DR.CH. S. PHANI KUMAR M.PHARM. Ph.D

Professor



DEPARTMENT OF PHARMACEUTICS

ADITYA PHARMACY COLLEGE

SURAMPALEM- 533437

2021-2023



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JNT University, Kakinada) Aditya Nagar, ADH

Road, Surampalem, E.G.Dist., A.P

Pin: 533437, ph: 08852

CERTIFICATE

This is to certify that the dissertation work entitled "Formulation and evaluation of Aspirin floating matrix tablets using Garlic peel powder" is submitted to the JNTUK University, Kakinada in partial fulfilment for the award of the degree of

PH.D
This is a bonafied work carried out By
NARRA SRI BHAVYA (Regd No: 213G1S0301) under the guidance of
DR. CH.S. PHAN KUMAR Professor Aditya Pharmacy College, Surampalem.

Place: Surampalem

Date:


Dr. D SATISH KUMAR M. pharm, Ph.D

Principal and professor

Aditya Pharmacy College

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Pin: 533437, Ph: 08852200005.

CERTIFICATE

This is to certify that the dissertation work entitled Formulation and evaluation of floating matrix tablets of Aspirin by using Garlic peel powder is submitted to the JNTUK University, Kakinada in partial fulfilment for the award of the degree of Master of pharmacy in pharmaceutics. This is bonafied work carried out by NARRA SRI BHAVYA (RegdNo.213G1S0301) under guidance of DR.CH. S. PHANI KUMAR, professor, Aditya pharmacy college, Surampalem.

Place: Surampalem

Date: 04-04-2024

Guide

DR.CH.S PHANI KUMAR
M.PHARM, Ph.D.
Professor



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Pin: 533437, Ph: 08852 200005

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled **FORMULATION AND EVALUATION OF FLOATING MATRIX TABLETS OF ASPIRIN BY USING GARLIC PEEL POWDER** is submitted to the Jawaharlal Nehru technological university, Kakinada in partial fulfilment for the award of the degree of . This is bonified work carried out by **NARRA SRI BHAVYA (REGD: 21301S0301)** under the guidance and supervision of **DR.CH.S. PHANI KUMAR** professor, Aditya Pharmacy College, surampalem.

Place: Surampalem

Date:


SIGNATURE OF EVALUATOR 1


SIGNATURE OF EVALUATOR 2



7

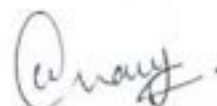

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DECLARATION

I, NARRA SRI BHAVYA (Regd No: 213G1S0301), do hereby declare that the dissertation entitled "FORMULATION AND EVALUATION OF FLOATING MATRIX TABLETS OF ASPIRIN BY USING GARLIC PEEL POWDER" is a record of genuine research work carried out by me under the supervision of DR. CH. S. PHANI KUMAR, Professor, Aditya Pharmacy College, Surampalem. The work reported herein has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

Place: Surampalem

Date: 04-04-2024



NARRA SRI BHAVYA

Regd No - 213G1S0301



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CONCLUSION

By constructing the standard calibration curve for Aspirin of fig. 7.0 in 0.1N HCl Buffer at concentration 2-10µg/ml. It was observed that analytical method use obeying beers lambert's law by showing R^2 value = 0.997 as shown hence the analytical method was used to determine that concentration present in various solutions used for analysis.

Drug and excipient compatibility studies to choose various excipients a long with drug, the drug and excipient compatibility was performed and found that, all the excipients involved in these studies hence all the excipients can be considered for the preparation of various Aspirin floating matrix tablets. The drug excipient compatibility studies were performed for Aspirin, garlic peel powder and HPMC at their highest concentration at a ratio how they used in designing of tablet formulation.

The flow properties for Aspirin were conducting and found Aspirin with Good flow properties by having Angle of repose 28.52°, bulk density 0.372g/ml, tapped density at 0.435g/ml, cars index 11.92% and Hausner's ratio at 1.135 as shown in table 7.2 hence aspirin can be tableted by direct compression method of its flow properties.

The tablets were designed 12%, 16% and 20%w/w with help of garlic peel powder plus garlic peel powder and HPMC and all formulations were subjected to the pre- compression studies and found all the formulations with God flow properties. hence all formulations can be tableted by using direct compression method because of their good flow properties.



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F1, F2, F3 were prepared with the help of garlic peel powder at 12%w/w, 16%w/w, 20%w/w per tablet. The rate release retardant is high for F3 Formulation were in following order

F3>F2>F1

F4, F5, F6 were prepared with help of HPMC at 12%w/w, 16%w/w, 20%w/w per tablet. The rate release retardant is high for F6 formulation and release retardation for HPMC powder formulation were in following order.

F6>F5>F4

F7, F8, F9, F10 were prepared with help of garlic peel powder and HPMC at 12%w/w, 16%w/w, 20%w/w per tablet. The rate release retardation is high for F10 formulation and release retardation for garlic peel powder and HPMC formulation following order.

