

ADITYA

PHARMACY COLLEGE

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Approved by AICTE & PCI – NEW DELHI, Affiliated to JNTU KAKINADA

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

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B. PHARMACY

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III Year - II Semester

L	T	P	C
4	1	0	4

PHARMACEUTICAL TECHNOLOGY – II

UNIT – I

06

Capsules: Advantages and disadvantages of capsule dosage forms, materials for production of hard and soft gelatin capsules, sizes of capsules, capsule filling, soft processing problems in capsule manufacturing, importance of base absorption and minimum/gm factors in soft capsules, quality control, stability testing and storage of capsule dosage forms.

LO: To understand Capsule formulation, types, manufacturing and evaluation – Quality Control – Stability testing-storage.

UNIT - II

10

Microencapsulation: Types of microencapsulation and importance of microencapsulation in pharmacy, micron capsulation by coacervation phase separator, multi orifice centrifugal separation. Spray drying, spray congealing, polymerization complex emulsion, air suspension technique, and pan coating techniques, evaluation of microcapsules.

LO: To understand microencapsulation – Applications, Methods of preparation, evaluation – Applications of Microcapsules.

UNIT - III

10

Tablets: Formulation of different types of tablets, granulation technology on large-scale by various techniques, types of tablet compression machinery and the equipments employed evaluation of tablets.

LO: To understand tablet formulations, additives- manufacturing methods-equipment-Evaluation of quality & control.

UNIT - IV

08

Coating of Tablets: Types of coating, coating materials and their selection, formulation of coating solution, equipment for coating, coating processes, evaluation of coated tablets.

LO: To understand types of tablet coating – coating solutions- Equipment-Process- evaluation of Coating tablets.



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**"FORMULATION AND EVALUATION OF FAST
DISINTEGRATING TABLETS OF DOMPERIDONE
USING NOVEL HOLE TECHNOLOGY"**

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

(2020)



Jawaharlal Nehru Technological University, Kakinada, A.P

BY:

A.Shanmukha(163G1R0001)

B.D.M Hiranmayee (163G1R0002)

B. Pravallika (163G1R0003)

B. Sujitha (163G1R0004)

B. Sandhya (163G1R0005)

Under the guidance of,

Mrs. N.Navya Sudha M.Pharm

Asst. Professor

Department of pharmaceutics

Aditya Pharmacy College

Surampalem-533437

2019-2020



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CERTIFICATE



*This is to certify that the dissertation entitled "Formulation and Evaluation of fast disintegrating tablets of Domperidone using novel hole technology", 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 A.Shanmukha(163G1R0001) B.D.M Hiranmayee (163G1R0002), B. Pravallika (163G1R0003,) B. Sujitha (163G1R0004), B. Sandhya (163G1R0005) under the supervision of **Mrs. N.Navya Sudha** and it has been previously not submitted to any other University of Academic Institution for any higher degree.*

Place: Surampalem

Date:

Dr.V.Ravi Sankar, M.Pharm, Ph.D

Principal and Professor,

Aditya Pharmacy College

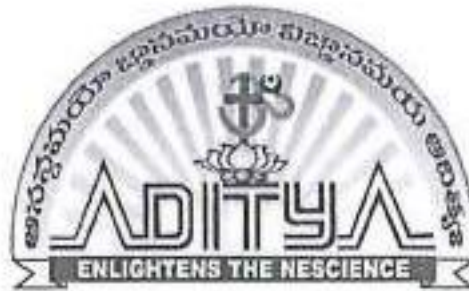
Internal Examiner

External Examiner



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SURAMPALAM 533 437

DECLARATION



*The project embodied in this thesis entitled "**Formulation and Evaluation of fast disintegrating tablets of Domperidone using novel hole technology**", was carried out in the Department of Pharmaceutics under the guidance of Mrs.N.Navya Sudha , 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.*

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B.D.M Hiranmayee (163G1R0002) *B.D.M. Hiranmayee*

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FORMULATION AND EVALUATION OF FAST DISINTEGRATING TABLETS OF DOMPERIDONE USING NOVEL HOLE TECHNOLOGY

10. SUMMARY AND CONCLUSIONS

Among all the orally administered dosage forms, tablet is most preferred because of ease of administration, compactness and flexibility in manufacturing. Solid dosage forms that can be dissolved or suspended with water in the mouth for easy swallowing are highly desirable for the pediatric and geriatric population, as well as other patients who prefer the convenience of readily administered dosage form. FDTs of Domperidone could be considered useful oral delivery systems to increase the drug bioavailability. From the study, it is concluded that Novel Hole Technology can be used to enhance the rate of disintegration and improved drug release rate. Thereby, the enhanced drug release leading to increased bioavailability of Domperidone. Thus, a satisfactory fast disintegrating tablet of Domperidone for large-scale production is feasible.

In present work, fast disintegrating tablets of Domperidone were prepared successfully by direct compression method using camphor as subliming agent, croscarmellose sodium, sodium starch glycolate in different concentrations (2%, 5%, 7.5%w/w). It was found better result with croscarmellose sodium(2% w/w) in tablet formulations with regard to wetting time, *in vitro* disintegration time and *in vitro* drug release.

The tablets are prepared by direct compression method (by the addition of super disintegrants) using camphor as subliming agent in order to create a porous structure. It was found to be the best approach in the formulation of fast disintegrating tablet. The prepared tablet also gives benefit in terms of patient compliance, avoids first pass effect, shows rapid onset of action, increased bioavailability, low side effect and good stability which make these tablets popular as a dosage form for the treatment of nausea.

Based on the above studies, following conclusions can be drawn

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IV Year - I Semester

L	T	P	C
0	0	3	2

BIOPHARMACEUTICS AND PHARMACOKINETICS LAB

1. Experiments **designed** for the estimation of various pharmacokinetic parameters with given Data (6 exercises).
2. Analysis of biological specimens for drug content and estimation of the pharmacokinetic parameters (at least 2 drugs).
3. *In vitro* evaluation of different dosage forms for drug release (4 experiments – tablets, capsules, suspensions and semi solids).
4. Statistical treatment of pharmaceutical data (ANOVA).

TEXT BOOK

1. B. Suresh, J.Raju and M.Vijay Kumar, Experimental Approaches to Biopharmaceutics and Pharmacokinetics.



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**"DESIGN, DEVELOPMENT AND CHARACTERIZATION OF
IMMEDIATE RELEASE TABLETS OF SALBUTAMOL BY 2³
FACTORIAL DESIGN WITH NATURAL SUPER-DISINTEGRANT"**

*Dissertation submitted to the Jawaharlal Nehru Technological University,
Kakinada in partial fulfilment of the requirements for the degree of Bachelor of
Pharmacy (2020)*



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

SUBMITTED BY

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BOGILLA SRI LEKHA (163G1R0007)

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BORRA MOUNIKA (163G1R0009)

BUDETI PRATYUSHA (163G1R0010)

UNDER THE GUIDANCE OF

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

Assistant professor



ADITYA PHARMACY COLLEGE

Surampalem - 533437

2019-2020



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Aditya Pharmacy College
SURAMPALAM-533 437

95

CERTIFICATE



This is to certify that the dissertation entitled "DESIGN, DEVELOPMENT AND CHARACTERIZATION OF IMMEDIATE RELEASE TABLETS OF SALBUTAMOL BY 2^3 FACTORIAL DESIGN WITH NATURAL SUPER-DISINTEGRANT" 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 BETINI HEMA (163G1R0006), BOGILLA SRI LEXHA (163G1R0007), BOLLINA SWATHI (163G1R0008), BORRA MOUNIKA (163G1R0009), BUDETI PRATYUSHA (163G1R0010). They have done this research work under the supervision of **Mr. S.P.N. Kumar, M. Pharm** and it has not been previously submitted to any other university or academic institution for any higher degree.

Dr. V. Ravi Sankar, *M.Pharm, Ph.D*

Principal,

Aditya Pharmacy College,

Surampalem-533437.

Place: Surampalem

Date:

Internal Examiner



External Examiner

PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 437

DECLARATION

The project embodied in this thesis entitled "DESIGN, DEVELOPMENT AND CHARACTERIZATION OF IMMEDIATE RELEASE TABLETS OF SALBUTAMOL BY 2^3 FACTORIAL DESIGN WITH NATURAL SUPER-DISINTEGRANT" was carried out in the department of Pharmaceutical Technology under the guidance of **Mr. S.P.N. Kumar**, M.pharm, Aditya Pharmacy College , Surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.

B. Hema

BETINI HEMA (163G1R0006)

B. Sri Lekha

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B. Swathi

BOLLINA SWATHI (163G1R0008)

B. Mounika

BORRA MOUNIKA (163G1R0009),

B. Pratyusha

BUDETI PRATYUSHA (163G1R0010),



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Conclusion

8. CONCLUSION

The summary of the results of project work can concluded as follows:

- Salbutamol is a BCS class-II drug which is intended for acute asthmatic exacerbations and chosen as a drug candidate for development of Immediate release tablets
- Superdisintegrants are used to release the drug quickly as well as to improve its bioavailability. Thus, Immediate release tablets of Salbutamol were prepared using Crosspovidone, Soya powder and Cross carmellose sodium as superdisintegrants.
- All the formulations have shown acceptable precompression and post compression parameters.
- From the obtained results, the effectiveness of superdisintegrants in terms of disintegration of drug is in the order of:

Cross carmellose Sodium > Soy powder > Sodium Starch Glycolate

- Depending upon the drug release and disintegration pattern, the order of drug release from the formulations is:

F8 > F4 > F3 > F7 > F5 > F2 > F6 > F1

- From the obtained results, F8 is found to be best formulation in terms of Disintegration time and in vitro drug release



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III Year - II Semester

L	T	P	C
4	1	0	4

PHARMACOLOGY – II**UNIT – I****08**

Pharmacology of Cardiovascular System – Drugs used in congestive heart failure & Cardiotonics.

Drugs used in cardiac arrhythmias, Antihypertensives, Drugs used in the treatment of Angina pectoris,

Drugs used in the therapy of shock.

LO: To acquire knowledge on CVS and its regulatory mechanisms, pathophysiology related to CVS diseases and disorders and Pharmacology of drugs used in the Cardio vascular diseases.

UNIT – II**06**

Drugs acting on blood forming organs: Anti-coagulants, Anti-platelets, Thrombolytics & hematinics.

Drugs acting on urinary system: Fluid and electrolyte balance, Diuretics & Antidiuretics.

LO: Grasping knowledge on treatment of blood disorders, kidney disorders.

UNIT – III**08**

Drugs acting on Endocrine system

Pancreatic hormone and Antidiabetic drugs, Thyroid & Antithyroid drugs, Gonadal hormones & Inhibitors, Adrenocorticosteroids & Adrenocortical antagonists, Hypothalamic & Pituitary Hormones.

LO: Grasping knowledge on Physiological role of Endocrine glands and its pathological conditions and the Pharmacology of drugs used.

UNIT – IV**06**

Autacoids: Histamine, Serotonin (5-HT) & their antagonists, Prostaglandins & leukotrienes, Pentagastrin, cholecystikinin, angiotensin, vasoactive peptides.

LO: To acquire knowledge on Autocoids, synthesis, metabolism and their Pharmacology.



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UNIT – V**06****Drugs Acting on the Respiratory System.**

Anti-asthmatic drugs including bronchodilators, Anti-tussives & expectorants, Respiratory stimulants.

LO: Impart knowledge on respiratory diseases and the Pharmacology of drugs.

UNIT – VI**16**

Chemotherapeutic agents and their applications: General principles of chemotherapy,

Sulphonamides and co-trimoxazole, Antibiotics: Penicillins, cephalosporins, betalactams,

Chemotherapeutic agents and their applications: Tetracyclines aminoglycosides, chloramphenicol, erythromycin, quinolones and miscellaneous antibiotics.

Chemotherapy of tuberculosis & leprosy.

Chemotherapy of fungal diseases, viral diseases, urinary tract infections and sexually transmitted diseases.

Chemotherapy of malignancy and immunosuppressive Agents.

LO: To gain knowledge on Chemotherapeutics and various classes of drugs used for infection and diseases.

TEXT BOOKS

1. Sathoskar, Pharmacology and pharmaco therapeutics Vol. 1 & 2, Publ by Popular Prakashan, Mumbai.
2. Tripathi, Textbook of Pharmacology, JAYPEE.
3. H.P Rang, M. M. dale & J.M. Ritter, Pharmacology, Churchill living stone.
4. F.S.K. Barar, Text book of Pharmacology, S.Chand.
5. F.S.K Barar, Essentials of Pharamcotherapeutics.

REFERENCES

1. J.G. Hardman and Lee E. Limbard, Good Mann & Gilmann: The Pharmacological Basis of Therapeutics, Mc Graw hill, Health Professions Dvn.
2. Bertram. G. Katzung, Basic and clinical pharmacology, 9th Edn, Mc Graw hill.
3. J. Crossland, Lewis 's Pharmacology, Church living stone.
4. Leilani Grajeda, Understanding Pharmacology: A Physiological Approach



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COMPARATIVE STUDY OF IN VIVO EFFECTS OF GLIMEPIRIDE AND
METFORMIN HYDROCHLORIDE ON PLASMA CONCENTRATION OF
DERIPYLLIN IN HEALTHY RATS

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

G.Mounika (163G1R0011)

G.Haritha (163G1R0012)

G.Neharika (163G1R0013)

J.Keerthi (163G1R0014)

K.Victor babu(163G1R0015)

Under the guidance of

K.PYDIRAJU, M.Pharm.

Associate Professor



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

Batch: 2016-2020

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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 "COMPARATIVE STUDY OF IN VIVO EFFECTS OF GLIMIPRIDE AND METFORMIN HYDRO CHLORIDE ON PLASMA CONCENTRATION OF DERIPHYLLIN IN HEALTHY RATS" submitted in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2016-2020. This is a bonafide work carried out by G.mounika(163G1R0011), G.haritha(163G1R0012), G.Neharika(163G1R0013), j.keerthi(163G1R0014), K.Victor babu(163G1R0015), under the direct guidance and supervision of K.PYDIRAJU M.Pharm. Associate Professor Aditya pharmacy college, surampalem, Andhra Pradesh.

(Internal examiner)

(External examiner)



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DECLARATION

We hereby declare that the dissertation work entitled "COMPARATIVE STUDY OF IN VIVO EFFECTS OF GLIMIPRIDE AND METFORMIN HYDRO CHLORIDE ON PLASMA CONCENTRATION OF DERIPHYLLIN IN HEALTHY RATS" in partial fulfillment of the degree in bachelor of pharmacy of the JNT University, Kakinada for the academic year 2016-2020, 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 Mr. k. Pydiraju, M.Pharm. Aditya pharmacy college, surampalem, Andhra Pradesh. we also declare that the matter embodied in it is a genuine work

G. Mounika

G.Mounika(163G1R0011)

G. Haritha

G.Haritha(163G1R0012)

G. Neharika

G.Neharika(163G1R0013)

J. Ramya Keerthi

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K. Victor Babu

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7.CONCLUSION

This study it was concluded that glimepride and Metformin HCL oral Antidiabetic, potentiates the Deriphyllin action in Asthma treatment.

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



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A handwritten signature in green ink, consisting of a stylized 'A' followed by a large 'X'.

III Year - I Semester

L	T	P	C
4	1	0	2

ENVIRONMENTAL SCIENCES

UNIT – I

10

Multidisciplinary Nature of Environmental Studies: Definition, Scope and Importance– Need for Public Awareness.

Natural Resources : Renewable and non-renewable resources – Natural resources and associated problems – Forest resources – Use and over – exploitation, deforestation, case studies – Timber extraction – Mining, dams and other effects on forest and tribal people – Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. - Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources. Case studies. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

LO: To know environment, Natural resource, Conservation of national resources

UNIT – II

10

Ecosystems : Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. - Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of the following ecosystem:

- Forest ecosystem
- Grassland ecosystem
- Desert ecosystem
- Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

LO: To understand various Ecosystems Characteristic features, structural functions of each

UNIT-III

10

Biodiversity and its conservation : Introduction - Definition: genetic, species and ecosystem diversity. - Bio-geographical classification of India - Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values - Biodiversity at global, National and local levels. - India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. - Endangered and endemic species of India – Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

LO: To understand biodiversity-basic principles-Conservation of Biodiversity



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UNIT –IV**10****Environmental Pollution :** Definition, Cause, effects and control measures of :

- a. Air pollution
- b. Water pollution
- c. Soil pollution
- d. Marine pollution
- e. Noise pollution
- f. Thermal pollution
- g. Nuclear hazards

Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
 - Role of an individual in prevention of pollution. - Pollution case studies. - Disaster management: floods, earthquake, cyclone and landslides.

LO: To know about environmental pollution, types of pollution-Causes-Measures to prevent and solid waste management-techniques/Methods.

UNIT – V**05**

Social Issues and the Environment: Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies – Waste land reclamation, Consumerism and waste products. Environment Protection Act -Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act, Issues involved in enforcement of environmental legislation, Public awareness.

LO: To know about social issues in environment, ethics, Acts related to environmental protection and conservation.

UNIT –VI**05**

Human Population and the Environment: Population growth, variation among nations. Population explosion – Family Welfare Programme. -Environment and human health. -Human Rights. -Value Education. HIV/AIDS. -Women and Child Welfare. -Role of information Technology in Environment and human health.

LO: Different aspects of human population and environment and their importance.

Text Books :

1. An Introduction to Environmental Studies by B. Sudhakara Reddy, T. SivajiRao, U. Tataji & K. Purushottam Reddy, Maruti Publications,

Reference:

1. Text Book of Environmental Studies by Deeshita Dave & P. UdayaBhaskar, Cengage Learning.
2. Environmental Studies by K.V.S.G. Murali Krishna, VGS Publishers, Vijayawada
3. Text Book of Environmental Sciences and Technology by M. Anji Reddy, BS Publications.