F10>F9>F8>F7

Finally, it was found that F10 formulation is best formulation among all Aspirin floating matrix formulation for its high-rate release retardation. It was compared with pure drug and found F10 is having 1.2-fold more *in-vitro* drug release profile to pure drug at the end of 60th minute.



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DRUG DELIVERY SYSTEMS
(MPH 102T)

SCOPE

This course is designed to impart knowledge on the area of advances in novel drug delivery systems.

OBJECTIVES

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

The various approaches for development of novel drug delivery systems.

The criteria for selection of drugs and polymers for the development of delivering system

The formulation and evaluation of Novel drug delivery systems..

THEORY

60 Hrs

1. Sustained Release(SR) and Controlled Release (CR) 10 Hrs
formulations: Introduction & basic concepts, advantages/disadvantages, factors influencing, Physicochemical & biological approaches for SR/CR formulation, Mechanism of Drug Delivery from SR/CR formulation, Polymers: introduction, definition, classification, properties and application Dosage Forms for Personalized Medicine: Introduction, Definition, Pharmacogenetics, Categories of Patients for Personalized Medicines: Customized drug delivery systems, Bioelectronic Medicines, 3D printing of pharmaceuticals, Telepharmacy.
2. Rate Controlled Drug Delivery Systems: Principles & Fundamentals, Types, Activation; Modulated Drug Delivery Systems; Mechanically activated, pH activated, Enzyme activated, and Osmotic activated Drug Delivery Systems Feedback regulated Drug Delivery Systems; Principles & Fundamentals. 10 Hrs
3. Gastro-Retentive Drug Delivery Systems: Principle, concepts advantages and disadvantages, Modulation of GI transit time approaches to extend GI transit. Buccal Drug Delivery Systems: Principle of muco adhesion, advantages and disadvantages, Mechanism of drug permeation, Methods of formulation and its evaluations. 10 Hrs
4. Ocular Drug Delivery Systems: Barriers of drug permeation, Methods to overcome barriers. 06 Hrs




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|---|--|--------|
| 5 | Transdermal Drug Delivery Systems: Structure of skin and barriers, Penetration enhancers, Transdermal Drug Delivery Systems, Formulation and evaluation. | 10 Hrs |
| 6 | Protein and Peptide Delivery: Barriers for protein delivery. Formulation and Evaluation of delivery systems of proteins and other macromolecules. | 08 Hrs |
| 7 | Vaccine delivery systems: Vaccines, uptake of antigens, single shot vaccines, mucosal and transdermal delivery of vaccines. | 06 Hrs |

REFERENCES

1. Y. W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded, Marcel Dekker, Inc., New York, 1992.
2. Robinson, J. R., Lee V. H. L, Controlled Drug Delivery Systems, Marcel Dekker, Inc., New York, 1992.
3. Encyclopedia of controlled delivery, Editor- Edith Mathiowitz, Published by WileyInterscience Publication, John Wiley and Sons, Inc, New York! Chichester/Weinheim
4. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, New Delhi, First edition 1997 (reprint in 2001).
5. S.P.Vyas and R.K.Khar, Controlled Drug Delivery - concepts and advances, Vallabh Prakashan, New Delhi, First edition 2002

JOURNALS

1. Indian Journal of Pharmaceutical Sciences (IPA)
2. Indian drugs (IDMA)
3. Journal of controlled release (Elsevier Sciences) desirable
4. Drug Development and Industrial Pharmacy (Marcel & Decker) desirable



12



**FORMULATION, EVALUATION AND IN-VITRO
CHARACTERIZATION OF LACOSAMIDE LOADED
CHITOSAN NANO PARTICLES FOR BREAST CANCER
TREATMENT**

Dissertation submitted to
Jawaharlal Nehru Technological University, Kakinada, A.P



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

MASTER OF PHARMACY

In

PHARMACEUTICS

By

PECHETTI SAIKIRAN

(Regd no-213G1S0302)

Under the guidance of

Mr. T. Uday Kumar M. Pharm, Ph. D
Assoc. professor



Department of Pharmaceutics

Aditya Pharmacy College

Surampalem-533437



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2021-2023

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FORMULATION, EVALUATION AND IN-VITRO
CHARACTERIZATION OF LACOSAMIDE LOADED
CHITOSAN NANO PARTICLES FOR BREAST CANCER
TREATMENT

Dissertation submitted to
Jawaharlal Nehru Technological University, Kakinada, A.P



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

MASTER OF PHARMACY

In

PHARMACEUTICS

Submitted by

PECHETTI SAIKIRAN

(Regd no-213G1S0302)

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Assoc. professor



Department of Pharmaceutics

Aditya Pharmacy College

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E.G. Dist., A.P. Pin: 533437, Ph.: 08852 200005

CERTIFICATE

This is to certify that the dissertation work entitled "FORMULATION, EVALUATION AND IN-VITRO CHARACTERIZATION OF LACOSAMIDE LOADED CHITOSAN NANO PARTICLES FOR BREAST CANCER TREATMENT." is submitted to the JNTU university, Kakinada in partial fulfilment for the award of the degree of Master of Pharmacy in Pharmaceutics. This is a benefited work carried out by PECHETTI SAIKIRAN (Regd No: 213G1S0302) under the guidance of Mr. T. Uday Kumar M.Pharm, Ph.D, Associate Professor Aditya Pharmacy College, Surampalem.

Place: Surampalem

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

Date:



Principal and Professor,
Aditya Pharmacy College,
Aditya Pharmacy College,
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E.G.Dist., A.P

Pin: 533437, Ph.: 08852 200005

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Place: Surampalem.

Date: 6/4/24



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T. Uday Kumar
Guide 6/4/24

Mr. T. Uday Kumar M. Pharm, Ph. D
Associate professor

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EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "FORMULATION, EVALUATION AND IN-VITRO CHARACTERIZATION OF LACOSAMIDE LOADED CHITOSAN NANO PARTICLES FOR BREAST CANCER TREATMENT," is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfilment for the award of the degree of Master of Pharmacy in Pharmaceutics. This is a benefited work carried out by PECHETTI SAIKIRAN (Regd No: 213G1S0302) under the guidance and supervision of Mr. T. Uday Kumar M.Pharm, Ph.D, Associate Professor, Aditya Pharmacy college, Surampalem.

Place: Surampalem

Date:

SIGNATURE OF EVALUATOR 1

SIGNATURE OF EVALUATOR 2



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DECLARATION

I, PECHETTI SAIKIRAN (Regd No:213G1S0302), do here by declare that the dissertation entitled "FORMULATION, EVALUATION AND IN-VITRO CHARACTERIZATION OF LACOSAMIDE LOADED CHITOSAN NANO PARTICLES FOR BREAST CANCER TREATMENT," is a record of genuine research work carried out by me under the supervision of Mr. T. Uday Kumar, M.Pharm, Ph.D, Associate Professor, Aditya Pharmacy College, Surampalem. The work reported here in has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

Place: Surampalem
Date: 04-Apr-2024

P. Sai Kiran

SAIKIRAN PECHETTI
Regd No-213G1S0302



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SUMMARY AND CONCLUSION

Intravenous drug delivery system enhances the permeability of the drug molecules. Thus, by incorporating of drug into nanoparticles and delivery through the intravenous route by significantly improve the bioavailability of Lacosamide loaded chitosan nano particles.

- From the present study, standard calibration curve was plotted shows best fit line with regression (R^2)0.9957 which obeys Beer's lambert law.
- The FT-IR studies was carried out and results shown that there is no interaction of API with excipients used in formulations.
- The zeta sizer shows particle size of LCS -Ch-NPs formulation shows greater transmittance indicate smaller particle size was found to 241.5 nm.
- The percentage drug content of LCS-Ch -NPs was found to be 45.5%.
- The entrapment efficiency of LCS-Ch-NPs was found to be 97%.
- In present study the drug release studies were carried out by dialysis membrane. The drug release of LCS-Ch-NPs formulation gave better release than pure LCS.

The formulation that shows 80-90% of drug release in 24hrs and it shows more impact in endocytosis.

- In XRD diffraction pattern of LCS shows as crystalline nature with sharp intense peak value of 2θ was found to be 25° .
- The DSC thermogram of LCS shows crystalline and sharp endothermic peak at melting point of 190°C - 200°C .



- The effect of LCS and LCS-Ch-NPs treatment on CELL TOXICITY OF IC₅₀ of LCS-Ch-NPs shows more potential activity as compared to LCS.



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PHARMACEUTICS PRACTICAL - I
(MPH 105PA)

1. Analysis of pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on HPLC
4. Experiments based on Gas Chromatography
5. Estimation of riboflavin/quinine sulphate by fluorimetry
6. Estimation of sodium/potassium by flame photometry
7. To carry out preformulation studies of tablets.
8. To study the effect of compressional force on tablets disintegration time.
9. To study Micromeritic properties of powders and granulation.




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Department of

PHARMACEUTICS

PIN No. 2336180301

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

Mr./Ms. Ch. Sai Krishna

a student of 1st year M. Chem. with Regd. No. 233 G150301

in the pharmaceutics lab-I Laboratory during the year 2023-2025.

| | |
|------------------------------|----|
| No. of Experiments Conducted | 13 |
|------------------------------|----|