PRINCIPAL
 Aditya Pharmacy College
 SURAMPALAM 533 437

DETERMINATION OF CONTENT OF ALUMINIUM LEACHING FROM **FOOD** CONTAINERS UNDER STRESSED CONDITIONS"

*Dissertation submitted to the Jawaharlal Nehru technological university,
Kakinada in partial fulfillment of the requirements for the degree of bachelor
of pharmacy (2020)*



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY,
KAKINADA

SUBMITTED BY

K. Divya teja(163G1R0016)

K. Bhagya sri (163G1R0019)

K.Geetha (163G1R0017)

K.Prathyusha(1633G1R0020)

K.Sravana sowmya(163G1R0018)



UNDER THE GUIDANCE OF

CH.HEMANTH KUMAR M.Pharm, (Ph.D)

Assistant Professor

ADITYA PHARMACY COLLEGE

Surampalem – 533437

2019-2020

CERTIFICATE



This is to certify that the dissertation entitled "**DETRMINATION OF CONTENT OF ALUMINIUM LEACHING FROM FOOD CONTAINERS UNBER STRESSED CONDITIONS**" 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 . K. Divya teja(163G1R0016) K.Geetha(163G1R0017),k.sravanasowmya(163G1R0018),K.Bhagyasri(16G1R0019) K.Pratyusha(163G1R0020)They have done this research work under the supervision of **Ch. Hemanth kumar m.pharm Ph.d** and it has not been previously submitted to any other university or academic institution for any higher degree.

Aditya pharmacy college,

Surampalem-533437.

Place: surampalem

Date:

**Internal Examiner
Examiner**

External




PRINCIPAL
Aditya Pharmacy College
SURAMPALAM 533 437

DECLARATION

The project embodied in this thesis entitled "**DETERMINATION OF CONTENT OF ALUMINIUM LEACHING FROM FOOD CONTAINERS UNDER STRESSED CONDITIONS**" was carried out in the department of pharmaceutical technology under the guidance of CH.HEMANTH KUMAR SIR, m. pharm, aditya pharmacy college, surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.

K. Divya teja

K.DIVYA TEJA(163G1R0016)

K. Geetha

K. GEETHA(163G1R0017)

K. Sravana Sowmya

K.SRAVANA SOWMYA(163G1R0018)

K. Bhagya

K.BHAGYA SRI(163G1R0019)

K. Prathyusha

K.PRATHYUSHA(163G1R0020)



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Aditya Pharmacy College
SURAMPALEM-533 437

Determination of content of aluminium leaching from the food containers under stressed conditions

CONCLUSION

The summary of results of projects can be concluded as:

- There is drastic leach of aluminium from Aluminium containers in basic and neutral conditions
- Leaching is negligible in acidic conditions
- From the work we have done till now it was observed that There is a chances of leaching of aluminium and other substances from the food containers under stressed conditions and we want to continue our work by furthrt working on it by using other methods
- With the continuous use of aluminium containers there is chance of increase in aluminium load in brain which leads to alzheimers disease.
- So it is better to stop usage the aluminium food container and replace them with glass or other material.



III Year - I Semester

L	T	P	C
4	1	0	4

PHARMACEUTICAL TECHNOLOGY – I**UNIT – I****10**

Preformulation: Physicochemical properties like physical form, particle size, shape, density, wetting, dielectric constant, solubility, dissolution, organoleptic additives, hydrolysis, oxidation reduction, recemization, polymerization, etc., and their effect on formulation, stability and bioavailability. Study of Prodrugs. Stability testing of finished products as per ICH guidelines.

L.O: To understand preformulation parameters and their significance, methods, stability testing protocols, ICH guidelines.

UNIT – II**12**

Liquid dosage forms: Introduction, types of additives used in formulations, vehicles, stabilizers, preservatives, suspending agents, emulsifying agents, solubilizers, colors, flavours and other manufacturing, packaging and evaluation of clear liquids, suspensions and emulsions official in pharmacopoeia.

L.O: To understand liquid dosage formulations, additives, manufacturing, evaluation, packaging procedures, official preparations.

UNIT – III**10**

Semisolid dosage forms: Definitions, types, mechanisms of drug penetration, factors influencing penetration, semisolid bases and their selection. General formulation of semi solids, clear gels manufacturing procedure, evaluation and packaging.

Suppositories: Ideal requirements of bases, Different types of bases, manufacturing procedure, packing and evaluation.

L.O: To understand semisolid and suppositories preparations, their formulations, methods of preparation, evaluation and packaging.

UNIT – IV**06**

Pharmaceutical aerosols: Definition, propellants general formulation, manufacturing and packaging methods, pharmaceutical applications.

Ophthalmic Preparations: Requirements, formulation, methods of preparation, containers, evaluation.

L.O: To understand aerosols, ophthalmic preparations, their formulation, types, preparations, packaging and evaluation methods.




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UNIT – V**06**

Cosmeticology and Cosmetic Preparations - I: Fundamentals of cosmetic science, structures and functions of skin and hair. Formulation, preparation and packaging of cosmetics for skin like powders and compacts, skin creams (Cold cream and Vanishing cream), sun screen preparations & cosmetics for Hair like Shampoos, hair colorants, hair removers.

L.O: To understand cosmetics science, functions of skin and hair, cosmetic properties and their formulations, preparations and evaluation methods.

UNIT – VI**06**

Cosmeticology and Cosmetic Preparations – II: Formulation, preparation & packaging of dentrifices like tooth powders, pastes, gels etc., and manicure preparations like nail polish, lipsticks, eye lashes, baby care products etc.

L.O: To understand formulation, preparations and packaging of various cosmetics preparations.

TEXT BOOKS

1. L. Lachman, H.A. Lieberman and J.L. Kanig, Theory & Practice of Industrial Pharmacy, Lea & Febieger, Philadelphia Latest Edn.
2. CVS. Subramanyam, Pharmaceutical production and management, Vallabh Prakashan, New Delhi 2005.
3. BM Mithal and RN Saha, A handbook of Cosmetics, Vallabh Prakashan, New Delhi.
4. M.Vimala Devi, Textbook of Cosmetics, CBS Publishers.
5. Balsam S.M and Sagarin Edward, Cosmetics: Science and Technology, 2nd Ed. 3 Vol set.

REFERENCES

1. Shobha Rani, Text of Industrial Pharmacy, Hiremath Orient Longman.
2. Sagarin & MS Balsam, Cosmetics Sciences & Technology Vol. I, 2 & 3
3. Lippincott Williams and Wilkins, Remington Pharmaceutical Sciences.
4. E.A. Rawlkins, Bentley's Text Book of Pharmaceutics, Elbs publications.
5. HC Ansel Introduction to Pharmaceutical Dosage forms
6. S.H. Willing, M.M. Tucherman and W.S. Hitchings IV, Good Manufacturing Practices for Pharmaceuticals: A Plan for Total Quality Control, Marcel Dekker, Inc., New York 1998.
7. Gilbert S. Banker and Christopher T Rhodes, Modern Pharmaceutics, IV Ed, Marcel Dekker, USA, 2005.
8. Poucher's, Perfumes, cosmetics and soaps, 10th Edition by Hilda Butler.




 PRINCIPAL
 Aditya Pharmacy College
 SURAMPALAM 533 437

«DISSOLUTION KINETICS OF ACECLOFENAC SUSTAINED RELEASE MATRIX TABLETS»

Dissertation submitted to the JNTUK University in fulfillment of the requirements for the
Degree of Bachelor of Pharmacy.



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA, A.P

PROJECT BY:

KOPPANA VINEETHA	(163G1R0021)
KOTHAPALLI HEMALATHA	(163G1R0022)
KOTIPALLI THEJASWI	(163G1R0023)
LAAIQAH MOIN	(163G1R0024)
MALLIPUDI PRASANTH KUMAR	(163G1R0025)



Under the guidance of:

Dr. RAVI SANKAR VANKA, M. Pharm, Ph.D.
Principal of Aditya Pharmacy College Department
of Pharmaceutics.

ADITYA PHARMACY COLLEGE
SURAMPALEM-533437




PRINCIPAL
 Aditya Pharmacy College
 SURAMPALEM 533 437

CERTIFICATE



This is to certify the dissertation entitled "*DISSOLUTION KINETICS OF ACECLOFENAC SUSTAINED RELEASE MATRIX FORMULATION*" was submitted to the Jawaharlal Nehru technological university, Kakinada in partial fulfillment of the requirements for the award for the degree of Bachelor of Pharmacy is a record of original research work carried out by K.VINEETHA (163G1R0021), K.HEMALATHA (163G1R0022), K.THEJASWI (163G1R0023), LAAIQAHI MOIN (163G1R0024), M.PRASANTH KUMAR (163G1R0025). They have done this research work under the supervision of **Dr. V. Ravi Sankar** and it has not been previously submitted to any other university or academic institution for any higher degree.

Dr. V. Ravi Sankar, M. Pharm, Ph.D.
Principal,
Aditya Pharmacy College, Surampalem -
533437.

Date:

Internal examiner

External examiner




PRINCIPAL
Aditya Pharmacy College
SURAMPALAM 533 437

DECLARATION

The project embodied in this thesis entitled "DISSOLUTION KINETICS OF ACECLOFENAC SUSTAINED RELEASE MATRIX TABLETS" was carried out in the pharmaceutical technology under the guidance of **Dr. Ravi Sankar**, M. Pharm, Ph. D, Aditya Pharmacy College, Surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.

K. Vineetha

K. VINEETHA (163G1R0021)

K. Thejaswi

K. THEJASWI (163G1R0023)

K. Hemalatha

K. HEMALATHA 163G1R0022)

Laaiahmoin

LAAIQA MOIN (163G1R0024)

M. Prasanth

M.PRASANTH KUMAR (163G1R0025)



[Signature]
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SURAMPALÉM-533 437

SUMMARY AND CONCLUSION

6. SUMMARY AND CONCLUSION

Sustained release tables of Aceclofenac tablets were prepared using polymer like hydroxy propyl methyl cellulose K15 and K100 in different ratios for sustained release formulation.

All the formulations have shown acceptable Precompression parameters.

Optimization of the formulations were done by using 2 responses in 3 square design i.e. hardness and disintegration time.

- Out of two formulations FA & FB, FA formulation was chosen as the better formulations by calculating the errors using ANOVA statistical tool.
- The drug release profiles of FA formulation was compared with marketed sustained release formulation and the dissolution kinetics of those formulations was determined.
- It was observed that, both FA and marketed formulation followed first order kinetics. Higuchi and Peppas graphs were also plotted.
- The similarity and dissimilarity factors of the test formulation and marketed formulation were determined and the results were under acceptable range.
- Sustained release tables of Aceclofenac tablets were formulated and dissolution kinetics were calculated from the experimental results, it was found that the drug release followed higuchi model no fickian mechanism.
- Our formulation showed comparable results with marketed formulation.



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II Year - I Semester

L	T	P	C
4	1	0	3

PHARMACEUTICAL MICROBIOLOGY**UNIT I****10**

Introduction to Microbiology: Origin, scope and discovery of spontaneous generation theory, contributions of Antony Von Leeuwenhoek, Pasteur, Koch and Lister.

Diversity of Microorganisms: Prokaryotes versus Eukaryotes – Eukaryotic and Prokaryotic cell structure, three domains of life (Bacteria, Archea and Eukaryotes). Pharmaceutical significance of Protozoa, Algae, Fungi, Bacteria and Viruses. Characterization and identification of microorganisms.

LO: To understand diversity of microorganisms and their spontaneous generation and use and harmful nature.

UNIT II**10**

Nutrition and Growth of Microbes: Nutritional requirements, types of nutrient media and growth conditions and nutritional types based on energy source.

Isolation, cultivation (aerobic & anaerobic) and preservation of microorganisms, physiology of growth, bacterial growth curve, methods for determining bacterial numbers, mass and cell constituents. Exponential growth and generation time. Bacterial growth in batch and continuous culture (chemostat and turbidostat) synchronous growth.

Microorganisms and their Environment: *Effects and microbial adaptations to environmental conditions* – Temperature, oxygen desiccation, extreme cold ionic effect, electricity, osmotic pressure, radiant energy, hydrostatic pressure, mechanical impact, vibration.

LO: To understand that bacterial growth curve consist of rapid growth followed by stabilization and later decline due to exhaustion of nutrients and several parameters affects the above.

UNIT III**08**

Control of Microorganisms: General Concepts, Inhibition of growth and killing, sterilization and disinfection, antiseptics and sanitation, mode of action application & limitation of physical agents (moist and dry heat, radiation and filtration), chemical agents. Various types of disinfectants, factors affecting sterilization and disinfection, evaluation of antimicrobial activity. Chemotherapeutic agents, mode of action and applications. Drug resistance. Official methods of sterility testing of pharmaceuticals and biosafety measures.

LO: To understand that moist heat, dry heat, radiation, filtration, chemicals can be used for sterilization and disinfection to provide aseptic condition in the filling areas, operation theatres etc

UNIT IV**10**

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Bacterial Genetics: Genetic recombination in bacteria, DNA replication, transcription and translation, Gene regulation (lac operon and tryptophan operon). Mutagenesis, chemical and physical mutagens.

LO: To understand the concept of bacterial resistance to antibiotics and other conditions.

UNIT V

04

Epidemiology of Diseases: Study of etiology, diagnosis, source of infection, mode of transmission, immunization methods, prevention and control of the following diseases. Bacillary dysentery, diphtheria, tuberculosis, leprosy, cholera, typhoid, syphilis, gonorrhea, tetanus, food poisoning and infection hepatitis.

LO: To understand that microbes are responsible for causing certain diseases.

UNIT VI

08

Microbiological Assays: Principles and methods involved in Assay of Antibiotics, Vitamins, Amino acids & Bio-Sensors in Analysis.

LO: To understand that Antibiotics/Vitamins can be standardized by microbial assays.

TEXT BOOKS

1. Pelczar and Reid, Text Book of Microbiology
2. Anantha Narayan and Jayram Panikar, Text Book of Microbiology, Orient Longman, Delhi.
3. N.K. Jain, Pharmaceutical Microbiology
4. Alcamo, Microbiology.

REFERENCES

1. Heritage, J, Introductory Microbiology.
2. Nester, Anderson, Roberts, Pearsall, Microbiology, McGraw-Hill.
3. Hugo, W B Pharmaceutical Microbiology.
4. Tortora A. Gerard, Text Book of Microbiology.




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 SURAMPALEM 533 437

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

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



BACHELOR OF PHARMACY

(2016-2020)

Submitted by

M.ANISHA DEVI (163G1R0026)

M.PRABHA (163G1R0027)

M.GEETHANJALI DEVI (163G1R0028)

M.NAVAZIYA (163G1R0030)

N.ASHA JYOTHI (163G1R0031)

Under the guidance of

SHAIK.RAFI M.Pharm



ADITYA PHARMACY COLLEGE

SURAMPALEM - 533437




PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

CERTIFICATE



This is to certify that the dissertation entitled "SYNTHESIS AND ANTIBACTERIAL ACTIVITY OF SOME NOVEL 1-[SUBSTITUTED]BENZOTRIAZOLE-1-YL-3-(PHENYL)]-PROPENONE" was submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment of the award of the degree of Bachelor of Pharmacy is a record of original research work carried out by M.Anisha(163G1R0026), M.G.S.S.Prabha(163G1R0027), M.Geethanjali(163G1R0028), MD.Navaziya(163G1R0030), N.Asha Jyothi(163G1R0031). 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.

Dr. V. Ravi Sankar,

Principal,

Aditya Pharmacy College,

Surampalem-533437.

Place: Surampalem

Date:

Internal examiner



External examiner

PRINCIPAL

Aditya Pharmacy College
SURAMPALEM-533 437

Page 1

Aditya Pharmacy College

DECLARATION

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

M. Anisha Devi (163G1R0026) *M. Anisha Devi*

M.G.S.S. Prabha (163G1R0027) *M. G. S. S. Prabha*

M. Geethanjali Devi (163G1R0028) *M. Geethanjali Devi*

MD. Navaziya (163G1R0030) *MD. Navaziya*

N. Asha Jyothi (163G1R0031) *N. Asha Jyothi*



[Signature]
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SUMMARY AND CONCLUSION

- The title compounds were prepared by taking equal moles of compound-2 and suitable aldehyde in a clean mortar and triturate with 40% alcoholic NaOH by adding drop by drop the solid product comes around 15 to 20 min.
- All the compounds synthesized were characterized by physical (R_f values, melting point, molecular weight, molecular formula).
- The title compounds were screened for antibacterial activity. The tested compounds have antibacterial activity at 250 μ ml concentration.



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SURAMPALEM-533-437

III Year - II Semester

L	T	P	C
0	0	3	2

PHARMACOLOGY LAB

1. To study the inotropic and chronotropic effects of drugs on isolated frog heart.
2. To study the effect of drugs on rat ileum.
3. To study the effects of drugs on isolated normal and hypodynamic frog heart.
4. To determine the dose-response curve of acetylcholine using rectus abdominus muscle of frog.
5. To determine the potentiating effect of neostigmine on the action of acetylcholine on Rectus abdominus muscle of frog.
6. To find the antagonistic effect of pancuronium against the action of acetylcholine on Rectus abdominus muscle of frog.
7. To record the CRC of 5-HT on rat fundus preparation.
8. To record the CRC of histamine on guinea pig ileum preparation.
9. Experiments pertaining to analgesia. (*Only demonstration*).
10. Experiments pertaining to anti-convulsant activity. (*Only demonstration*).
11. Experiments pertaining to anti-inflammatory activity (*Only demonstration*).
12. To determine the hypoglycemic activity of drugs (second generation antidiabetic drugs) on rabbits / albino rats. (*Only demonstration*).



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SURAMPAL - 533 437

**"In-Vitro Antioxidant Activity and In-Vivo Nootropic
Activity of Ethanolic Extract of *Nigella sativa* seeds in
Wister Albino Rats"**

*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.,

Submitted By

P.V.S.S.SARANYA (163G1R0038)

P.NAVYA SRI (163G1R0039)

P.DIVYA (163G1R0040)

R.RAMYA (163G1R0041)

R.SUBBALAKSHMI (163G1R0042)



Under the Guidance of:

Mr. A.TIRUPATHI RAO M.Pharm.(PhD)

Asst. Professor

Department Of Pharmacology

Aditya Pharmacy College

Surampalem – 533437

2016-2020



PRINCIPAL

**Aditya Pharmacy College
SURAMPAL - 533 437**

CERTIFICATE



This is to certify that the dissertation entitled "In-Vitro Antioxidant Activity and In-Vivo Nootropic Activity of Ethanolic Extract of Nigella sativa Seeds in Wistar Albino Rats", 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 P.V.S.S.Saranya (163G1R0038), P.Navya Sri (163G1R0039), P.Divya (163G1R0040), R.Ramya (163G1R0041), R.Subbalashmi (163G1R0042) under the supervision of Mr. A. Tirupathi Rao M.pharm(Ph.D.) and it has been previously not submitted to any other University or academic institution for any higher degree.

Dr. V. RAVISANKAR, M.Pharm, Ph.D.

Principal & Professor,

Aditya Pharmacy College

Surampalem.

Place: Surampalem

Date:

Internal Examiner

External Examiner



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Aditya Pharmacy College
SURAMPALAM 533 437



DECLARATION

The project embodied in this thesis entitled "In-Vitro Antioxidant Activity and In-Vivo Nootropic Activity of Ethanolic Extract of Nigella sativa Seeds in Wister Albino Rats" was carried out in the Department of Pharmacology under the guidance of **Mr. A.Tirupathi Rao, M.Pharm, Aditya Institute of Pharmaceutical Sciences & Research, Surampalem.** The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.


P.V.S.S.Saranya (163G1R0038)

P.Navya Sri (163G1R0039)

P.Divya (163G1R0040)

R.Ramya (163G1R0041)

R.Subbalashmi (163G1R0042)


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7. CONCLUSION

The Ethanolic extract of *Nigella sativa* found to have significant effect on free radical scavenging activity and antioxidant activity.

From the table, it is found that the *N. sativa* extract has significant activity in spatial memory and learning. This indicates that the extract has nootropic or memory activity.



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

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SURAMPALEM-533 437

III Year - II Semester

L	T	P	C
0	0	3	2

PHARMACEUTICAL TECHNOLOGY – II LAB

At least 25 Pharmaceutical preparations related to the topics are to be prepared

1. Experiments to illustrate preparation, stabilization, physical, chemical and biological evaluation of pharmaceutical products like capsules (2*), tablets (8*), Parenterals – Ampoules (4*), Large Volume Parenterals (4*), Microcapsules (2*).
2. Quality control test for Tablets (2*) and Capsules (2*) as per IP 2014.
3. Quality control test for Glasses as per IP 2014.

* indicates number of experiments




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**"DEVELOPMENT, CHARACTERIZATION AND COMPARATIVE
EVALUATION OF IMMEDIATE RELEASE AMLODIPINE TABLETS"**

*Dissertation submitted to the Jawaharlal Nehru Technological University,
Kakinada in partial fulfilment of the requirements for the degree of Bachelor of
Pharmacy (2020)*



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

SUBMITTED BY

SAILA LAKSHMI SRAVANTHI (163GIR0043)
SAPPIDIBHAVISHYA CHOWDHURY (163GIR0044)
SATTILPAVANSURESH REDDY (163GIR0045)
SATTILPRASANTH KUMAR (163GIR0046)
SEESAMCHANTI (163GIR0047)

UNDER THE GUIDANCE OF

Mr. DASARI NAGASEN, M. Pharm.
Assistant professor



ADITYA PHARMACY COLLEGE

Surampalem - 533437

2019-2020



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SURAMPALAM-533 437

CERTIFICATE



This is to certify that the dissertation entitled "DEVELOPMENT, CHARACTERIZATION AND COMPARATIVE EVALUATION OF IMMEDIATE RELEASE AMLODIPINE TABLETS" 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 SAILA LAKSHMI BRAVANTHI (163G1R0043), SATTIDJ BHAVISHYA CHOWDHURY (163G1R0044), SATTILPAVANSURESH REDDY (163G1R0045), SATTIPRASANTH KUMAR (163G1R0046), SEESAM CHANTI (163G1R0047). They have done this research work under the supervision of **Mr. DASARI NAGASEN, M. Pharm** and it has not been previously submitted to any other university or academic institution for any higher degree.

Dr. V. Ravi Sankar, *M.Pharm, Ph.D*

Principal,

Aditya Pharmacy College,

Surampalem-533437.

Place: Surampalem

Date:

Internal Examiner

External Examiner




PRINCIPAL
Aditya Pharmacy College
SURAMPalem 533437

DEPARTMENT OF PHARMACEUTICSABSTRACTABSTRACT

The basic aim of this study is the formulation, optimization and evaluation of immediate release amlodipine tablet IP 10 mg tablets by direct compression method. Amlodipine in the form of amlodipine besylate is used for the treatment of mild to moderate hypertension, chronic stable angina pectoris or vasospastic angina (prinz metals or variant). Totally 5 preparations are prepared with Amlodipine. Mannitol and microcrystalline cellulose as diluents, Crosscarmellose sodium used as disintegrant, talc as glidant, Magnesium stearate as lubricant. The amlodipine blend was prepared by manual blending. Pre compression parameters like bulk density, true density, angle of repose, Compressibility index, Hausner's ratio indicate all the formulations are showing good flow properties. Powdered blend was compressed to produce tablets are evaluated for post compression parameters like Wight variations, hardness, friability, disintegration and dissolutions parameters. In vitro dissolution profile of all the formulations were compared with marketed dissolution profile, from that F2-F4 does not show remarkable similarity (f_2) of Dissolution profile with marketed formulation. Formulation F5 shows the 99.87% of drug release and show similarity (f_2) with marketed dissolution profile. Among all the formulations F5 showing the release profile (99.87%) similar to the innovator. By this evaluation results F5 was selected as the optimized formulation. F5 meet all the specification with the marketed formulation (Amlokind 10 mg)

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8. SUMMARY AND CONCLUSION

Studies have been carried out on Amlodipine with an objective of preparing the amlodipine 10 mg tablets by using direct compression technique and comparing the optimized formulation with marketed formulation Amlokind by using similarity factor (f_2) value.

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

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

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

Formulation trial F1 had shown compression defect sticking, so to overcome this in the formulation trial F2, talc had added which has shown good results. In formulation optimization we had taken the change in concentration of croscarmellose sodium to meet the dissolution with marketed formulation.

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

Formulation trials F1-F4 does not meet the criteria for dissolution when compared with the marketed formulation by using similarity factor (f_2). Among all the formulations F5 had shown good dissolution results with Amlokind and the similarity factor (f_2) has shown value 81.

The formulation F5 had shown good results in post compression parameters like Weight variation, Hardness, Friability, Disintegration Drug content and Dissolution parameters. The release profile of the formulation F5 had shown 97.3% and an assay value as 101.2%. The release profile of the AMLOKIND had shown 98.2% and an assay value as 100.4%.

From the study, it is concluded that the invitro release of Amlodipine 10mg tablets prepared by using formulation (F5) has shown good results than the marketed formulation (Amlokind).

II Year - II Semester

L	T	P	C
4	1	0	3

MEDICINAL CHEMISTRY-I

UNIT-I

09

Heterocyclic compounds:

1. Five and six membered ring systems with heteroatoms: Furan, Pyrrole, Thiophene, Pyridine, Imidazole, Pyrazole, Oxazole, Isoxazole, Thiazole and Pyrimidine.
2. Fused ring systems with heteroatoms: Quinolines, Isoquinolines, Acridine, Benzimidazole and Phenothiazine.

LO: Nomenclature (numbering), one or two methods of preparation, important reactions, mechanisms and examples of drugs having the above ring systems.

UNIT-II

06

1. **Drug activity and physico-chemical properties:** Solubility, partition coefficient, hydrogen bonding, chelation, surface activity, bioisosterism, optical and geometrical isomerism, prodrugs and soft drugs.
2. **Mechanism of drug action:** receptor theories, enzyme stimulation and enzyme inhibition.
3. **Drug metabolism:** Phase I and Phase II reactions, factors affecting drug metabolism.

LO: Concepts involving receptors, drug-receptor interaction forces, mechanisms, equations, structures, advantages.

UNIT-III

10

Drugs acting on CNS:

1. **Hypnotics and anxiolytics:** Phenobarbital, Diazepam and Alprazolam.
2. **Antipsychotics:** Chlorpromazine and Haloperidol.
3. **Antiepileptics:** Phenytoin, Carbamazepine, Valproate sodium.
4. **Antidepressants:** Imipramine, Amitriptyline, Isocarboxazide, Iproniazide.
5. **General anaesthetics:** Ketamine, Halothane and Thiopental sodium.

LO: Definition, scope, classification, mode of action, Structure-Activity Relationship (SAR) wherever applicable, therapeutic uses and **synthesis** of compounds as given above under each class.

UNIT-IV

09

1. **Adrenergic drugs:** Amphetamine, Salbutamol, Ephedrine, Phenylephrine and Dopamine.
2. **Adrenergic blockers:** Prazosine, Tolazoline, Propranolol, Atenolol.
3. **Cholinergic drugs:** Carbachol, Bethanichol.
4. **Anticholinergics:** Propantheline, Dicyclomine.
5. **Neuromuscular blockers:** Succinyl choline.



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LO: Definition, scope, classification, mode of action, Structure-Activity Relationship (SAR) wherever applicable, therapeutic uses and synthesis of compounds as given above under each class.

UNIT-V

08

1. **Analgesics and Non-steroidal anti-inflammatory agents (NSAIDs):** Paracetamol, Aspirin, Ibuprofen, Indomethacin, Diclofenac.
2. **Narcotic analgesics:** Meperidine, Methadone.
3. **Local anaesthetics:** Benzocaine, Procaine, Lignocaine and Dibucaine

LO: Definition, scope, classification, mode of action, Structure-Activity Relationship (SAR) wherever applicable, therapeutic uses and synthesis of compounds as given above under each class, an understanding of morphinans, its agonists and antagonists.

UNIT-VI

08

1. **Oral antihyperglycemic agents:** Tolbutamide, Gliclazide, Glipizide, Glibenclamide, Metformin and Pioglitazone.
2. **Thyroid drugs:** Methimazole, Propylthiouracil
3. **H1-receptor antagonists:** Diphenhydramine, Chlorpheniramine, Chlorcyclizine, Cetrizine.
4. **H2-receptor antagonists:** Ranitidine
5. **Proton pump inhibitors:** Omeprazole, Rabeprazole, Lansaprazole.

LO: Definition, scope, classification, mode of action, Structure-Activity Relationship (SAR) wherever applicable, therapeutic uses and synthesis of compounds as given above under each class.

TEXT BOOKS

1. JH Block & JM Beale (Eds), Wilson & Giswold's Text book of organic Medicinal Chemistry and pharmaceutical chemistry, 11th Ed, Lippcott, Raven, Philadelphia, 2004.
2. S. N. Pandeya, Textbook of medicinal chemistry, SG Publ. Varanasi, 2003.
3. M. Atherden, Bentley and Driver's Textbook of Pharmaceutical Chemistry, Ed: 1, Oxford University Press, Delhi.

REFERENCES

1. D. Abraham (Ed), Burger Medicinal chemistry and Drug discovery, Vol. 1 & 2. John Wiley & Sons, New York 2003, 6th Ed.
2. Lippincott Williams and Wilkins, Remington: The Science and Practice of Pharmacy, 20th Edition.
3. B.N. Lads, MG.Mandel and F.L way, Fundamentals of drug metabolism & disposition, William & welking co, Baltimore USA.
4. C. Hansch, Comprehensive medicinal chemistry, Vol 1 – 6 Elsevier pergmon press, Oxford




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SYNTHESIS AND *IN-VITRO* ANTHELMINTIC STUDY OF SOME NOVEL COUMARIN-BENZIMIDAZOLE HYBRID ANALOGUES

DISSERATION SUBMITTED TO JNTUK UNIVERSITY

In partial fulfillment for the award of Degree of Bachelor of Pharmacy



Submitted By:

Vasantha Sandhya	(Regd No. 163G1R0053)
Velugula Surekha	(Regd No. 163G1R0054)
Yalamati Sri Divya	(Regd No. 163G1R0055)
Yalla Likhitha	(Regd No. 163G1R0056)
Yeluri Priya Pravallika	(Regd No. 163G1R0057)
Kuchibhotla Manogna	(Regd No. 163G1R0058)

Under supervision of:

CH. Venkata Apparao

Assistant Professor

Department of Pharmaceutical Chemistry



ADITYA PHARMACY COLLEGE

Surampalem, East Godavari District, Andhra Pradesh-533 437

2020



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Aditya Pharmacy College
SURAMPALEM 533 437



This is to certify that the dissertation entitled "**SYNTHESIS AND *IN-VITRO* ANTHELMINTIC STUDY OF SOME NOVEL COUMARIN-BENZIMIDAZOLE HYBRID ANALOGUES**" submitted to JNTUK University, in partial fulfilment for the award of Degree of Bachelor of Pharmacy is a record of original research work carried out by **Vasanth Sandhya, Velugula Surekha, Yalamati Sri Divya, Yalla Likhitha, Yeluri Priya Pravallika and Kuchibhotla Manogna** at our college under the guidance and supervision of **CH. Venkata Apparao**, Assistant Professor, Department of Pharmaceutical Chemistry, Aditya Pharmacy College, Surampalem during the academic year 2019-2020.

I further certify that neither the dissertation nor any part of it has been submitted to any other University or Institute.

SUPERVISOR

CH. Venkata Apparao

Assistant Professor

Aditya Pharmacy College

Surampalem – 533437

CERTIFIED BY

Dr. V. Ravi Sankar

Professor and Principal

Aditya Pharmacy College

Surampalem - 533437




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DECLARATION

We hereby declare that the dissertation entitled "**SYNTHESIS AND *IN-VITRO* ANTHELMINTIC STUDY OF SOME NOVEL COUMARIN-BENZIMIDAZOLE HYBRID ANALOGUES**" is a bonafide and genuine research work carried out by us under the guidance and supervision of **CH. Venkata Apparao**, Assistant Professor, Department of Pharmaceutical Chemistry, Aditya Pharmacy College, Surampalem, Andhra Pradesh. The extent and sources of information derived from existing literature have been indicated through project work at appropriate places. Neither the dissertation nor any part of it has been submitted to any other University or Institute.

Date:

Place: Surampalem

V. Sandhya

Vasanthha Sandhya

Y. Likhitha
Yalla Likhitha

V. Surekha

Velugula Surekha

Y. Priya Pravallika
Yeluri Priya Pravallika

Y. Sridivya

Yalamati Sri Divya

K. Manogna

Kuchibhotla Manogna



5.5. CONCLUSION

The present study circumspects around a systematic plan of work that was carried out to synthesize some novel Coumarin-Benzimidazole hybrid derivatives followed by their anthelmintic efficacy evaluation. An extensive effort towards this has led to the synthesis of 2 (two) such compounds which were found to have exhibited notable anthelmintic potency. In the present study it was markedly observed that amongst the 2 compounds synthesized by fusion of two heterocyclic aldehydes with 7-hydroxy-4-methyl Coumarin and their subsequent clubbing with 2-chloromethyl benzimidazole, the heterocyclic aldehyde fused compounds (compound A and B) too exhibited more or less efficient activity but are much less potent when compared to the standard. Thus, it is evident from the present study that the in-vitro anthelmintic potency of the synthesized compounds follows the order as: Comp A > Comp B.

Hence, it can be concluded from the results, that congeners synthesized by taking aromatic and hetero aromatic fused congeners like compound A or B, as the reference lead can prove to be some attractive candidates for further development of newer analogues which can pave the way for development of newer and potent anthelmintic compounds in future.



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IV Year - I Semester

L	T	P	C
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CHEMISTRY OF NATURAL PRODUCTS LAB

1. Preparation of different alkaloids testing reagents like Dragendorff, Mayer, Wagner's, etc. and testing some alkaloids and plant extracts using these reagents.
2. Identification of alkaloids by specific colour tests.
3. Test for steroids, steroidal glycosides and cardiac glycosides. Liberman-Burchard test, Salkowski reaction, Kedde reaction etc.
4. Tests for flavanoids and their glycosides. Shinoda test (Mg/Hcl test), Fecl₃ test.
5. TLC and examination of alkaloids, steroids, steroidal glycosides and cardiac glycosides.
6. Identification of natural products.
7. Extraction of caffeine from tea leaves.
8. Extraction of lactose from milk.
9. Extraction of nicotine from tobacco.
10. Extraction of piperine from black pepper.
11. Extraction of lycopene from tomatoes.
12. Extraction of β -carotene from carrots.
13. Volatile oil production by steam distillation (*demonstration only*).

TEXT BOOKS

1. Indian Pharmacopoeia-1996.
2. Weagners, Phytochemical methods of Drug Analysis.
3. C.K.Kokate, Practical Pharmacognosy.



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SURAMPALAM 533 437

***EVALUATION OF SYNERGISTIC ANTI BACTERIAL ACTIVITY OF LEAVES OF *PLUMERIA OBTUSA* AND *PLUMERIA PUDICA* ***

*Dissertation submitted to the Jawaharlal Nehru Technological University,
Kakinada (JNTUK) in partial fulfillment of the requirements for the degree of
Bachelor of Pharmacy (2020)*



Jawaharlal Nehru Technological University,
Kakinada (JNTUK), Andhra Pradesh.

SUBMITTED BY:

AJIBO HENRY C	163G1R0059
ANJALI PRADHAN	163G1R0060
ANSHUMAN JANA	163G1R0061
ARNAB MAHAPATRA	163G1R0062
ASOGWA SAMUEL OTUODI	163G1R0063



UNDER THE GUIDANCE OF:

Mrs. K. Ganga Bhavani M.Pharm;

Associate Professor

Department of Pharmacology

ADITYA PHARMACY COLLEGE

SURAMPALEM-533437




PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533437



CERTIFICATE

This is to certify that the dissertation entitled ***"EVALUATION OF SYNERGISTIC ANTIBACTERIAL ACTIVITY OF THE LEAVES OF PLUMERIA OBTUSA AND PLUMERIA PUDICA"***, submitted to the Jawaharlal Nehru Technological University, Kakinada (JNTUK) 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 AJIRO HENRY C (163G1R0059), ANJALI PRADHAN (163G1R0060), ANSHUMAN JANA (163G1R0061), ARNAB MAHAPATRA (163G1R0062), ASOGWA SAMUEL OTUODI (163G1R0063). We have done this research under the supervision of Mrs. K. Ganga Bhavani and it has not been previously submitted to any other University or Academic Institution for any higher degree.

Dr.V. Ravi Shankar

Principal & Professor

Aditya Pharmacy College

Surampalem.