No. of Experiments Attended 13

Signature - Faculty incharge

Signature-Head of the Department
PRINCIPAL

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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 |
|-------|----------|---|----------|---------|
| | | INTRODUCTION | 1 - 04 | |
| 1 | 10/11/23 | Assay of Paracetamol using H^{14} in mlat | 5 - 06 | 8/17/23 |
| 2 | 17/11/23 | Assay of Salicylic acid using Direct Comparison method (a) using Single point method | 07 - 08 | 8/24/23 |
| 3 | 14-11-23 | Assay of Sulphacetamide sodium eye drops by colorimetry | 09 - 11 | 8/24/23 |
| 4 | 24/11/23 | Assay of furosemide | 12 - 14 | 8/24/23 |
| 5 | 20/11/23 | Simultaneous estimation of sodium benzoate Caffeine by simultaneous equation method | 15 - 17 | 8/29/23 |
| 6 | 29/12/23 | Assay of Sodium Ions by flame photometry | 18 - 19 | 7/24/24 |
| 7 | 29/12/23 | Assay of potassium Ions by flame photometry | 20 - 21 | 7/24/24 |
| 8 | 22/12/23 | Estimation of Riboflavin by fluorimetry | 22 - 23 | 7/24/24 |
| 9 | 12/1/24 | Experiment based on H.P.L.C | 24 | 7/24/24 |
| 10 | 22/1/24 | Experiment based on Gas Chromatography | 25 - 26 | 7/24/24 |
| | | INTRODUCTION | 27 - 30 | |

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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|--------------|
| 11 | 27/01/24 | To carry-out prepermutation studies of Tablet | 31-32 | } Tw 29/1 |
| 12 | 29/01/24 | To study the effect of compression force on Tablet disintegration Time | 33-34 | |
| 13 | 02/02/24 | To study micromeritic properties of powders and granules | 35-37 | |

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PHARMACEUTICS PRACTICAL - II

(MPH 105PB)

1. To study the effect of particle size on dissolution of a tablet.
2. To study the effect of binders on dissolution of a tablet.
3. To plot Heckal plot, Higuchi and peppas plot and determine similarity factors.
4. To perform In-vitro dissolution profile of CR/ SR marketed formulation
5. Formulation and evaluation of sustained release matrix tablets
6. Formulation and evaluation osmotically controlled DDS
7. Preparation and evaluation of Floating DDS- hydro dynamically balanced DDS
8. Formulation and evaluation of Muco adhesive tablets.
9. Formulation and evaluation of trans dermal patches.




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

Department of
Pharmaceutics

Name: Ch. Sai. Krishna

PIN No. 2336180301

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

Mr./Ms. Ch. Sai. Krishna

a student of M. Pharmacy *with Regd. No.* 233 6180301

in the Pharmaceutics lab-II *Laboratory during the year* 2023-2025

No. of Experiments Conducted 09

No. of Experiments Attended 09

Signature - Faculty incharge

Signature-Head of the Department

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Aditya Pharmacy College

Submitted for the practical examination held on SURAMPALEM-533 437

Examiner-1

Examiner-2

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Aditya Pharmacy College
SURAMPALEM-533 437



Painter

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| | | INTRODUCTION | 01-02 | Pr |
| 1 | 7/11/23 | To study the effect of particle size on dissolution of Tablets | 03-06 | Pr |
| 2 | 17/11/23 | To study the effect of binders on dissolution of Tablet | 07-10 | Pr |
| 3 | 24/11/23 | To plot Hixson plot, Higuchi and Peppas plot and determine similarity factor | 11-13 | Pr |
| 4 | 28/11/23 | To perform In-vitro dissolution profile of C.R./S.R marketed formulations | 14-17 | Pr |
| 5 | 01/12/23 | Formulation and Evaluation of sublingual release matrix tablets | 18-20 | Pr |
| 6 | 15/12/23 | Formulation and Evaluation of osmotically controlled Drug Delivery system | 21-24 | Pr |
| 7 | 22/12/23 | Preparation and evaluation of floating Drug Delivery system | 25-28 | Pr |
| 8 | 05/01/24 | Formulation and evaluation of muco adhesive Tablets | 29-32 | Pr |
| 9 | 12/01/24 | Formulation and Evaluation of Transdermal Patches | 33-36 | Pr |

PHARMACEUTICS PRACTICAL - III

(MPH 205PA)

1. To study the effect of temperature change, non solvent addition, incompatible polymer addition in microcapsules preparation
2. Preparation and evaluation of Alginate beads
3. Formulation and evaluation of gelatin /albumin microspheres
4. Formulation and evaluation of liposomes/niosomes
5. Formulation and evaluation of spherules
6. Improvement of dissolution characteristics of slightly soluble drug by Solid dispersion technique.
7. Comparison of dissolution of two different marketed products /brands
8. Protein binding studies of a highly protein bound drug & poorly protein bound drug
9. Bioavailability studies of Paracetamol in animals.
10. Pharmacokinetic and IVIVC data analysis by Winnoline[®] software
11. In vitro cell studies for permeability and metabolism



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SURAMPALEM-533 432



ADITYA PHARMACY COLLEGE

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

Department of
PHARMACEUTICS

Name: Ch. Sai. Krishna

PIN No. 2336150301

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

Mr./Ms. Ch. Sai. Krishna

a student of M. Pharmacy with Regd. No. 2336150301

in the Pharmaceutical - III Laboratory during the year 2023 - 24

No. of Experiments Conducted 10

No. of Experiments Attended 10

Signature - Faculty incharge

Signature-Head of the Department

Submitted for the practical examination held on 22/12/24

Examiner-1

Examiner-2

Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| 1 | 05/03/24 | Study the Improvement in dissolution characteristics of salicylic acid by solid dispersion technique (Solvent Evaporation) | 01 - 04 | Phani |
| 2 | 14/03/24 | Study the Improvement in dissolution characteristics of salicylic acid by solid dispersion technique (Co-grinding) | 05 - 08 | Phani |
| 3 | 25/03/24 | preparation & Evaluation of Ibuprofen alginate beads | 09 - 12 | Phani |
| 4 | 04/04/24 | formulation & Evaluation of cyclodextrane microspheres | 13 - 17 | Phani |
| 5 | 30/04/24 | formulation & Evaluation of albumin microspheres | 18 - 22 | Phani |
| 6 | 09/05/24 | Study of protein binding of salicylic acid - A strong protein bound drug | 23 - 25 | Phani |
| 7 | 06/06/24 | Comparative protein binding studies of salicylic acid with egg albumin | 26 - 28 | Phani |
| 8 | 18/06/24 | Diffusion studies of salicylic acid from ointment using a semi-permeable membrane | 29 - 31 | Phani |

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SURAMPALEM-533 437



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| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| 9 | 27/06/24 | To construct the calibration curve of salicylic acid using colorimeter | 32 - 33 | Pharm |
| 10 | 11/07/24 | To construct the calibration curve of Ibuprofen using U.V - spectrophotometer | 34 - 35 | Pharm |

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immunity and metabolism

PHARMACEUTICS PRACTICAL - IV (MPH 205PB)

1. DoE Using Design Expert® Software
2. Formulation data analysis Using Design Expert® Software
3. Quality-by-Design in Pharmaceutical Development
4. Computer Simulations in Pharmacokinetics and Pharmacodynamics
5. Computational Modeling Of Drug Disposition
6. To develop Clinical Data Collection manual
7. To carry out Sensitivity Analysis, and Population Modeling.
8. Development and evaluation of Creams
9. Development and evaluation of Shampoo and Toothpaste base
10. Formulation Development of Multi Vitamin Syrup
11. Use of Optimization techniques in Formulation Development of Tablets



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ADITYA PHARMACY COLLEGE

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

Department of
PHARMACEUTICS

Name: Ch. Sai. Krishna

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in the PHARMACEUTICAL ^{-TV} Laboratory during the year 2023-24

No. of Experiments Conducted 11

No. of Experiments Attended 11

Ch. T. Lakshmi
11/1/24
Signature - Faculty incharge

Ch. T. Lakshmi
Signature-Head of the Department

Principal
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the practical examination held on 23/07/24

[Signature]
Examiner-1

[Signature]
Examiner-2

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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|--------------|
| 1 | 15/03/24 | Overview About "DoE" using design Expert software | 01 - 06 | <u>W</u> (A) |
| 2 | 22/03/24 | formulation data analysis using Design Expert software | 07 - 09 | <u>W</u> (A) |
| 3 | 11/04/24 | Quality by design in pharmaceutical development | 10 - 11 | <u>W</u> (A) |
| 4 | 28/04/24 | computer simulation pharmacodynamics using stata dot apparatus | 12 - 13 | <u>W</u> (A) |
| 5 | 12/04/24 | formulation and Evaluation of cold cream | 14 - 15 | <u>W</u> (A) |
| 6 | 19/04/24 | formulation and Evaluation of Vanishing cream | 16 - 17 | <u>W</u> (A) |
| 7 | 26/04/24 | formulation and Evaluation of Shampoo | 18 - 19 | <u>W</u> (A) |
| 8 | 03/05/24 | formulation and Evaluation of Tooth paste | 20 - 21 | <u>W</u> (A) |
| 9 | 06/05/24 | Cosmetics formulation used to overcome various medical problems | 22 - 25 | <u>W</u> (A) |


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Painter

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|---------------|
| 10 | 7/05/24 | Development of clinical data collection manual | 28-29 | <u>tw</u> (A) |
| 11 | 10/6/24 | Development and Evaluation of multipurpose herbal cream | 30-32 | <u>tw</u> (B) |



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Aditya Pharmacy College
SURAMPAL EM-533 425



PHARMACEUTICAL ANALYSIS PRACTICAL - I
(MPA 105PA)

1. Calibration of glasswares
2. Calibration of pH meter
3. Calibration of UV-Visible spectrophotometer
4. Calibration of FTIR spectrophotometer
5. Calibration of GC instrument
6. Calibration of HPLC instrument
7. Cleaning validation of any one equipment
8. Impurity profiling of drugs
9. Assay of official compounds by different titrations
10. Assay of official compounds by instrumental techniques.
11. Estimation of riboflavin/quinine sulphate by fluorimetry
12. Estimation of sodium/potassium by flame photometry
13. Quantitative determination of hydroxyl group.
14. Quantitative determination of amino group
15. Colorimetric determination of drugs by using different reagents