Place: Surampalem

Date:

Internal Examiner

External Examiner




PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437



DECLARATION

The Project embodied in this thesis entitled "EVALUATION OF SYNERGISTIC ANTI BACTERIAL ACTIVITY OF THE LEAVES OF *PLUMERIA OBTUSA* AND *PLUMERIA PUDICA*" was carried out in the Department of Pharmacology under the guidance of Mrs. K. Ganga Bhavani, 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.

AJIBO HENRY C (163G1R0059)

ANJALI PRADHAN (163G1R0060)

ANSHUMAN JANA (163G1R0061)

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ADITYA PHARMACY COLLEGE

CONCLUSION

The results obtained in the experimental study on antibacterial activity suggests that the ethanolic extracts of both plumeria obtuse and plumeria pudica leaves showed a significant activity on Gram +ve specie (staphylococcus aerus) and Gram -ve specie (E. coli).

In combination of both extracts, we suspect that plumeria pudica shows more effect on Gram +ve species and plumeria obtuse shows more effect on Gram -ve species. This might be due to enzyme induction or inhibition of one another.

To determine the reaction behind this we should go for the pharmacokinetic studies.



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IV Year - I Semester

L	T	P	C
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BIOPHARMACEUTICS AND PHARMACOKINETICS**UNIT - I****10**

Introduction to Biopharmaceutics and Pharmacokinetics and their role in formulation development and clinical setting.

Biopharmaceutics: Passage of drugs across biological barrier (passive diffusion, active transport, facilitated diffusion and pinocytosis) factors influencing absorption – physiochemical, physiological and pharmaceutical.

L.O: To understand Biopharmaceutics, Pharmacokinetics and their applications –absorption mechanisms, factors, their application with examples.

UNIT - II**06**

Drug distribution in the body, Factors influencing distribution.

Plasma protein binding, binding sites, factors influencing protein binding.

L.O: To understand drug distribution, protein binding – factors.

UNIT - III**12****Pharmacokinetics**

Significance of plasma drug concentration measurement.

Compartment model: Definition and scope.

Pharmacokinetics of drug absorption – Zero order and first order absorption rate constant using Wagner Nelson and Loo-riegelman method.

Volume of distribution and distribution coefficient.

L.O: To understand the significance of plasma drug concentrations, Compartment models - kinetics, parameters.

UNIT - IV

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08

Comparative kinetics One compartment and two compartment models. Determination of Pharmacokinetic parameters from plasma and urine data after drug administration by oral parenteral and other routes.

Curve fitting (Method of Residuals) Regression procedures.

Clearance concept, Mechanism of Renal clearance, clearance ratio, determination of renal clearance.

Non-linear pharmacokinetics with special reference to one compartment model after I.V. Drug administration, Michaelis - Menten Equation, detection of non-linearity (Saturation mechanism).

L.O: To understand pharmacokinetic models; Linear and Non-Linear kinetics, mechanisms and method of assessments.

UNIT – V

06

Clinical pharmacokinetics:

Definition and scope:

Dosage adjustment in patients with and without renal and hepatic failure.

Pharmacokinetic drug interactions and its significance in combination therapy.

L.O: To understand clinical pharmacokinetics and their significance, drug interactions – Adjustment of dose.

UNIT – VI

08

Bioavailability and Bioequivalence.

Measures of bioavailability, C-max, T-max and Area Under the Curve (AUC)

Design of single dose bioequivalence study and relevant statistics.

Overview of regulatory requirements for conduction of bio-equivalence studies.

Bio availability and bio equivalence including evaluation testing protocols:

- a. *In vitro* dissolution studies for solid dosage forms interpretation of dissolution data *in vitro* - *in vivo* correlations.
- b. Bioavailability testing protocol and procedures.
- c. *In vivo* methods of evaluation – statistical treatment (t-test, ANOVA - one way & two way).

L.O: To understand bioavailability, bioequivalence, concepts, assessments, design, regulation, *in vitro* dissolution methods, *In vitro* – *in vivo* correlation.



Principal
Aditya Pharmacy College
SURAMPAL-533 437

“Formulation And Evaluation of Sublingual Tablets of Sumatriptan Succinate by WOW Tab Technology”

Dissertation submitted to the JNTU-K University in partial fulfilment of the requirements for the degree of Bachelor of Pharmacy (2020)



Jawaharlal Nehru Technological University, Kakinada, A.P

BY:

Devalla. Sudeepthi(163G1R0064) D. Sudeepthi

Diptanu Bhowmik(163G1R0065)

Patrick. E. Ekwenugo(163G1R0066)

Elsa S Prem(163G1R0067)

Enema Edith Chidibere(163G1R0068)



Under the guidance of,

Mrs. MadhaviLathaSamala M.Pharm (Ph.D.)

Asst. Professor

Department of pharmaceutics

Aditya Pharmacy College

Surrampalem-533437

2016-2020




PRINCIPAL
Aditya Pharmacy College
SURRAMPALAM-533 437

CERTIFICATE



This is to certify that the dissertation entitled **"Formulation and Evaluation of Sublingual tablets of Sumatriptan Succinate by using WOW tab technology"**, 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 D. Sudeepthi (163G1R0064), Diptanu Bhowmik (163G1R0065), Patrick.E.Ekwenugo (163G1R0066), Elsa.S.Prem (163G1R0067), EnemaEdith Chidibere(163G1R0068) under the supervision of Mrs. Madhavi Latha Samala (M pharm, phd) and it has been previously not submitted to any other University of Academic Institution for any higher degree.

Place: Surampalem

Date: _____

Dr. V. Ravi Shankar, M.Pharm, Ph.D.

**Principal and Professor,
Aditya Pharmacy College**

Internal Examiner

External Examiner




PRINCIPAL
Aditya Pharmacy College
SURAMPALAM 533 437

DECLARATION



The project embodied in this thesis entitled "Formulation and Evaluation of Sublingual tablets of Sumatriptan Succinate by WOW tab technology", was carried out in the Department of Pharmaceutics under the guidance of Mrs. Madhavi Latha Samala, 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.

Devalla.Sudeepthi (163G1R0064)

Diptanu Bhowmik (163G1R0065)

Patrick.E.Ekwenugo (163G1R0066)

Elsa S Prem (163G1R0067)

Enema Edith Chidibere (163G1R0068)




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7.1 Summary and conclusion:

Sumatriptan succinate sublingual tablets were prepared by WOW Tab technology using different combinations of low mouldable (Lactose, Mannitol) and high mouldable sugars (Maltose, Sorbitol) and other excipients like Starch, Microcrystalline cellulose, talc and flavour.

The prepared WOW tab blends of formulations W₁, W₂, W₃, W₄, W₅, W₆ and Direct compression blend (DC) were evaluated for their flow properties. All the blends showed good to excellent flow. The blends were compressed in to tablets and the tablets were characterized based upon their physicochemical characteristics like hardness, thickness, friability, weight variation, assay, disintegration test and *in-vitro* dissolution studies.

The Sumatriptan succinate Sulingual tablets prepared by "WOW Tab Technology" showed faster drug release profiles when compared with the direct compression technique. Among all the formulations, W3 (95.91%) and W4 (97.47%) batches showed faster and good dissolution pattern which contained lactose and mannitol as low moldable sugars and maltose and sorbitol as high moldable sugars respectively with in 15 min.

From the present study it can be concluded that the WOW Tab system has more advantage than the conventional direct compression technique showing its maximum acceptance in the pharmaceutical industry. Many research works are being carried out on the formulation of fast and immediate release dosage forms based on WOW Tab Technology.



A handwritten signature in green ink, appearing to be "A. K."

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SURAMPALEM 533 437

III Year - I Semester

L	T	P	C
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MEDICINAL CHEMISTRY-II**UNIT - I**

06

1. **Introduction to principles of chemotherapy**, chemotherapeutic index, drug resistance.
2. **Sulphonamides**: Sulfisoxazole, Sulphamethazole and Sulphathiazole.
3. **Antitubercular agents**: PASA, isoniazid, Ethambutol
4. **Antileprotic agents**: Dapsone

LO: Definition, current status, classification, mode of action, Structure-Activity Relationship (SAR) wherever applicable, therapeutic uses and synthesis of compounds as given above under each class.

UNIT - II

08

1. **Antimalarials**: Chloroquine, primaquine and pyrimethamine
2. **Anthelmintics**: Diethyl carbamazine citrate, mebendazole, tinidazole,
3. **Antiamoebic agents**: Metronidazole and diloxanide furoate
4. **Antifungal agents**: Clotrimazole, fluconazole and tolnaftate

LO: Definition, current status, classification, mode of action, Structure-Activity Relationship (SAR) wherever applicable, therapeutic uses and synthesis of compounds as given above under each class.

UNIT - III

10

1. **Antiviral agents**: Acyclovir, zidovudine, idoxuridine and amantadine
2. **Cytostatic agents**: Chlorambucil, cyclophosphamide, carmustine, 5-fluoro uracil and mercaptopurine

LO: Definition, current status, classification, mode of action, Structure-Activity Relationship (SAR) wherever applicable, therapeutic uses and synthesis of compounds as given above under each class.

UNIT - IV

12

Antibiotics:

1. **Penicillins**: Ampicillin, Amoxycillin
2. **Cephalosporins**: Structures of important cephalosporins (not synthesis)
3. **Tetracyclins**: Oxytetracycline, doxycycline
4. **Aminoglycosides**: Streptomycin and neomycin (structures)
5. **Miscellaneous**: Chloramphenicol, rifampicin (only structure)

LO: Chemistry, structures of currently used drugs, classification, mode of action, Structure-Activity Relationship (SAR) wherever applicable, therapeutic uses and synthesis of compounds as given above under each class



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UNIT – V**07**

Water soluble vitamins: Structures of B1, B2, B6, B12, Nicotinic acid, Nicotinamide, Folic acid and Ascorbic acid.

LO: Chemistry, structural features, classification, mode of action, Structure-Activity Relationship (SAR) wherever applicable, therapeutic uses, biological role.

UNIT – VI**07**

Fat soluble vitamins: Physiological role, uses and Structures of vitamin A, Retinoic acid, Vitamin D, Ergosterol, Vitamin E, Vitamin K.

LO: Chemistry including reactions, structural features, interconversions, classification, mode of action, Structure-Activity Relationship (SAR) wherever applicable, therapeutic uses, biological role.

TEXT BOOKS

1. S. N. Pandeya, Textbook of medicinal chemistry, SG Publ. Varanasi, 2003.
2. Sri Ram, Medicinal Chemistry.
3. Rama Rao Nadendla, Medicinal Chemistry.

REFERENCES

1. D. Abraham (Ed), Burger Medicinal chemistry and Drug discovery, Vol. 1 & 2, John Wiley & Sons, New York 2003.
2. Lippincott Williams and Wilkins- Remington- The Science and Practice of Pharmacy.
3. L. M. Atherden, Bentley and Driver's Textbook of Pharmaceutical Chemistry, Oxford University Press, Delhi.
4. B.N. Lads, M.G.Mandel and F.I.Way, Fundamentals of drug metabolism & disposition, William & welking co, Baltimore USA.
5. C. Hansch, Comprehensive medicinal chemistry, Vol 1 – 6 Elsevier pergmon press, oxford 1991.
6. Daniel lednicer, Strategies For Organic Drug Synthesis And Design, John Wiley, N. Y. 1998.
7. D. Lednicer, Organic drug synthesis, Vol. 1 – 6, J.Wiley N.Y.
8. Kadam, Textbook of Medicinal Chemistry Vol. 1 & 2.
9. O.P. Agarwal, Text book of natural products. Vol. 1 & 2.




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A STUDY ON PRELIMINARY PHYTOCHEMICAL SCREENING & IN-VITRO
ANTIBACTERIAL AND ANTHELMINTIC ACTIVITY OF ETHANOLIC EXTRACT OF
ABUTILON INDICUM

Dissertation Submitted to



JNT UNIVERSITY
KAKINADA

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

EZE THADDEUS OKONKWO (163G1R0069)
EZUGWU PEACE OGOCHUKWU (163G1R0070)
GOODUPU, PRASANNA KUMAR(163G1R0071)
GEDDAM, RAVINDRANATH CHOWDARY(163G1R0072)
GOLLAPALLI KAVYA SRI (163G1R0073)

Under the guidance of

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

Associate Professor



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

Batch: 2016- 2020



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SURAMPALAM-533 437



ADITYA PHARMACY COLLEGE
(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 "A STUDY ON PRELIMINARY PHYTOCHEMICAL SCREENING & IN-VITRO ANTIBACTERIAL AND ANTHELMINTIC ACTIVITY OF ETHANOLIC EXTRACT OF *ABUTILON INDICUM* " submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2016-2020. This is a bonafide work carried out by *Eze Thaddeus Okonkwo (163G1R0069), Ezugwu Peace Ogochukwu (163G1R0070), G. Prasanna Kumar (163G1R0071), G. Ravindranath Chowdary (163G1R0072), G. Ravya Sri (163G1R0073)*, under the direct guidance and supervision of S. Nageswara Rao M.Pharm., (Ph.D.), Associate Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

(Internal Examiner)

(External Examiner)



[Signature]
Principal
Aditya Pharmacy College
SURAMPALAM-533 437

DECLARATION

We hereby declare that the dissertation work entitled "A STUDY ON PRELIMINARY PHYTOCHEMICAL SCREENING & IN-VITRO ANTIBACTERIAL AND ANTHELMINTIC ACTIVITY OF ETHANOLIC EXTRACT OF *ABUTILON INDICUM*" in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2016-2020, was carried out by us in the library and laboratories of Aditya Pharmacy College, Surampalem, Andhra Pradesh under the valuable and efficient guidance and supervision of Mr. S.Nageswara Rao, M.Pharm.,(Ph.D.), Associate Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

Eze Thaddeus Okonkwo	(163G1R0069)	<i>Thaddeus</i>
Ezugwu Peace Ogochukwu	(163G1R0070)	<i>Peace</i>
G. Prasanna Kumar	(163G1R0071)	<i>Prasanna</i>
G. Ravindranath Chowdary	(163G1R0072)	<i>G. Ravindranath</i>
G. Kavya Sri	(163G1R0073)	<i>G. Kavya Sri</i>



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SURAMPALEM 533 437

Summary and conclusion

Summary and conclusion

- The preliminary phytochemical screening of the crude extracts revealed that the leaves of *Abutilon indicum* extract contains alkaloids, tannins, steroids, glycosides and flavonoids.
- The antibacterial activity of leaves of *Abutilon indicum* may be due to the presence of flavonoids.
- The results obtained in the experimental study of antibacterial activity suggest that the ethanolic extracts of leaves of *Abutilon indicum* has broad spectrum of activity, means it is having ability to kill both gram positive and gram negative bacteria.
- It was found that the anthelmintic activity of ethanolic extract of *Abutilon indicum* at test concentration is not showing significant anthelmintic activity when compared to albendazole (standard).



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SURAMPALEM 533 437

III Year - II Semester

L	T	P	C
4	1	0	4

PHARMACEUTICAL BIOTECHNOLOGY**UNIT - I**

10

Fermentation Technology: Isolation, Selection, Screening of Industrial important microbes, Strain improvement. Types, design & operation of Bioreactor. Types of fermentations, optimization of fermentation process, Principle and Procedure involving in downstream process and effluent treatment.

LO: To understand principles of fermentation technology- types of bioreactor – optimization of fermentation process – principles of effluent treatment

UNIT - II

10

Specific Fermentations: Selection of organism, fermentation & purification of various antibiotics, vitamins, aminoacids, organic acids, solvents like penicillin, streptomycin, tetracycline, erythromycin, riboflavin, cyanocobalamin, glutamic acid, lysin, citric acid, lactic acid, alcohol, acetone etc.

LO: To understand Fermentations of various types of industrial and medicinal compounds

UNIT - III

08

Microbial Transformations: Types, Methods of bioconversions & Application in Pharma Industry, Steroidal transformation.

Recombinant DNA Technology: Introduction to R-DNA technology and genetic engineering, steps involved, isolation of enzymes, vectors, recombination and cloning of genes.

Production of biotechnology derived therapeutic proteins like humulin, humatrop, activase, intron a, monoclonal antibodies by hybridoma technique, recombinax HB (Hepatitis B)

LO: To understand types, methods and applications of bioconversion – principles and production technology of recombinant DNA technology with examples.



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UNIT – IV**08**

Immunology & Immunological Preparations: Principles of Immunity, Humoral immunity, cell mediated immunity, antigen – antibody reactions, hypersensitivity and its applications

Active & passive immunizations, vaccine preparation, standardization & storage of BCG, cholera, smallpox, polio, typhus, tetanus toxoid, immuno serum & diagnostic agents.

LO : To understand principles of Immunology, Antigen- Antibody reactions – applications, active and passive immunizations – study of various vaccines and sera

UNIT – V**08**

Enzyme Technology: Techniques of immobilization of enzymes, factors affecting enzyme kinetics, advantages of immobilization over isolated enzymes.

Study of enzymes such as hyaluronidase, penicillinase, streptokinase, streptodornase, amylase, protease etc. immobilization of bacteria & plant cells

LO: To understand techniques, applications and production enzymes of medicinal importance

UNIT – VI**06**

Introduction, role, collection, process & storage of blood products, plasma substitutes like Whole human blood, Human normal immunoglobulins, dextran. Sutures & ligatures like catgut etc.

Definition & applications of bioinformatics, proteomics and genomics.

LO: To understand Blood products – collection processing, storage and uses of various blood products.

TEXT BOOKS

1. Wulf Crueger and Anneliese Crueger, Biotechnology, 2nd Ed, Publ- Panima publication co-operation, New Delhi
2. P. F. Stanbury & A. Whitaker, Principles of fermentation technology, Pergamon Press
3. B.P. Nagori & Roshan Issari, Foundations in Pharmaceutical Biotechnology
4. Sambamurthy. K, Text Book of Pharmaceutical Biotechnology
5. S. S. Kori, Pharmaceutical biotechnology




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 Aditya Pharmacy College
 SURAMPALAM 533 437

SYNTHESIS, CHARACTERISATION OF PYRAZOLES DERIVED FROM CHALCONE AND EVALUATION OF ANTIMICROBIAL ACTIVITY.

*Dissertation submitted to the JNTU-K University in partial fulfillment of
the requirements for the degree of Bachelor of Pharmacy.*
(2020)



BY:

N. BALA KISHORE, (163G1R0079)

N. Bala Kishore

ODOH HYACINTH .I. (163G1R0081)

NWADINIGWE FINIAN .C. (163G1R0080)

ODOH JOHNMARY .T. (163G1R0082)

OHAGWU EMMANUEL .C. (163G1R0083)



Under the guidance of,

Ms. M.BHAGYALALITHA M.S.Pharm.

Asst. Professor

Department of Pharmaceutical Chemistry, Aditya Pharmacy College, Surampalem.

533437 2015-2020



(Handwritten signature in green ink)

PRINCIPAL

Aditya Pharmacy College
SURAMPALEM 533 437

CERTIFICATE

This is to certify that the dissertation entitled "Synthesis, characterisation of pyrazoles derived from chalcone and evaluation of antimicrobial activity", submitted to the JNTUK 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, N.BALA KISHORE (163G1R0079), NWADINIGWE FINIAN .C. (163G1R0080), ODOH HYACINTILL (163G1R0081), ODOH JOHNMARY.T. (163G1R0082), OBAGWU EMMANUEL.C. (163G1R0083), under the supervision of Ms. M. BHAGYALALITHA and it has been previously not submitted to any other University of Academic Institution for any higher degree.

Place: Surampalem

Date:

Dr.  RAVI SHANKAR, M.Pharm, PhD

Principal and Professor,

Aditya Pharmacy College.

Internal Examiner

External Examiner




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Aditya Pharmacy College
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ABSTRACT

Pyrazole derivatives have become attractive target of extensive research due to its inherent properties and therapeutic uses. Pyrazole containing drugs finds many pharmacological activities like anti-bacterial, anti-fungal, anti-oxidant, anti-convulsant, anti-tumor, anti-inflammatory etc. The present study includes the synthesis of pyrazole derivatives derived from chalcone and hydrazides. All derivatives were characterized by IR. Chalcone derivatives and pyrazole derivatives were then subjected to anti-microbial screening against different strains of bacteria viz., *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli*, *Proteus vulgaris* at 300 μ g/ml, 500 μ g/ml and 800 μ g/ml concentration by using agar well diffusion technique. The results were compared with the standard antibiotics gentamycin (50 μ g/ml). The results of anti-bacterial susceptibility testing revealed that all chalcone derivatives and Pyrazole derivatives showed more pronounced effect.



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Summary and conclusion

SUMMARY& CONCLUSION

- In the present study synthesized pyrazole derivatives from chalcone were synthesized and characterized by IR spectral data.
- The synthesized compounds were screened for their antibacterial activity.
- All compounds exhibited moderate to potent antibacterial activity.
- Compound PAPCP was found to exhibit good anti-bacterial activity against *Bacillus subtilis*.
- Compound PAPCP showed good antibacterial activity against both gram positive bacteria and gram negative bacterial.

FUTURE PROSPECTS:

Further analysis of structure by Mass spectroscopy is required to interpret the synthesized compounds & more extensive study is needed to confirm the mode of action studies to optimize the effectiveness of this compounds.




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II Year - II Semester

L	T	P	C
4	1	0	3

PHARMACEUTICAL UNIT OPERATIONS – II

UNIT-I 06

Heat Transfer:

Source of heat, heat transfer, methods of heat transfer, heating of fluids, film coefficients, design of heating equipments, radiant heat transmission, steam and electricity as heating media, properties of steam.

LO: To understand principles and theory of Heat flow / Conductions, Convection, Radiation.

UNIT-II 08

Evaporation: Basic concept of phase equilibria, factors affecting the evaporation, evaporators, film evaporators, single effect and multiple effect evaporators.

LO: To understand evaporation, Phase equilibrium, Theory of evaporation- Evaporators.

UNIT-III 08

Distillation: Raoult's law, phase diagrams, volatility, simple steam and flash distillations, principles of rectification, Azeotropic and extractive distillation.

LO: Theory of distillation types of rectifiers, their application.

UNIT-IV 10

Drying: Moisture content and mechanism of drying, rate of drying and time of drying calculations, classification and types of dryers, dryers used in pharmaceutical industries tray dryer, Fluidised dryer, spray dryer, vacuum oven and freeze-dryer.

LO: Drying, Moisture content, rate of evaporation, types of dryers construction working and Applications.

UNIT-V 10

Size Reduction: Definition, objectives of size reduction, factors affecting size reduction, laws governing energy and power requirements of a mill, types of mills including Ball mill, Hammer mill, Fluid energy mill etc.

LO: To understand theory of size reduction, factors involved in size reduction, equipments- Construction working and applications-selection of size reduction equipment.

UNIT-VI 08

Mixing: Theory of mixing, solid-solid, solid-liquid and liquid-liquid mixing equipment, Double cone, Twin-shell, Silverson mixer, Colloid mill, Sigma blade mixer, Planetary mixer, Propeller mixer and Turbine mixer.

LO: Theories of mixing solid-solid, solid-liquid & liquid-liquid mixing equipments.



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**"FORMULATION AND EVALUATION OF
AMLODIPINE BESYLATE ORODISPERSIBLE FILMS"**

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

(2020)



Jawaharlal Nehru Technological University, Kakinada, A.P

BY:

Onuh Chinago Juliet (163G1R0084) P. Anisha (163G1R0085)

Padala Praharsha (163G1R0086) P.Sumanjali (163G1R0087)



Under the guidance of,

Mrs. Gowripattapu Sridevi M.Pharm (PhD)

Asst. Professor

Department of pharmaceutics

Aditya Pharmacy College

Surampalem-533437

2019-2020



PRINCIPAL

Aditya Pharmacy College
SURAMPALEM 533 437

CERTIFICATE



This is to certify that the dissertation entitled "*Formulation and Evaluation of Amlodipine Besylate Orodispersible Films*", 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 Onuh Chinago juliet (163G1R0084), P.Anisha (163G1R0085), Padala praharsha (163G1R0086), P.Sumanjali (163G1R0087) under the supervision of Mrs.Gowripattapu Sridevi M.Pharm (Ph.D) and it has been previously not submitted to any other University of Academic Institution for any higher degree.

Place: Surampalem

Date:

Dr .V. Ravi Shankar Sir,

M. Pharm , Ph .D

Principal and Professor,

Aditya Pharmacy College.

G Sridevi

Internal Examiner



PRINCIPAL

Aditya Pharmacy College
SURAMPALAM 533 437

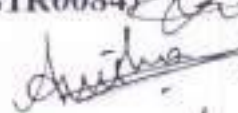
External Examiner

DECLARATION

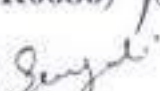


The project embodied in this thesis entitled "Formulation and Evaluation of Amlodipine Besylate orodispersible films", was carried out in the Department of Pharmaceutics under the guidance of Mrs. Gowripattapu Sridevi, M.Pharm(Ph.D) Aditya Pharmacy College, Surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.


Onuh Chinago Juliet (163G1R0084) 

P. Anisha (163G1R0085) 

Padala Praharsha (163G1R0086) 

P. Sumajali (163G1R0087) 




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The Conclusions drawn from the present investigation are given below:

- Suitable analytical methods based on UV-Vis spectro-photometry were developed for Amlodipine besylate.
- Oro-dispersible films of Amlodipine were prepared successfully using solvent evaporation method. Four different formulations of the films F1, F2, F3, and F4 were prepared respectively.
- Based on observations, the films exhibited satisfactory characteristics regarding to integrity, flexibility, dispersion of drug, and other quality control parameters. The surface texture of oro-dispersible films was smooth and uniform.
- The surface pH of all formulations was neutral. Hence no mucosal irritation was expected thus patient compliance increased. The thickness and weight variation were found to be uniform and values ranging from 0.097 to 0.12 and 0.283 and 0.470.
- The folding endurance was optimum and exhibited good physical and mechanical properties. The folding endurance of drug (F1) was higher as compared to other formulations.
- The release studies of Amlodipine besylate indicates that formulation F1 containing HPMC (160mg) film showed faster and better release profile compared to the other formulations.
- The *in-vitro* release of Amlodipine from the films F1 to F4 was in the range of 69.77 to 94.22 in phosphate buffer solution, pH 6.8.
- Zero order and first order plots were drawn for 4 formulations (F1, F2, F3, and F4) and were found to obey first order kinetics out of which F1 gave better results.



II Year - II Semester

L	T	P	C
4	1	0	3

PHARMACOLOGY - I**UNIT - I**

06

General Pharmacology: Introduction to pharmacology, sources of drugs, dosage forms and routes of administration, mechanism of action, Structural activity and relationship (SAR), factors modifying drug action, tolerance and dependence, Pharmacogenetics, Enzyme Induction & Inhibition; Absorption, distribution, metabolism and excretion of drugs; Principles of drug discovery and development of new drugs.

L.O: Knowledge imparting basic concepts of Pharmacology, mechanism of action of drugs, SAR, Pharmacokinetics and drug discovery.

UNIT - II

10

Pharmacology of Autonomic Nervous System:

Neurohumoral transmission in peripheral nervous system (Autonomic and Somatic) Parasympathomimetics & parasympatholytics, sympathomimetics & sympatholytics. Ganglionic-stimulants and blocking agents, skeletal muscle relaxants.

L.O: To understand the basics of physiology and neurotransmitters and their roles. To gain knowledge on the drugs acting on ANS and muscle relaxants.

UNIT - III

08

Drugs acting on Central Nervous System:

Neurohumoral transmission in the CNS, General anesthetics, Alcohols and Disulfiram, Sedatives, hypnotics, & anti-anxiety agents.

L.O: To understand the role of neurotransmitters in the CNS and pharmacology of various classes of drugs acting on CNS.

UNIT - IV

08

Analgesics, Antipyretics, Anti-inflammatory and Anti-gout drugs, Narcotic analgesics & antagonists, Pharmacology of Local Anaesthetics.

L.O: To have knowledge on the pathophysiology on Analgesia, pyretics, inflammation, gout and drugs used in their treatment.

UNIT - V

06

Antipsychotics & Lithium, Antidepressants, Pharmacology of Anti-epileptic drugs.

Pharmacological management of Parkinsonism & other movement disorders, C.N.S. stimulants, Drug Addiction & Drug Abuse.

L.O: To impart knowledge on pathophysiology of various disease conditions of the above topics and pharmacology of drugs.



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UNIT – VI**06****Drugs Acting on the Gastrointestinal Tract**

Antacids, Antisecretory & Anti-ulcer Drugs, Laxatives & antidiarrhoeal drugs, Appetite Stimulants & Suppressants, Emetics & anti-emetics, Carminatives, Demulcents, Protectives, Adsorbents, Astringents, digestants, enzymes & mucolytics.

L.O: To impart knowledge on pathophysiology and conditions relating to peptic ulcers and emesis and to understand the pharmacology of drugs used in GIT disorders.

TEXT BOOKS

1. Sathoskar, Pharmacology and Pharmacotherapeutics. Vol. 1 & 2, Publ by Popular Prakashan, Mumbai
2. Tripathi, Text book of Pharmacology
3. H.P Rang, M. M. dale & J.M. Ritter, Pharmacology, Churchill living stone.
4. F.S.K. Barar, Text book of Pharmacology, S.Chand.

REFERENCE BOOKS

1. J.G. Hardman and Lee E. Limbard, Good Mann & Gilmann, The Pharmacological basis of therapeutics, Mc Graw hill, Health Professions Dvn.
2. Bertram. G. Katzung, Basic and Clinical Pharmacology, 9th Edn.
3. J. Crossland, Lewis's Pharmacology, Church living stone.
4. Ruth Woodrow, Essentials of Pharmacology for Health Occupations.



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SURAMPALEM 533 437

PRELIMINARY SCREENING, EVALUATION OF ANTIHELMINTHIC, AND
ANTHINFLAMMATORY ACTIVITY OF ETHANOLIC EXTRACT OF BLEPHARIS
INTEGRIFOLIA

Thesis submitted to



Jayashree Mahila Technological University, Kakinada, A.P.

For the award of the degree of

Bachelor of Pharmacy

Geeta Kumari, R (163G1R0088)

Ravi Kumar (163G1R0089)

Satabda Chatterjee (163G1R0091)

Shivam Chaturvedi (163G1R0092)

Sounak Deka (163G1R0093)

Under the guidance of

K.Durga Devi, M.PHARMACY

Assistant Professor in Pharmaceutical Biotechnology



Aditya Pharmacy College

Surampalem-533437

2016-2020

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Aditya Pharmacy College
SURAMPALAM 533 437



CERTIFICATE



This is to certify that Geeta Kumari, R. Ravi Kumar, Satabda Chatterjee, Shivam Chaturvedi, Sounak Deka has carried out the dissertation work "Preliminary Screening, Evaluation of Anthelmintic, and Anti-inflammatory Activity of Ethanolic Extract of *Blepharis integrifolia*" in the partial fulfilment of the requirements for the award of B.Pharm in Pharmacognosy and this dissertation work is a bonafide research work done by them under the supervision of K. Durga Devi and guidance at the department of Pharmacognosy, Aditya Pharmacy college, Surampalem, affiliated to Jawaharlal Nehru Technological University, Kakinada.

Dr. V. Ravi Sankar, M. Pharm, Ph.D

PRINCIPAL,

Professor in Pharmaceutical Technology,

Aditya Pharmacy College,

Surampalem.

Place: Surampalem

Date:




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Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

The research work embodied in this thesis "Preliminary Screening, Evaluation of Anthelmintic, and Anti-inflammatory Activity of Ethanolic Extract of *Blepharis integrifolia*" was carried out by us in the Pharmacognosy Laboratories of Department of Pharmacognosy Aditya Pharmacy college, Surampalem, affiliated to Jawaharlal Nehru Technological University, Kakinada, India, under the supervision of Mrs. K.Durga Devi, M.Pharm, Assistant Professor in Pharmaceutical Biotechnology Aditya pharmacy college, Surampalem. The extent and source of information derived from the existing literature have been indicated throughout the thesis at appropriate places. The work is original and has not been submitted in partial or full for any diploma or degree of this or any other University.

Geeta Kumari, R (163G1R0088)

Ravi Kumar (163G1R0089)

Satabda Chatterjee (163G1R0091)

Shivam Chaturvedi (163G1R0092)

Sounak Deka (163G1R0093)




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CONCLUSION:

- In the secondary metabolites screening test extract show positive result for alkaloids, saponins, flavanoids, steroids especially terpenoids. This illustrates plant extract has antihelminthic, antifungal and antioxidant activity, anti-inflammatory, antimicrobial, antidiabetic activities.
- It was observed that the extracts showed a remarkable dose dependent antihelminthic activity against *Pheritima posthuma*. The extract showed paralysis of worms in a time nearer to that of *Albendazole Oral suspension* at tested concentration 10mg/ml.
- It was showed that the leaf extract has a reliable anti-inflammatory activity compared to standard drug aspirin.

In this study, in-vitro anti-inflammatory activity has been performed and showed positive result. Further in vivo work has to be done for in-vitro anti-inflammatory action of the plant extract.




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I Year - I Semester

L	T	P	C
4	1	0	3

GENERAL & DISPENSING PHARMACY**UNIT-I**

6

Historical back-ground and development of profession of Pharmacy & pharmaceutical industry in brief. Development of Indian Pharmacopoeia & other pharmacopoeias such as BP, USP, European Pharmacopoeia, Extra Pharmacopoeia & Indian national formulary.

LO: To understand the development of pharmacy profession & various pharmacopoeias.

UNIT-II

10

Dispensing Pharmacy : Principles of dispensing, form of prescription, handling of prescription, source of errors for prescription, care required in dispensing procedures including labeling of dispensed products. Weights and Measures, introduction to Latin terms, Percentage calculations, allegation method, proof spirit calculations, displacement value and calculations of iso tonicity adjustment. General dispensing procedure- posology calculations of doses.

LO: To understand dispensing principles, procedures, calculations involved, doses.

UNIT-III

10

Principles involved and procedures adopted in dispensing of the following classes of preparations.

- (i) Mixtures
- (ii) Solutions → A study of the following solutions – Cresol with soap solution IP, Aqueous Iodine solution IP, Strong solution of Iodine IP, Weak Iodine Solution IP, strong solution of Ammonium acetate.
- (iii) Emulsions
- (iv) Powders
- (v) lotions & liniments
- (vi) ointments

LO: To understand principles and procedures involved in the dispensing of various categories of products.

UNIT-IV

08

Dosage forms – Purpose, classification, definitions and general characteristics of the following dosage forms

Solids: Tablets and capsules.

Liquid orals: Elixirs, Syrups, Linctus, Suspensions and Emulsions.

Liquids for external use: Lotions & liniments applications.

Semi solids: Ointments, Creams, Gels, Suppositories and Pessaries.

LO: To understand dosage forms and their general characteristics.

UNIT-V

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Incompatibilities: Physical, chemical and therapeutic incompatibilities – methods of overcoming and handling of incompatible prescriptions.

LO: To understand incompatibility and methods of overcoming incompatibility.

UNIT-VI

08

Extraction and Galenical products: Principle and methods of extraction - preparation of infusions, tinctures, dry, soft and liquid extracts.

LO: To understand extraction and Galenical products – Principles and procedures.

TEXT BOOKS

1. Cooper & Gunns Dispensing Pharmacy, CBS, Publ. and Distributors New Delhi.
2. R.M Metha, Dispensing Pharmacy.
3. NK Jain and GD Guptha, Modern Dispensing Pharmacy, Pharma Med Press.
4. Sanmathi BS and Anshu Guptha, Dispensing Pharmacy – A Practical Manual, Pharma Med Press.
5. General Pharmacy by M.L.Schroff
6. General Pharmacy by Cooper & Gunn.

REFERENCES

1. Lippincott Williams and Wilkins, Remington Pharmaceutical Sciences.
2. E.A. Rawlkins, Bentley's Text Book of Pharmaceutics, Elbs publ.
3. Hoover, Dispensing of Medication.