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ADITYA PHARMACY COLLEGE

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

Department of

Pharmaceutical Analysis

Name: A. Estheru Rani

PIN No. 2336151602

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Mr./Ms. ADAPA ESTHERU RANI

a student of I - M Pharmacy with Regd. No. 2336151602

Advanced Pharmaceutical
in the Analysis - I Laboratory during the year 2023 - 2024

No. of Experiments Conducted 21

No. of Experiments Attended 21

Signature - Faculty in charge

Signature-Head of the Department

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Aditya Pharmacy College

SURAMPALEM-533 437

Submitted for the practical examination held on

Examiner-1

Examiner-2

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Aditya Pharmacy College

SURAMPALEM-533 437



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|-----------|---------|
| 0. | | Introduction. | 1 - 5 | 8/6/23 |
| 1. | 6/11/23 | Calibration of glass ware. | 6 - 9 | 8/7/23 |
| 2. | 6/11/23 | Calibration of pH meter | 10 - 11.2 | 8/7/23 |
| 3. | 7/11/23 | Calibration of U-V visible Spectrophotometer | 12 - 15 | 8/7/23 |
| 4. | 10/11/23 | Assay of paracetamol using A_{max} method | 16 - 18 | 8/14/23 |
| 5. | 14/11/23 | Assay of salicylic acid using Direct comparison (or) single point method. | 19 - 21 | 8/17/23 |
| 6. | 17/11/23 | Assay of sulphacetamide sodium eye drops by colorimetry. | 22 - 24 | 8/20/23 |
| 7. | 20/11/23 | Simultaneous estimation of caffeine, sodium benzoate using simultaneous estimation method. | 25 - 27 | 8/23/23 |
| 8. | 23/11/23 | Assay of paracetamol using oxidation and chelation reaction. | 28 - 29 | 8/24/23 |
| 9. | 24/11/23 | Assay of furosemide | 30 - 32 | 8/27/23 |
| 10. | 27/11/23 | Assay of Ascorbic acid using Single point standardization method | 33 - 34 | 8/11/23 |
| 11. | 1/12/23 | Estimation of salbutamol using Folin - ciocalteu reagent. | 35 - 37 | 8/15/23 |
| 12. | 15/12/23 | Assay of Ascorbic acid | 38 - 40 | 8/18/23 |
| 13. | 18/12/23 | Assay of magnesium sulphate | 41 - 43 | 8/23/23 |
| 14. | 23/12/23 | Estimation of Riboflavin by fluorimetry. | 44 - 46 | 8/25/23 |
| 15. | 29/12/23 | Estimation of sodium ion by flame photometry. | 47 - 48 | 8/31/23 |

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SURAMPALM-533 437



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| 16. | 29/12/23 | Estimation of potassium ion concentration of flame photometry. | 49-50 | 5/1/24 |
| 17. | 5/1/24 | Quantitative determination of hydroxyl group. | 51-53 | 5/8/24 |
| 18. | 8/1/24 | Quantitative determination of amino group. | 54-56 | 5/11/24 |
| 19. | 12/1/24 | Calibration of HPLC | 57-69 | 5/22/24 |
| 20. | 22/1/24 | Calibration of GC | 70-72 | 5/29/24 |
| 21. | 29/1/24 | Interpretation of IR Spectra | 73-76 | 5/29/24 |

2nd time

5/1/24



PHARMACEUTICAL ANALYSIS PRACTICAL - II

(MPA 105PB)

1. Analysis of Pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on HPLC
4. Experiments based on Gas Chromatography .
5. Determination of total reducing sugar
6. Determination of proteins
7. Determination of saponification value, Iodine value, Peroxide value, Acid value in food products
8. Determination of fat content and rancidity in food products
9. Analysis of natural and synthetic colors in food
10. Determination of preservatives in food
11. Determination of pesticide residue in food products
12. Analysis of vitamin content in food products
13. Determination of density and specific gravity of foods
14. Determination of food additives



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ADITYA PHARMACY COLLEGE

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

Department of
Pharmaceutical Analysis

Name: M. Yamini

PIN No. 233G191603

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

Mr./Ms. MORTHIA YAMINI

a student of T.M. Pharmacy with Regd. No. 233G191603

Advanced Analysis - II
in the Pharmaceutical Laboratory during the year 2023-2024

No. of Experiments Conducted 21

No. of Experiments Attended 21

Signature - Faculty incharge

Signature - Head of the Department

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Aditya Pharmacy College

Submitted for the practical examination held on SURAMPALEM-533 437

Examiner-1

Examiner-2

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Aditya Pharmacy College
SURAMPALEM-533 437



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|--|----------|---------|
| | 7/11/23 | Introduction | 1 | -A- |
| 1. | 7/11/23 | Assay of Salicylic acid using direct comparison or single point method. | 2-4 | |
| 2. | 9/11/23 | Assay of Salicylic acid using double point standardization method | 5-8 | Af |
| 3. | 14/11/23 | Assay of paracetamol using λ_{max} (or) Specific absorbance method. | 9-11 | Af |
| 4. | 16/11/23 | Assay of paracetamol using chemical derivatization method. | 12-13 | Af |
| 5. | 21/11/23 | Construction of calibration curve for paracetamol using double beam Spectrophotometer. | 14-16 | Af |
| 6. | 23/11/23 | Assay of Sulphacetamide sodium in eye drops by using colorimetry | 17-19 | Af |
| 7. | 28/11/23 | Simultaneous estimation of caffeine sodium benzoate by simultaneous equation method. | 20-23 | Af |
| 8. | 30/11/23 | Assay of Furosemide | 24-26 | Af |
| 9. | 19/12/23 | Determination of Acid value of oil. | 27-29 | Af |

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SURAMPALEM-533 437



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|----------|---|----------|---------|
| 10 | 21/12/23 | Determination of Saponification value of oil. | 30-32 | AF |
| 11 | 26/12/23 | Determination of iodine value of oil. | 33-35 | AF |
| 12 | 28/12/23 | Determination of peroxide value of oil. | 36-38 | AF |
| 13 | 28/12/23 | Estimation of acidity of edible oil. | 39-40 | AF |
| 14 | 2/1/24 | Estimation of fat content in food products | 41-43 | AF |
| 15 | 4/1/24 | Determination of total reducing sugars. | 44-45 | AF |
| 16 | 9/1/24 | Determination of proteins by Using Spectrophotometric method. | 46-48 | AF |
| 17 | 9/1/24 | TLC Method for isolation & configuration of oil Soluble colour | 49-51 | AF |
| 18 | 23/1/24 | Determination of density, relative density, Specific gravity of foods | 52-54 | AF |
| 19 | 23/1/24 | Determination of preservatives in foods | 55-56 | AF |
| 20 | 25/1/24 | Calibration of HPLC | 57-70 | AF |
| 21 | 30/1/24 | Calibration of Gas chromatography | 71-74 | AF |

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PHARMACEUTICAL ANALYSIS PRACTICAL - III (MPA 205PA)

1. Comparison of absorption spectra by UV and Wood ward – Fiesure rule
2. Interpretation of organic compounds by FT-IR
3. Interpretation of organic compounds by NMR
4. Interpretation of organic compounds by MS
5. Determination of purity by DSC in pharmaceuticals
6. Identification of organic compounds using FT-IR, NMR, CNMR and Mass spectra
7. Bio molecules separation utilizing various sample preparation techniques and Quantitative analysis of components by gel electrophoresis.
8. Bio molecules separation utilizing various sample preparation techniques and Quantitative analysis of components by HPLC techniques.
9. Isolation of analgesics from biological fluids (Blood serum and urine).
10. Protocol preparation and performance of analytical / Bioanalytical method validation.
11. Protocol preparation for the conduct of BA/BE studies according to guidelines.




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Aditya Pharmacy College
SHIRAMANGALA-533 437



ADITYA PHARMACY COLLEGE

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

Department of PHARMACEUTICAL ANALYSIS

Name: M. YAMINI

PIN No. 233G1S1603

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Mr./Ms. MORTHA YAMINI

a student of I - M.PHARMACY with Regd. No. 233G1S1603

Advanced pharmaceutical
in the Analysis - III Laboratory during the year 2023-2024

No. of Experiments Conducted 14

No. of Experiments Attended 14

Signature - Faculty incharge

Signature-Head of the Department
PRINCIPAL

Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the practical examination held on 26/7/24

Examiner-1

Examiner-2

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Aditya Pharmacy College
SURAMPALEM-533 437



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|--|----------|---------|
| 1. | 4/3/24 | Comparison of absorption spectra of Aspirin & Sodium benzoate by UV & wood ward Fieser rule | 1-8 | 7/10/24 |
| 2 | 15/3/24 | Comparison of absorption spectra of Salicylic acid and paracetamol by UV & wood ward Fieser rule | 9-11 | 7/11/24 |
| 3 | 22/3/24 | Interpretation of organic compounds by FT-IR | 12-14 | 7/11/24 |
| 4 | 1/4/24 | Interpretation of organic compounds by ^1H - NMR | 15-19 | 7/11/24 |
| 5 | 8/4/24 | Interpretation of organic compounds by ^{13}C - NMR | 20-23 | 7/11/24 |
| 6 | 15/4/24 | Interpretation of organic compounds by DEPT spectra | 24-27 | 7/11/24 |
| 7. | 26/4/24 | Interpretation of organic compounds by cosy spectra | 28-31 | 7/11/24 |
| 8. | 29/4/24 | Interpretation of organic compounds by Mass spectra | 32-36 | 7/11/24 |