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 437

**Estimation of flucloxacillin in bulk drug and tablets by chemical
derivatization method and its validation**

Is a Dissertation Submitted to the

JNT University, Kakinada



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

BACHELOR OF PHARMACY

BY

Subhasmith Pradhan(163G1R0094)

Sundara siri Sirisha(163G1R0095)

Tavva durga satyavathi(163G1R0096)

Tetali satya Anusha (163G1R0097)

Tushar subra samanta(163G1R0098)

Under The Guidance Of

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

Professor

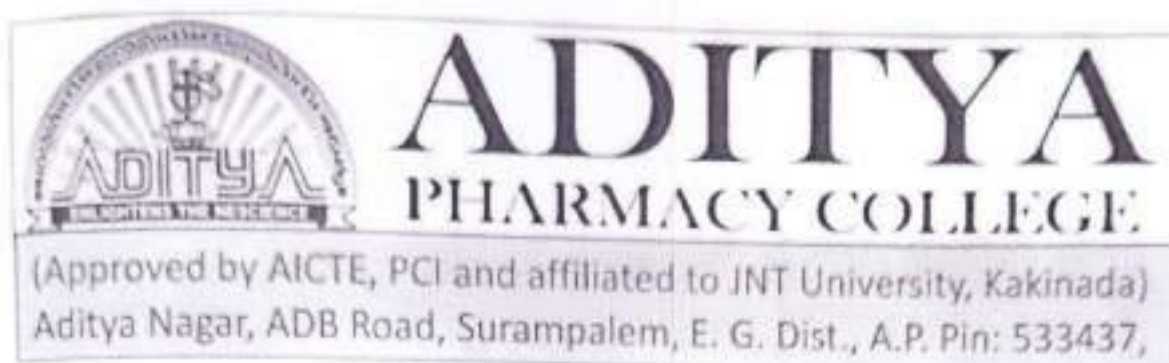


Aditya Pharmacy College, Aditya Nagar, Surampalem - 533 437.

2016-2020



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM 533 437



Dr. V. Ravisankar, M. Pharm., Ph. D.
Principal & Professor

CERTIFICATE

This is to certify that the dissertation work entitled "Estimation of flucloxacillin in bulk drug and tablets by chemical derivatization method and its validation" is submitted to the JNT University, Kakinada in partial fulfillment for the award of the degree of Bachelor of Pharmacy. This is a bonafied work Carried out by Subhasmith Pradhan(163G1R0094), Sundara siri Sirisha(163G1R0095), Tavva durga satyavathi(163G1R0096), Tetali satya Anusha (163G1R0097) and Tushar subra samanta(163G1R0098) under the supervision of Dr.D.Sathis Kumar, Professor, Aditya Pharmacy College, Surampalem.

Place: Surampalem

Date:

Principal

(Dr.V.Ravisankar)

PRINCIPAL

Aditya Pharmacy College
SURAMPALAM 533 437



DECLARATION

We, Subhasmith Pradhan (163G1R0094), Sundara siri Sirisha (163G1R0095), Tavva durga satyavathi (163G1R0096), Tetali satya Anusha (163G1R0097) and Tushar subra samanta (163G1R0098), do hereby declare that the dissertation entitled "Estimation of flucloxacillin in bulk drug and tablets by chemical derivatization method and its validation" is a record of genuine research work carried out by us under the supervision of Dr.D.Sathis Kumar, Professor, Aditya Pharmacy College, Surampalem. The work reported herein has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

Place: Surampalem

Subhasmith Pradhan (163G1R0094),

Sundara siri Sirisha (163G1R0095),

Tavva durga satyavathi (163G1R0096),

Tetali satya Anusha (163G1R0097)

Tushar subra samanta(163G1R0098).

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SURAMPALAM 533 437



Estimation of flucloxacillin in bulk drug and tablets by chemical derivatization method and its validation

SUMMARY:

CHARACTERISTICS	ACCEPTABLE RANGE	OBSERVED RESULTS
Accuracy	Recovery (95-105%)	97 to 100.8%
Precision, Reputability	RSD < 2%	Less than 2%
Intermediate precision (ruggedness)	RSD < 2%	Less than 2%
Specificity	No Interference	No interference
LOD	S/N > 2 or 3	0.524829087
LOQ	S/N > 10	1.590391174
Linearity	Correlation Coefficient(r)>0.99	0.9972±0.0016
Robustness	RSD < 2%	Less than 2%

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 flucloxacillin in pharmaceuticals.



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III Year - II Semester

L	T	P	C
4	1	0	2

REGULATORY AFFAIRS, IPR & PATENTS**UNIT-I** **10**

Preformulations and Formulation Development – Regulatory requirements in Preformulations and Formulation Development of Solid, Liquid and Semisolid dosage.

LO: To understand preformulations – protocols – regulatory – requirements – Formulation Development of Solid, Liquid and Semisolid dosage.

UNIT-II **10**

Manufacturing- Regulatory requirements related to manufacturing- manufacturing formula, Records, Validations involved-GMP

Validations, Types- Validation of Process and Equipment – Raw materials, Excipients and solvents

LO: To understand regulatory requirements related to manufacturing, validation – types, Validation of process, equipment, raw materials, excipients.

UNIT-III **10**

Regulatory requirements of packaging materials- Evaluation of Packaging materials.

Stability – Regulation for Stability testing of API, Solid and liquid dosage form as per ICH guidelines.

LO: To understand regulatory requirements of packaging materials, evaluation of packaging materials, stability testing as per ICH.

UNIT – IV **07**

Clinical Trials Phase –I, II, III & IV studies – Regulations involved

LO: To understand regulatory requirements of Clinical Trials, Phase –I, II, III & IV studies.

UNIT-V **06**

A Study of Intellectual Property Rights : Definitions – Guidelines – National and international – Examples.

LO: To understand IPR with examples




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UNIT- VI

07

Patents: patenting laws and Regulations – Procedures for obtaining and writing a patent – Examples

LO: To understand patents, patent laws, procedures with examples.

TEXT BOOKS

1. How to Practice GMPs By P.P.Sharma, Vandhana Publications, Agra.
2. Quality Assurance and Quality Management in Pharmaceutical Industry, Anjaneyulu Y.
3. Good Manufacturing Practices and Inspection, W.H.O, Vol – II.
4. I.P.R: Hand book for pharma students and researchers, Bansal.

References :

1. Quality Assurance guide by organization of Pharmaceutical Procedures of India
2. Drug formulation manual by D.P.S.Kohli and D.H.Shah, Eastern Publishers, New Delhi.
3. Pharmaceutical Process Validation by FRA R.Berry and Robert.A.Nash.
5. Pharmaceutical Preformulations by J.J.Wells.
6. Applied Production and Operations management by Evans, Anderson, Sweeny and Williams.
7. Basic principles of Clinical Research and methodology by Gupta.
8. Biopharmaceutics and Clinical Pharmacokinetics – An Introduction : 4th Edition, Revised and Expanded by Robert E. Notary, Marcel Dekker incm, New york and Basel, 1987.



PRINCIPAL
Aditya Pharmacy College
SURAMPalem 533 437

"FORMULATION AND EVALUATION OF LIQUISOLID COMPACTS OF NIMESULIDE TABLETS "

*Dissertation submitted to the Jawaharlal Nehru Technological University,
Kakinada in partial fulfilment of the requirements for the degree of Bachelor of
Pharmacy(2020)*



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

SUBMITTED BY

TUTIKA SINDHUJA (163G1R0099) T. Sindhuja
UGWU ANTHONY ODINAKA (163G1R00A0) Anthony
UGWU CHIDIEBERE EMMANUEL (163G1R00A1) Emanuel
VALLEURU SATYA SRI VARALAKSHMI (163G1R00A2) V. Satya Sri
VATTURI ANEESHA (163G1R00A3) V. Aneetha

UNDER THE GUIDANCE OF

Mrs. M. Sesha sai durga , M. Pharm.

Assistant professor



ADITYA PHARMACY COLLEGE

Surampalem- 533437

2019-2020

PRINCIPAL

Aditya Pharmacy College
SURAMPALAM 533 437



2019-2020

CERTIFICATE



This is to certify that the dissertation entitled "FORMULATION AND EVALUATION OF LIQUISOLID COMPACTS OF NIMESULIDE" 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 TUTHA SINDHUA(163G1R0099), UGWU ANTHONY ODINAKA(163G1R00A0), UGWU CHIDI EBERE EMMANUEL (163G1R00A1), VALLURU SATYA SRI VARALAKSHMI(163G1R00A2), VATTURI ANEESHA(163G1R00A3). They have done this research work under the supervision of **Mrs. M. Sesha sai durga, M. Pharm** and it has not been previously submitted to any other university or academic institution for any higher degree.

Dr. V. Ravi Sankar, *M.Pharm, Ph.D*

Principal,

Aditya Pharmacy College,

Surampalem-533437.

Place: Surampalem

Date:

Internal Examiner



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM 533 437

External Examiner

DECLARATION

The project embodied in this thesis entitled "FORMULATION AND EVALUATION OF LIQUISOLID COMPACTS OF NIMESULIDE" was carried out in the department of Pharmaceutical Technology under the guidance of Mrs M. Sesha sai durga , 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.

TUTIKA SINDHUJA (163G1R0099) UGWU ANTHONY ODINAKA (163G1R00A0)

UGWU CHIDIEBERE EMMANUEL (163G1R00A1)

VALLURU SATYA SRI VARALAKSHMI (163G1R00A2]

VATTURI ANEESHA (163G1R00A3)



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Conclusion:

An attempt was made to develop the liquisolid compacts of nimesulide to achieve fast dissolving effect and to enhance the bioavailability. From the in-vitro drug release studies the optimized formulation LS- 2 showed fast drug release when compared to the conventional tablet.

In conclusion, the liquisolid compacts technique can be a promising alternative for the formulation of water-insoluble drugs, such as nimesulide into rapid release tablets. The higher dissolution rates displayed by liquisolid compacts may also imply enhanced oral bioavailability due to the increased wetting properties and surface of drug available for dissolution.

References:

1. Mohamed Hassan G. Dehghan and mohammad jafar-improving dissolution of meloxicam using solid dispersions. Iranian J Pharm Res 2004;5:231-8.
2. Ellsworth AJ, Witt DM, Dugdale DC. Medical drug reference. Elsevier science, Missouri; 2003. p. 610-2.
3. Nagabandi VK, Ramarao T, Jayaveera KN. LIQUISOLID compacts: a novel approach to enhance bioavailability of poorly soluble drugs. Int J Pharm Biol Sci 2011;1:89-102.
4. Chuahan PV, Patel HK, Patel BA, Patel KN, Patel PA. Liquisolid technique for enhancement of dissolution rate of ibuprofen. Int J Pharm Res Scholars 2012;1:268-80.
5. Ngiik T, Elkordy A. Effects of liquisolid formulations on dissolution of naproxen. Eur J Pharm Biopharma 2009;73:373-84.
6. Kulkarni AS, Gaja JB. Formulation and evaluation of liquisolid compacts of diclofenac sodium. PDA J Pharm Sci Technol 2010;64:222-32.
7. El-Say KM, Samy AM, Fetouh MI. Formulation and evaluation of liquisolid tablets. Int J Pharm Sci Rev Res 2010;3:135-42.



I Year - II Semester

L	T	P	C
4	1	0	3

COMPUTER APPLICATIONS AND BIOSTATISTICS**UNIT-I****22**

Overview of computer with general applications: components of computers, computer languages, usage of computers, introduction of operative system.

Introduction to MS-Office: MS- word: Basics, working with files, working with text, formatting paragraphs, styles, lists, tables, graphics, spelling and grammar, page formatting macros and table of contents.

MS-Excel: Basics, spreadsheets, data types, formulas, formatting charts and graphs.

MS-Power Point: Basics, views, slide controls, applied design, page setup, templates, background control, colour screens, traditions and animations, working with texts and working with graphics.

MS-Access: Data base concepts, screens layouts, creating tables, data sheet record, table relationships, shorting and filtering, query forms, form controls, sub forms, reports, importing, exporting and linking.

LO: The student should be familiar with overview of the computers and MS-office

UNIT-II**06**

Information Technology Today: Internet and World Wide Web (www), structure and organization of www, browsers, information searching in www, search engines, pharmaceutical resources in www types of indexing tools and search strategies, Hyper Text Manuscripts Languages (HTML) and e-mail.

LO: Familiarity with internet, WWW, browsing, HTML & e-mails.

+UNIT-III**06**

Database Management: Concepts and objectives of Database Management systems, advantages of database management systems and examples of DBMS packs (like DBASE III)

LO: Familiarity with Database management.

UNIT-IV**08**

Data collection and treatment: Significant digits and rounding of numbers, data collection, random and non-random sampling methods, sample size, data organization, diagrammatic representation of data, bar, pie, 2-D and 3-D diagrams

Measures of central tendency and variations: Mean, median, mode, proportions and applications, range, standard deviations and standard error of means, coefficient of variation, kurtosis, skewness and confidence (fiducial) limits for mean and proportions.

LO: Fundamentals of data / Sample collection and diagrammatic representation. Measures of central tendency and dispersion.

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UNIT-V**04**

Correlation and Regression: Correlation and regression analysis, method of least squares and non-linear regression

LO: Correlation and regression in pharmacy.

UNIT-VI**04**

Statistical inference: t-test, chi square test and their applications in pharmacy.

LO: Application of t-test & Chi square test in testing the significance of difference or similarity.

TEXTBOOKS

1. Computer Fundamentals, Anita Goel, Pearson.
2. Information Technology Workshop, 3e, G Praveen Babu, M V Narayana BS Publications.
3. Khan & Khan, "*Fundamentals of Biostatistics*".
4. Pranab Kumar Banerjee, "*Introduction to Biostatistics*".

REFERENCE BOOK:

1. Essential Computer and IT Fundamentals for Engineering and Science Students, Dr. N.B. Venkateswarlu
2. Biostatistics for medical, nursing and pharmacy students by A. Indrayan, I. Satyanarayana.
3. Introduction to Information Technology, ITL Education Solutions Ltd., 2nd Ed, PEARSON
4. Comdex Information Technology, Vikas Gupta, dreamtech.




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 SURAMPALEM 533 437

"Optimization of process and formulation parameters of Ondansetron loaded pellets using statistical Design"

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



Jawaharlal Nehru Technological University, Kakinada, A.P
Bachelor of Pharmacy (B. Pharmacy)

BY

Hema Sri V (163G1R00A4) *V. Hema Sai*

Padmaja V (163G1R00A5) *V. Padmaja*

Nibitha G (163G1R00A6) *Nibitha*

Deepika P (163G1R00A8)

Tanishka Rao (163G1R00A9)



Under the guidance of

Dr. A. Harani,

Associate Professor, M. Pharmacy, Ph. D

Department of Pharmaceutics

Aditya Pharmacy College

Surampalem – 533 437

AX
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Aditya Pharmacy College
SURAMPALAM 533 437





This is to certify that the dissertation work entitled "Optimization of process and formulation parameters of Ondansetron loaded pellets using statistical Design" is submitted to the JNTU-K University, Kakinada, in partial fulfillment for the award of the degree of Bachelor of Pharmacy in Pharmaceutics. This is a bonafied work carried out by Hema Sri V (163G1R00A4), Padmaja V (163G1R00A5), Nibitha G (163G1R00A6), Deepika P (163G1R00A8), Tanishka Rao (163G1R00A9) under the guidance and supervision of Dr. A. Harani, Associate Professor, Aditya Pharmacy College (Surampalem) and it has been previously not submitted to any other University or academic institution for any higher degree.

Place: Surampalem

Date:



Internal Examiner

Principal and Professor,
Aditya Pharmacy College

[Signature]
P. PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 437

External Examiner

DECLARATION



The project embodied in this thesis entitled "Optimization of process and formulation parameters of Ondansetron loaded pellets using statistical Design", was carried out in the Department of Pharmaceutics under the guidance of Dr. A. Harani, Associate 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.

Hema Sri V (163G1R00A4)

Padmaja V (163G1R00A5)

Nibitha G (163G1R00A6)

Deepika P (163G1R00A8) P. Deepika

Tanishka Rao (163G1R00A9) T. Tanishka Rao

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The release study data was fitted into different kinetic models and the mechanism & kinetics of drug release was determined. The optimized formulation followed first order kinetics with polymer controlled diffusion.

6.2. CONCLUSION

Enhancement of bioavailability aided by enhanced solubility is the key point of focus in the present research.

The present work is focused on development of ondansetron loaded pellets, which serves the purpose of increasing solubility due to reduced affective surface area. The Microcrystalline Cellulose and Sodium Starch Glycolate are the important excipients in the formulation of pellets.

Using Design Expert Software various proportions of the MCC and SSG, and the method of preparation were decided. The ondansetron loaded pellets were formulated and evaluated. They were evaluated for Percent yield, angle of repose and Carr's index and analyzed by Design Expert Software. Finally, optimized formulation was subjected to *in vitro* dissolution studies and kinetic fitting model.

It was observed that the formulation consisting of 18.35 mg of MCC, 102.625 mg of SSG are the optimal concentrations in making effective formulations by extrusion method with desired responses. It showed a drug release of $80.15 \pm 1.18\%$ in 8 hrs.

Thus by this work, we could conclude that Ondansetron loaded pellets can be used as efficient means of formulation to enhance solubility and helping to enhance the bioavailability of the drug and as efficient oral drug delivery system for Ondansetron.

6.3. SIGNIFICANT CONTRIBUTION OF THE RESEARCH PROJECT

- ✓ The formulation developed is useful for the improvement of solubility of the drug



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- ✓ The patient compliance can be enhanced.

Thus this research work, the formulation technique used was effective reproducible and the formulations were safe and efficient in carrying the drug to the systemic effect.

6.4. FURTHER WORK TO BE DONE

- ✓ *Ex vivo* evaluation
- ✓ *In vivo* evaluation.




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IV Year - I Semester

L	T	P	C
4	1	0	4

PHARMACEUTICAL ANALYSIS – II**UNIT – I**

10

Visible, UV & IR Spectrophotometry: Principle, Electron Transition, Beer-Lamberts Law & Deviations, Chromophore concept, Instrumentation – Construction of Single Beam and Double Beam Spectrophotometers, Woodward-fieser rules for calculating absorption maximum and Applications.

LO: To understand principles, instrumentations and working of UV and its Spectrophotometers – applications with examples.

UNIT – II

08

Nuclear Magnetic Resonance spectroscopy:-

Basic Principle, Instrumentation, Chemical Shift, Shielding & Deshielding effects, factor influencing Chemical shift and Applications.

Electron Spin Resonance Spectroscopy: Basic Principle, Instrumentation, Hyperfine splitting, g-value and Applications.