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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|--|----------|---------|
| 9. | 6/5/24 | Distinguish between pentan-2-one and pentan-3-one Compounds by Mass spectra | 37-40 | 5/5/24 |
| 10. | 3/6/24 | Identification of organic compounds using FT-IR, ^1H -NMR, ^{13}C -NMR & Mass spectra. | 41-47 | 7/10/24 |
| 11. | 10/6/24 | Determination of purity by DSC in pharmaceuticals | 48-50 | 12/4/24 |
| 12. | 14/6/24 | Isolation of analgesics from biological fluids | 51-53 | 5/28/24 |
| 13. | 24/6/24 | Protocol preparation for Analytical Method validation | 54-69 | 5/28/24 |
| 14. | 28/6/24 | Designing and protocol of Bioequivalence studies as per CDSCO | 70-75 | 5/17/24 |

Completed
5/17/24

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SURAMPALM-533 437



PHARMACEUTICAL ANALYSIS PRACTICAL - IV
(MPA 205PB)

1. In process and finished product quality control tests for tablets, capsules, parenterals and creams
2. Quality control tests for Primary and secondary packing materials
3. Assay of raw materials as per official monographs
4. Testing of related and foreign substances in drugs and raw materials
5. Preparation of Master Formula Record.
6. Preparation of Batch Manufacturing Record.
7. Quantitative analysis of rancidity in lipsticks and hair oil
8. Determination of aryl amine content and Developer in hair dye
9. Determination of foam height and SLS content of Shampoo.
10. Determination of total fatty matter in creams (Soap, skin and hair creams)
11. Determination of acid value and saponification value.
12. Determination of calcium thioglycolate in depilatories




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SURAMPALM-533 437



ADITYA PHARMACY COLLEGE

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

Department of
Pharmaceutical Analysis

Name: *T. Satyasai*

PIN No.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 3 | 3 | 6 | 1 | 3 | 1 | 6 | 0 | 4 |
|---|---|---|---|---|---|---|---|---|---|

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

Mr./Ms. *Thota. Satyasai*

a student of *1st - M. Pharmacy* with Regd. No. *2336131604*

in the *APA - IV* Laboratory during the year *2023-24*

No. of Experiments Conducted

| |
|----|
| 18 |
|----|

No. of Experiments Attended

| |
|----|
| 18 |
|----|

Signature - Faculty incharge

Signature-Head of the Department

Submitted for the practical examination held on *27/07/24*

K. Sankar
Examiner-1

D.
Examiner-2

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PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 437



Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|----------------------------|
| 1. | 5/3/24 | Instructions for preparation of Master formula Record | 1-7 | <i>[Signature]</i> 5/3/24 |
| 2. | 7/3/24 | Instructions for preparation of Batch Manufacturing Report | 8-10 | <i>[Signature]</i> 12/3/24 |
| 3. | 12/3/24 | finished products Quality control tests for paracetamol tablets | 11-17 | <i>[Signature]</i> 19/3/24 |
| 4. | 19/3/24 | finished products Quality control tests for marketed capsules | 18-21 | <i>[Signature]</i> 21/3/24 |
| 5. | 21/3/24 | Determination of Acid value | 22-24 | <i>[Signature]</i> 18/4 |
| 6. | 18/4/24 | Determination of saponification value | 25-26 | <i>[Signature]</i> 18/4 |
| 7. | 18/4/24 | Estimation of Rancidity in Hair oil | 27-28 | <i>[Signature]</i> 18/5/24 |
| 8. | 1/5/24 | Estimation of Peroxide value in edible oil | 29-31 | <i>[Signature]</i> 7/5 |
| 9. | 7/5/24 | Determination of SLS content in shampoo | 32-33 | <i>[Signature]</i> 8/5 |

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Pointer

| S.No. | Date | Name of the Experiment | Page No. | Remarks |
|-------|---------|---|----------|---------|
| 10. | 8/5/24 | Determination of foam height in Shampoo | 34-35 | 11/5 |
| 11. | 14/5/24 | Determination of aryl amine content in hair dye | 36-38 | 10/6 |
| 12. | 5/6/24 | Determination developer in hair dye | 39-41 | 11/6 |
| 13. | 11/6/24 | Determination of total fatty substance in hair dye/cream | 42-43 | 12/6 |
| 14. | 12/6/24 | Determination of total fatty substance in bath soap | 44-45 | 12/6 |
| 15. | 18/6/24 | Determination of calcium Thioglycolate in Depilatories | 46-47 | 19/6 |
| 16. | 19/6/24 | Identification of Related substance by caffeine using Thin layer chromatography | 48-49 | 25/6 |
| 17. | 25/6/24 | Quality control of Glass containers as per I.P | 50-54 | 26/6 |
| 18. | 26/6/24 | Assay of Ibuprofen using UV-visible spectrophotometer. | 55-58. | 08/7 |