Mass Spectrometry: Basic Principle, Instrumentation and Applications.

LO: To understand principles, instrumentations, applications with examples of NMR, ESR, Mass spectrometry.

UNIT – III

10

Basic Principles and applications of differential thermal analysis (DTA) and differential scanning calorimetry (DSC).

Basic Principles and applications of Atomic absorption spectroscopy, XRD, Emission spectroscopy and Raman spectroscopy.

Optical rotatory dispersion (ORD) and Circular dichroism: General Principle and Applications.

Radio Immuno Assay & Enzyme Linked Immuno Sorbent Assay.

LO: To understand basic principles and applications of DTA, DSC, XRD, Atomic absorption, Emission, Raman, ORD and Radio Immuno Assay.

UNIT – IV

08



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Chromatography: Column chromatography, Paper chromatography, TLC, Ion exchange chromatography, Gel chromatography.

LO: To understand principles and procedures of various types of chromatography with examples.

UNIT – V

08

GLC, HPLC, HPTLC

LO: To understand principles, instrumentations and applications of GLC, HPLC, HPTLC.

UNIT – VI

06

LCMS and Electrophoresis: Scope, Different types Electrophoresis and applications.

LO: To understand principles, instrumentations and applications of LCMS and Electrophoresis

TEXT BOOKS

1. R.M. Silverstein and G.C. Bassler. Spectrometric Identification of Organic Compounds
2. AH Beckett & Stenlake, Text book of Practical Pharmaceutical chemistry, Vol I & II CBS Publ.
3. AI Vogel, Quantitative Chemical Analysis
4. Hobart. H. Willard and others, Instrumental methods of analysis, CBS publ and Distributors New Delhi.
5. Robert D. Brown, Introduction to Instrumental Analysis.
6. Skoog, Principles of Instrumental Analysis.
7. B K Sharma, Instrumental and Chemical Analysis, Goel Publ House, Hyderabad.
8. Elementary organic spectroscopy (Principles and applications) by YR Sharma.
9. Basic concepts of Analytical Chemistry by SM Khopkar.
10. Pharmaceutical Analysis – II by PC Kamboj.
11. Pharmaceutical Analysis – III by PC Kamboj.
12. Qualitative organic Analysis (Spectrochemical technique) by William Kemp.

REFERENCES

1. Settle, Handbook of Instrumental Techniques for Analytical Chemistry.
2. Y. Anjaneyulu & Maraiiah, Quality Assurance & Quality Management in Pharmaceutical Industry.
3. P.D. Sethi, Quantitative analysis of Drugs and Pharmaceuticals.
4. K. A. Cornors, A Textbook of pharmaceutical analysis, Wiley Interscience, NY.



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SURAMPALEM 533 43

A Thesis Report on

**COLORIMETRIC DETERMINATION OF PHENOL IN WATER
SAMPLES BY DERIVATIZATION USING FOLIN -
CIOCALTEUREAGENT (FC REAGENT)**

Thesis submitted to



Jawaharlal Nehru Technological University, Kakinada, A.P

In the partial fulfilment for the award of the degree of

Bachelor of Pharmacy

V.S.S. KRISHNAVENI (173G5R0001) DIMAN DAS(153G1R0011)

Y. SUBHA PRAŞANNA(173G5R0002) U.V.S. SUSHANTHIKA (153G1R0058)

HAFIZ ELHAJ ELHAFIA ABDELRAHIM(153G1R0088)

Under the Esteemed Guidance of

Miss. B.SUJIYA.,M.Pharm

Assistant Professor, Pharmaceutical Analysis.



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ADITYA PHARMACY COLLEGE

(FORMERLY KNOWN AS SRI SALADITYA INSTITUTE OF PHARMACEUTICAL SCIENCES & RESEARCH)

(Affiliated to Jawaharlal Nehru Technological University, Kakinada)

APPROVED BY AICTE & PCI

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

2017-2020



ADITYA PHARMACY COLLEGE

(EARLY KNOWN AS SRI SAI ADITYA INSTITUTE OF PHARMACEUTICAL SCIENCES & RESEARCH)

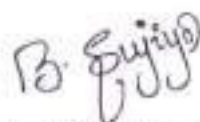
(Affiliated to Jawaharlal Nehru Technological University, Kakinada)

APPROVED BY AICTE & PCI

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

CERTIFICATE

This is to certify that the investigation described on this thesis entitled "COLORIMETRIC DETERMINATION OF PHENOL IN WATER SAMPLES BY DERIVATIZATION USING FOLIN - CIOCALTEU REAGENT (FCREAGENT)" is submitted by T.ANUSHA(153H1R0072), T.ANUSHA(153H1R0073), V.SASIKIRAN(153H1R0074), V.S.K.CHAITANYA(153H1R0075), V.S.P.R.LAKSHMI(153H1R0076), V.S.R.KRISHNA(153H1R0077), of ADITYA PHARMACY COLLEGE, SURAMPALEM, affiliated to Jawaharlal Nehru Technological University, Kakinada for the partial fulfilment Bachelor of Pharmacy. The report embedded in this thesis was carried out under the guidance of Miss. B.SUJIYA, M.Pharm, Assistant Professor, ADITYA PHARMACY COLLEGE, SURAMPALEM.



Miss. B.SUJIYA, M.Pharm

Assistant Professor,

ADITYA PHARMACY COLLEGE,

Surampalem - 533437

East Godavari (A.P).

Dr.V .RAVI SANKAR, M.Pharm, Ph.D

Principal,

ADITYA PHARMACY COLLEGE,

Surampalem - 533437

East Godavari (A.P).



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SURAMPALAM 533 437



EXTERNAL EXAMINER

DECLARATION

We hereby declare that the research work embodied in this thesis entitled "Colorimetric estimation of phenol in water samples by derivatization using FOLIN-CIOCALTEU REAGENT (FCREAGENT)" was carried out by us in the Department of Pharmaceutical Analysis, Aditya Pharmacy College, Surampalem, affiliated to JNTU, Kakinada, India, under the supervision of Miss. B. SUJIYA., Assistant Professor of Pharmaceutical Analysis, Aditya Pharmacy College, Surampalem. The extent and source of information derived from the existing literature have been indicated throughout the thesis at appropriate places. The work is original and has not been submitted in partial or full for any diploma or degree of this or any other University.

V.S.s.k. veni

V.S.S. KRISHNAVENI (173G5R0001)

Y. Subha prasanna


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DIMAN DAS (153G1R0011)

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U.V.S. SUSHANTHIKA (153G1R0058)

HAFIZ ELHAJ ELHAFIA ABDELRAHIM (153G1R0088).


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Conclusion:

%RSD was found to be within the limits, So the method was found to be Precise.

4. LOD and LOQ:

Parameters	At 550nm
LOD	0.441 µg/ml
LOQ	1.35 µg/ml

Table 7.4: LOD and LOQ data for Water Sample - A

Parameters	At 550nm
LOD	0.448 µg/ml
LOQ	1.45 µg/ml

Table 7.5: LOD and LOQ data for Water Sample - B**5. SPECIFICITY:**

The Blank(Water) showed no absorbence at maximum wavelength

Conclusion:

There is no solvent interference.




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III Year - I Semester

L	T	P	C
4	1	0	4

PHARMACOGNOSY – II

Definition, general tests and detailed Pharmacognostic study of the following drugs.

UNIT I**10****Glycoside containing drugs:**

- | | | |
|----|--------------------------|--|
| a. | Saponin Glycosides | : Glycyrrhiza, Ginseng, Dioscorea, Sarasaparilla & Senega. |
| b. | Cardio active Glycosides | : Digitalis, Squill, Strophanthus & Thevetia. |
| c. | Anthraquinone Glycosides | : Aloe, Senna, Rhubarb & Cascara. |
| d. | Bitter Glycosides | : Psoralea, Gentian & Chirata. |

LO: To understand that Glycosides are isolated from plant sources and have varied action based on aglycone part.

UNIT II**10****Alkaloid containing drugs:**

- | | | |
|----|-----------------------------------|--|
| a. | Pyridine – Piperidine derivatives | : Tobacco & Lobelia. |
| b. | Tropane | : Belladonna, Hyoscyamus, Datura, Coca & Aswagandha. |
| c. | Quinoline & Isoquinoline | : Cinchona, Ipecac, Opium. |
| d. | Indole | : Ergot, Rauwolfia, Vinca, Nux-vomica |
| e. | Imidazole | : Pilocarpus |
| f. | Steroid | : Kurchi |
| a. | Alkaloidal amine | : Ephedra & Colchicum. |
| b. | Glycoalkaloid | : Solanum |
| c. | Purine | : Coffee, Tea. |

LO: To understand that Alkaloids of different structures are synthesized by different plants and possess varied activities based on structure.

UNIT - III**07**

Systematic Pharmacognostic study of the following Volatile oil containing drugs: Mentha, Coriander, Cinnamon, Lemon Oil, Nutmeg, Eucalyptus, Ginger, Cardamom, Tulsi, Lemon Grass, Caraway, Cumin, Dill, Clove, Fennel and Black Pepper.

LO: To maintain quality in volatile oils.



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UNIT- IV**06**

Biological source, preparations, identification tests and uses of the following enzymes:
Diastase, Papain, Pepsin, Trypsin, Pancreatin.

LO: To understand that different enzymes of useful nature are produced by plants

UNIT-V**10****Biogenesis of Phytopharmaceuticals:**

General techniques of biosynthetic studies and basic metabolic pathways.

Brief introduction to biogenesis of secondary metabolites of Pharmaceutical importance.

Biosynthesis of Atropine, Morphine, Isoprenoid compounds and Cardiac glycosides.

LO: To understand that compounds of varied chemical nature are produced by Plants (chemo diversity).

UNIT – VI**07**

Study of plant Fibers like Cotton, Cotton Wood Pulp, Jute, Silk, Hemp and Flax used in surgical dressing and related products.

The applications of natural dyes like Turmeric, Henna, Saffron, Cochineal and Marigold in Pharmacy.

LO: Plants exhibit a lot of diversity in producing Fibers useful for fabrics as well as Dyes to colour them.

TEXT BOOKS

1. Trease and Evans, Pharmacognosy.
2. Tyler, Brady & Robert, Pharmacognosy.
3. Wallis, Text book of Pharmacognosy.
4. Quadry, Pharmacognosy.
5. Kokate C.K., Purohit AP & Gokhale, Pharmacognosy
6. S.L.Deore, et.al., Pharmacognosy and Phytochemistry, A comprehensive approach

REFERENCES

1. Atal C.K & Kapur B.M, Cultivation & Utilization of Medicinal Plants.
2. Ayurvedic Pharmacopoeia of India, Pub by Govt. Of India
3. Khare C.P, Indian Medicinal plants – An Illustrated dictionary
4. Arya Vaidya Sala, Indian Medicinal Plants, University Press



Signature
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SURAMPALAM 517 457

PREFORMULATION, FORMULATION AND EVALUATION OF POLYHERBAL FORMULATIONS FOR GREY HAIR

Thesis submitted to



Jawaharlal Nehru Technological University, Kakinada, A.P.,

For the award of the degree of

Bachelor of Pharmacy

N.L.TULASI (163G1R0032) N.S.R.L.MANIMALA (163G1R0034)

N.BALARAJU (163G1R0033) N.L.B.ANUSHA (163G1R0035)

P.T.V.ARAVINDAM RAO (163G1R0037)

Under the guidance of

M.VINAY KUMAR, M.PHARM, (Ph.D)

Assistant Professor in Pharmacognosy & Phytochemistry



Aditya Pharmacy College

Surampalem -533437




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Aditya Pharmacy College
SURAMPALM 533 437

CERTIFICATE



This is to certify that N. L. Tulasi, N. Balaraju, N. S. R. L. Manimala, N. L. B. Anusha, P. T. V. Aravindam Rao has carried out the dissertation work on “PREFORMULATION, FORMULATION AND EVALUATION OF POLYHERBAL FORMULATIONS FOR GREY HAIR ” the partial fulfillment of the requirements for the award of B.pharm in Pharmacognosy & Phytochemistry and this dissertation work is a bonafied research work done by them under my supervision and guidance at the department of Pharmacognosy & Phytochemistry, Aditya Pharmacy College, Surampalem, affiliated to Jawaharlal Nehru Technological University, Kakinada.

M.VINAYKUMAR, M. PHARM, (Ph.D)

Assistant Professor in Pharmacognosy & Phytochemistry

Aditya Pharmacy College

Surampalem

Place: Surampalem

Date:




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 SURAMPALAM-517 117

DECLARATION

The research work embodied in this thesis entitled "PREFORMULATION, FORMULATION AND EVALUATION OF POLY HERBAL HAIR DYE" was carried out by us in the Pharmacognosy Laboratories of Department of Pharmacognosy and Phytochemistry, Aditya pharmacy college, surampalem, Affiliated to Jawaharlal Nehru Technological University, Kakinada, Andhra Pradesh, India, under the supervision of Mr.M.Vinay kumar, M.Pharm, Assistant Professor in Pharmacognosy & Phytochemistry, Aditya pharmacy college, Surampalem. The extent and source of information derived from the existing literature have been indicated throughout the thesis at appropriate places. The work is original and has not been submitted in partial or full for any diploma or degree of this or any other University.

N.L. Tulasi N.L.TULASI (163G1R0032)

N. Bola A. N.BALARAJU (163G1R0033)

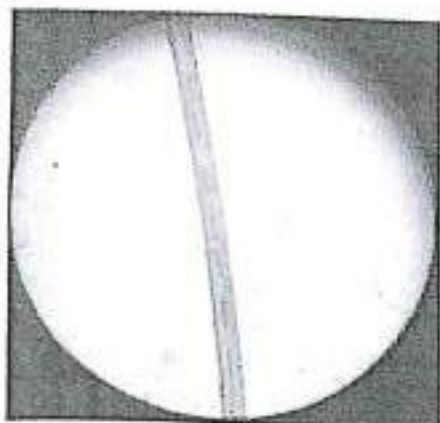
N.S.R.L. Maini N.S.R.L.MANIMALA (163G1R0033)

N.L.B.ANUSHA (163G1R0035)

P.T.V. Aravindam P.T.V.ARAVINDAM RAO (163G1R0037)




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F5



F9



F10

These are the results of grey hair after being treated with the above formulations. Different shades of colours such as mahogany, blonde, orange, blackish colours are obtained.

DISCUSSION:

To mask grey hair various polyherbal hair dye formulations are formulated and applied on to grey hair and the formulations which had shown better colour change are selected and repeated trials were done to obtain satisfactory results. Thus polyherbal formulations with henna, indigo, tea, coffee, amla, beetroot had shown colour change into like blond, mahogany orange and copper red. The formulations with black and pale catechus, bhringraj and myrobalan had turned grey hair into light black colour with whitish spots to complete black colour as a satisfactory hair dye. These formulations were made without harmful ingredients. These polyherbal formulations are safe to skin and hair and do not cause any damage to hair shaft. Thus, formulated polyherbal hair dye is user friendly, safe and stable.



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II Year - II Semester

L	T	P	C
4	1	0	3

PHARMACOGNOSY – I**UNIT-I**

Definition, History, Scope and development of Pharmacognosy. General introduction to alternative systems of medicine like Ayurveda, Siddha, Unani and Homeopathy. **02**

Brief introduction to natural sources of drugs with examples: Plant Source, Animal Source, Mineral Source, Marine Source and microorganisms. **04**

LO: To make the students understand that drugs are obtained from different sources and crude drugs are used in the indigenous systems of medicine.

UNIT-II**06**

Classification of Crude Drugs: Alphabetical, Morphological, Pharmacological, Chemical, Taxonomical and Chemo taxonomical methods of classification with suitable examples.

LO: To make the students understand that crude drugs can be classified based on several criteria.

UNIT-III**08**

Cultivation, collection, processing, drying and storage of medicinal plants:

- Factors influencing cultivation of medicinal plants.
- Plant hormones and their applications.
- Definitions and examples for polyploidy, mutation and hybridization with reference to medicinal plants.

Good Agriculture Practices: Strategies of obtaining improved cultivation of medicinal plants.

LO: To understand improved agricultural conditions provide high yield and the methods be standardized to get consistent yields.

UNIT-IV**08**

Adulteration & Evaluation of crude drugs:

Adulteration of crude drugs: Different methods of adulteration of crude drugs and general methods for detection of adulterants like Organoleptic, Microscopic, Physical, Chemical and Biological methods of evaluation.

LO: To provide enough knowledge to identify adulterants from genuine products and to provide quality products.

UNIT-V**08**

Systematic Pharmacognostic study of the following carbohydrates and derived products:

Acacia, Tragacanth, Agar, Starch, Guar gum, Pectin, Ispaghula and Honey.

LO: To provide quality products of the above as excipients.



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SURAMPAL-EM 533 437

UNIT-VI**14**

Systematic Pharmacognostic study of the following Lipids: Castor oil, Cod liver oil, Shark liver oil, Linseed oil, Cocoa butter, Kokum butter, Bees wax, Wool fat, Hydnocarpus oil, Spermaceti, Lard and Olive oil.

Study of Tannins & Tannin containing drugs: Gambier, Black catechu, Myrobalan & Arjuna.

Study of Resins & Resin containing drugs: Benzoin, Asafoetida, Balsam of Tolu, Podophyllum.

LO: To maintain quality in fixed oils & understand that Tannins and Resins and their combination products are produced by different plants.

TEXT BOOKS

1. Trease and Evans, Pharmacognosy.
2. Tyler, Brady & Robert, Pharmacognosy.
3. T.E.Wallis, Textbook of Pharmacognosy.
4. Kokate C.K, Purohit AP & Gokhale Pharmacognosy.
5. G.S.Kumar, K.N.Jayaveera, A Text Book of Pharmacognosy and Phytochemistry.

REFERENCES

1. Atal C.K & Kapur B.M, Cultivation & Utilization of Medicinal Plants.
2. Ayurvedic Pharmacopoeia of India, Pub by Govt. of India.
3. Heinrich, Fundamentals of Pharmacognosy and Phytotherapy.
4. R.N Chopra, S.L Nair and I.C Chopra, Glossary of Indian Medicinal Plants, CSIR, New Delhi
5. A A Farooqi and B S Sree Ramu, Cultivation of Medicinal and Aromatic Crops. University Press
6. Quadry, Pharmacognosy.



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SURAMPAL EM-533 437

PRELIMINARY PHYTOCHEMICAL SCREENING, ANTIBACTERIAL
AND ANTHELMINTIC ACTIVITIES OF ALCHOLICLEAFEXTRACTS
OF HIBISCUS TILIACEUS

Thesis submitted to



Jawaharlal Nehru Technological University, Kakinada, A.P.,

For the award of the degree of

Bachelor of Pharmacy

IDALU MARNATHA IRUMEKHAI(163G1R0074)

M.JAYALEKSHMI(153G1R0075)

K.YASWANTH (163G1R0076)

KYRRPANGSING WANNIANG (163G1R0077)

M.SUPRAJA(163G1R0078)

Under the guidance of

K. HARI KAMESH KIRAN, M.PHARM

Assistant Professor in Pharmacology



Aditya Pharmacy College

Surampalem -533437

2016-2020



PRINCIPAL

**Aditya Pharmacy College
SURAMPalem 533 437**

CERTIFICATE



This is to certify that IDALU MARANATHA IRUMEKHA, M. JAYALEKSHMI, K. YASWANTH, KYRPANGSING WANNIANG, M. SUPRAJA has carried out the dissertation work on "PRELIMINARY PHYTOCHEMICAL SCREENING, ANTIBACTERIAL AND ANTHELMINTIC ACTIVITIES OF ALCOHOLIC EXTRACTS OF *ALANGIUM SALVIFOLIUM*" in the partial fulfillment of the requirements for the award of B.Pharm in Pharmacology and this dissertation work is a bonafide research work done by them under the supervision of K. HARIKAMESH KIRAN and guidance at the department of Pharmacology, Aditya Pharmacy college, Surampalem, affiliated to Jawaharlal Nehru Technological University, Kakinada.

PRINCIPAL,

Professor in Pharmaceutical Analysis,

Aditya Pharmacy College,

Surampalem.

Place: Surampalem

Date:



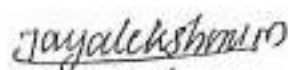
PRINCIPAL
Aditya Pharmacy College
SURAMPALAM 522 027

DECLARATION

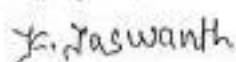
The research work embodied in this thesis entitled "PRELIMINARY PHYTOCHEMICAL SCREENING, ANTIBACTERIAL AND ANTHELMINTIC ACTIVITIES OF ALCOHOLIC EXTRACTS HIBISCUS TILIACEUS" was carried out by us in the Pharmacology Laboratories of Department of Pharmacology, Aditya Pharmacy college, Surampalem, affiliated to Jawaharlal Nehru Technological University, Kakinada, India, under the supervision of Mr. K. HARI KAMESH KIRAN, M.Pharm, Assistant Professor in Pharmacology, Aditya pharmacy college, Surampalem. The extent and source of information derived from the existing literature have been indicated throughout the thesis at appropriate places. The work is original and has not been submitted in partial or full for any diploma or degree of this or any other University.



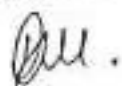
IDALU MARANATHA IRUMEKHAI(163G1R0074)



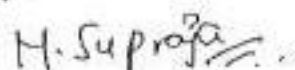
M.JAYALEKSHMI(153G1R0075)



K.YASWANTH (163G1R0076)



KYRRPANGSING WANNIANG (163G1R0077)



M.SUPRAJA(163G1R0078)



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CONCLUSION :

Medicinal plants are potential renewable natural resources and are generally considered to play a beneficial role in human health care. The medicinal value of these plants lies in some chemical substances that produce a definite physiological action on the human body. The most important of these bioactive compounds are alkaloids, flavonoids, tannins and phenolic compounds.

This thesis establishes a marked anthelmintic and anti-bacterial activity of ethanolic extract of the whole plant of **Hibiscus tiliaceus**. However actual anti-bacterial and anti-helminthic ingredients 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 drug development. However, before coming to the conclusive statement, further research is needed to investigate the bioactive constituents which are responsible for this biological activities.



A handwritten signature in green ink, consisting of stylized initials and a surname.

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SURAMP-128-533 437

IV Year - I Semester

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PHARMACEUTICAL ANALYSIS – II LAB

Experiments

1. Interpretation of IR Spectra.
2. Determination of λ - max and construction of calibration curve of a drug.
3. Determination of concentration of glycerine by Abbe's refractometer.
4. Assay by UV- spectrophotometry (Atleast 4 drugs).
5. Assay by Colorimetric method (Atleast 2 drugs).
6. Ascending paper chromatography.
7. Radial paper chromatography.
10. Two dimension chromatography
11. Thin layer chromatography (Atleast 3 drugs).
12. Column chromatography (*Demonstration Only*).
13. Paper electrophoresis of amino acids.
14. Gel electrophoresis (*Demonstration Only*).
15. HPLC (*Demonstration Only*).



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Aditya Pharmacy College
SURATI



VASUDHA PHARMA CHEM LIMITED

Unit-II : Plot No. 79, Jawaharlal Nehru Pharma City, Parawada, Visakhapatnam-531019, Andhra Pradesh, INDIA.

Phone: +91-8924-236227, 236228

E-mail: mwu2@vasudhapharma.com

Fax : +91-8924-236229

Website: www.vasudhapharma.com

03rd June, 2019

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Ms. Rajana Ramya, (Regd. No.163G1R0041) a Third year B. Pharm student of ADITYA PHARMACY COLLEGE, Surampalem, E.G.Dist has undergone a project work on "High Pressure Liquid Chromatography (HPLC)" in Quality Control department at our unit as part of her curriculum.

She has successfully completed her project in stipulated period from 13th May, 2019 to 03rd June, 2019.

We found her sincere and hardworking. Her conduct during the above period found Satisfactory.

For VASUDHA PHARMA CHEM LTD.,

 03/06/19

Authorized Signatory




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I Year - II Semester

L	T	P	C
4	1	0	3

PHYSICAL PHARMACY - I

UNIT - I 10

Intermolecular forces and states of matter: Binding forces between molecules, the states of matter, the gaseous state, the liquid state, solids and the crystalline state. Phase equilibria and the phase rule.

LO: To learn intermolecular forces and states of matter, Phase equilibria and Phase rule

UNIT - II 08

Thermodynamics: The first law of thermodynamics, The second law of thermodynamics. The third law of thermodynamics, Free energy functions and applications. Thermochemistry

LO: To understand laws of Thermodynamics and their Applications

UNIT - III 08

Physical properties of Drug Molecules: Dielectric constant induced polarization, Dipole moment, Refractive index and Molar refraction, Optical rotatory dispersion.

LO: To understand the physical properties of drug molecules and their significance.

UNIT - IV 12

Solutions of Non electrolytes: Concentration expressions, Ideal and Real solutions, Colligative properties, molecular weight determinations.

LO: To understand properties of Non electrolytes and their significance

Solutions of Electrolytes: Properties of solutions of electrolytes. The Arrhenius theory of electrolyte dissociation. The modern theory of strong electrolytes and other coefficients for expressing colligative properties.

LO: To know theories of electrolytes and their **dissolution** and colligative properties

UNIT - V 05

Buffers and buffered isotonic systems: The buffer equation, buffer capacity, buffers in pharmaceutical and biological systems, buffered isotonic solutions, methods of adjusting tonicity and pH (relevant numerical problems).

LO: To know about buffers, buffer isotonic solutions, Methods of adjusting isotonicity and their Significance.

UNIT - VI 07

Solubility and Distribution Phenomena: Solvent-solute interaction, solubility of gases in liquids, liquids in liquids, solids in liquids, distribution of solutes in immiscible solvents.

Introduction to phenomena of diffusion: Ficks first law and second law.

LO: To understand the solubility and distribution phenomenon and laws of diffusion.



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DATE: 07-06-2019

TO WHOMSOEVER IT MAY CONCERN

This is to certify that P.T.V ARAVINDAM RAO B, Pharmacy student of ADITYA PHARMACY COLLEGE , bearing Registration No: 163G1R0037 have undergone instrumentation training for HPLC, GC, FT-IR, UV-Visible Spectrophotometer and Chemical Analysis, **Dissolution** & Disintegration Apparatus, Punching Machine and Coating pan.

He also undergone training in analytical R&D department and Microbiology Department overall for a period from 08th MAY 2019 to 08th JUNE 2019 in our organization. During this period his performance is satisfactory.

We wish him the very best in all his future endeavors.

Best Regards,
Chandra Labs

Authorized Signatory

Sapvarad
07/06/2019



[Signature]
PRINCIPAL
Aditya Pharmacy College
SURAMPALAM-533 417

II Year - II Semester

L	T	P	C
4	1	0	3

PHARMACEUTICAL ANALYSIS -I**UNIT-I****08**

A General introduction to Pharmaceutical analysis and general aspects of Standardization of Pharmaceutical chemicals and Formulated products mentioned in Indian pharmacopoeia. Importance of proper sampling and general books for pharmaceutical standards like pharmacopoeias, National formularies.

Computation of analytical results, Significant numbers, rejection of doubtful values with reference to Volumetric and Gravimetric analysis, sources of errors and Calibration of analytical equipment used in volumetric and Gravimetric analysis.

LO: To understand the concept of standardization by gravimetric and volumetric methods.

UNIT-II**10**

Acid-Base titrations: Theoretical basis of neutralization reactions including electrolytic dissociation, application of law of mass action, relative strength of acids and bases, hydrolysis of salts and buffer solutions, theory of neutralization indicators and factors involved in the selection of indicators for different types of acid-base titrations. Procedures involved in different types of titrations using strong acid, weak base, strong base, weak base and back titration with blank determination. Assay of Boric acid Sodium bicarbonate, Borax, calcium hydroxide, zinc oxide, calcium carbonate, Acetyl salicylic acid, Formaldehyde, NaOH in presence of sodium carbonate.

Non-aqueous titrations: Principles, Advantages and pharmaceutical applications, solvents reagents and indicators used in Non aqueous titrimetry, other methods of detecting end points. Examples of titrations of alkali metal and alkaline earth metal salts of organic acids, primary, secondary and tertiary amines, halogen acid salts of bases, titration of acidic substances. Assay of thiamine hydrochloride.

LO: To understand the concept of standardization by aqueous and non-aqueous titrations.

UNIT-III**08**

Oxidation-reduction titrations: theoretical considerations including standard potentials, calculation of redox potentials, redox indicators, principle and procedure involved in different types of redox titrations using potassium permanganate, iodine. Titrations of released iodine and back titration of excess iodine, potassium iodate, ammonium ceric sulphate and titanous chloride. Assay of ferrous sulphate, Hydrogen peroxide, Sodium nitrate, Estimation of ascorbic acid with 2,6-dichlorophenol indophenols, Assay of mercuric chloride, Assay of sodium metabisulphite, Assay of copper sulphate

LO: To understand the concept of standardization by oxidation – reduction methods.

UNIT-IV**10**

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Precipitation titrations: principles and procedures involved in Argentimetry, use of Silver nitrate and Ammonium thiocyanate. Indicators used in precipitation titrations including adsorption indicators, Mohr's and Volhard's methods with examples. Assay of Potassium chloride, Ammonium thiocyanate, Assay of Mercuric oxide.

Complexometric titrations: Basic principles of Complexometric analysis including theories of complex ions, chelating agents, properties of metal complexes with particular reference to EDTA. Basic principles of complexometric analysis including theories of complex formation. Werner's coordination number and structure of complex ions, Chelating agents, properties of metal complexes with particular reference to EDTA, various examples of titrations of metal ions using Disodium acetate, indicators and end point detection using indicators and by physical methods, masking and demasking agents, pharmaceutical applications of complexometry with particular reference to I.P. Assay of Calcium gluconate injection/tablets, Calcium lactate and Assay of Aluminium sulphate

LO: To understand that standardization can be done for some compounds by Precipitation titrations.

UNIT-V

08

A detailed study of gravimetric analysis including principles involved, critical factors and typical methods involving precipitation, coagulation, digestion, filtration and incineration procedures with suitable examples. Advantages and disadvantages, sources of errors and their elimination in gravimetric analysis. Determination of sulphate as barium sulphate, Estimation of magnesium as magnesium pyrophosphate, Determination of thiamine as silico tungstate.

LO: To understand that standardization can be done for some compounds by gravimetric method.

UNIT-VI

06

Principles and procedures involved and application of nitrite titrations, titrations using 2, 6-dichlorophenol-indophenol. Aquametry including use of Karl-fisher reagent and moisture balances.

Gas analysis: principles of gas analysis use of hempel's gas burette and pipette, nitrometer, haldome's and orset's gas analysis apparatus and their operations. Examples of gas analytical methods of pharmaceutical significance.

LO: To understand that moisture in drugs can be determined by Karl-Fisher titration.

TEXT BOOKS:

1. Indian pharmacopoeia
2. Practical Pharmaceutical Chemistry by A.H. Becket and Stenlake
3. Quantitative Inorganic Analysis by A.I. Vogel.
4. L. M. Atherden, Bentley and Driver's Textbook of Pharmaceutical Chemistry, Oxford University Press, Delhi.
5. Pharmaceutical Analysis, Volume -I by PC Kamboj.



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SURAMPALM 533 437

Chandra Labs

An NABL Accredited Lab (As Per ISO : 17025)
Approved by Drugs Control Administration
Govt. of Telanagana



DATE: 09-07-2019

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **KOTIPALLI THEJASWI B.** Pharmacy student of **ADITYA PHARMACY COLLEGE**, bearing Registration No: **163G1R0023** have undergone instrumentation training for HPLC, GC, FT-IR, UV-Visible Spectrophotometer and Chemical Analysis, Dissolution & Disintegration Apparatus, Punching Machine and Coating pan.

She also undergone training in analytical R&D department and Microbiology Department overall for a period from **08-05-2019** to **08-07-2019** in our organization. During this period her performance is satisfactory.

We wish her the very best in all her future endeavors.

Best Regards,
Chandra Labs.



Signature

aprasad
9/7/2019



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I Year - II Semester

L	T	P	C
4	1	0	3

PHARMACEUTICAL INORGANIC CHEMISTRY

UNIT-I

08

1. Classification of inorganic pharmaceuticals based on their applications and therapeutic uses.
2. Sources of impurities, **quality control** and test for purity. Limit tests for chlorides, sulphates, iron, arsenic, lead and heavy metals and their pharmacopoeial standards.

LO: Pharmaceutical orientation to inorganic chemistry, definitions, principles, procedures, limits of detection, keeping the impurities in pharmaceutical substances to the minimal level.

UNIT-II

10

1. **Sodium, potassium and calcium replenishers:** sodium chloride, compound sodium chloride solution (Ringer solution), potassium chloride, ORS.
2. **Calcium replenishers:** Calcium chloride, calcium gluconate, dibasic calcium phosphate.
3. **Acid-base regulators:** sodium bicarbonate, sodium lactate, sodium citrate/potassium citrate, sodium acetate and ammonium chloride.
4. **Antacids:** Aluminium hydroxide gel, dried aluminium hydroxide gel, magnesium oxide, magnesium hydroxide mixture, magnesium trisilicate and calcium carbonate.
5. **Expectorants:** Ammonium chloride, potassium iodide.
6. **Emetics:** Potassium antimony tartrate and copper sulfate.
7. **Antidotes:** Sodium thiosulphate and sodium nitrite.

LO: Properties, classification, preparation, assay of ammonium chloride, sodium thiosulfate and sodium nitrite, uses.

UNIT-III

08

1. **Adsorbents:** Light kaolin, heavy kaolin and activated charcoal.
2. **Astringents:** Zinc oxide and Bismuth subcarbonate.
3. **Protectants:** Calamine, zinc oxide, zinc stearate, talc and titanium dioxide
4. **Silicone polymers:** Activated Dimethicone
5. **Anti-infectives:** Hydrogen peroxide solution, potassium permanganate, silver nitrate (Silver protein), iodine (Solutions of iodine, povidone-iodine) boric acid and yellow mercuric chloride.

LO: Properties, preparation wherever applicable, assay of hydrogen peroxide, potassium permanganate, boric acid, zinc oxide and uses.

UNIT-IV

08



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1. **Laxatives:** Magnesium sulphate and Sodium phosphate.
2. **Haematinics:** Ferrous sulphate, Ferrous fumarate, Ferrous gluconate, Ferric ammonium Citrate, Iron and Dextrose injection.
3. **Suspending agents:** Bentonite and Colloidal silica.
4. **Excipients:** Di and tricalcium phosphates, Magnesium stearate, talc and Calcium carbonate (precipitated chalk).
5. **Colorants:** Titanium oxide and Ferric oxide.

LO: Properties, preparations wherever applicable, uses.

UNIT-V

08

Dental products:

1. **Fluorides:** Sodium fluoride and Stannous fluoride.
2. **Oral antiseptics:** Hydrogen peroxide, Zinc peroxide and mouth washes.
3. **Dentifrices:** Dibasic calcium phosphate, Strontium chloride and Sodium metaphosphate.
4. **Cements and Fillers:** Zinc oxide.

LO: Properties, preparations wherever applicable, uses.

UNIT-VI

08

Miscellaneous medicinal agents of inorganic nature:

Cisplatin (Antineoplastic), lithium carbonate (Antipsychotic), Barium sulfate (diagnostic agent), Plaster of paris (surgical aid), Sodium Aurothiomalate (antirheumatic), Sodium antimonygluconate (internal parasiticide) and Potassium perchlorate (antithyroid).

LO: Structures, properties and uses.

TEXT BOOKS

1. A.H.Beckett and J.B.Stenlake, Practical pharmaceutical chemistry, Part-I. The Athtome press, University of London, London.
2. Advanced Inorganic Chemistry by Satya prakash, G.D.Tuli
3. Wal Ankita, Wal, Pranay, Rai, Awani Kumar, Inorganic Pharmaceutical Chemistry, New Age International Publishers.

REFERENCES

1. J.H Block, E.Roche, T.O Soine and C.O. Wilson, Inorganic Medical and pharmaceutical Chemistry Lea & Febiger Philadelphia PA.
2. P. Gundu Rao, Inorganic pharmaceutical chemistry; Vallabh Prakashan, Delhi.
3. L.M. Atherden, Bentley and Driver's Textbook of Pharmaceutical Chemistry Oxford University Press, London.
4. G.R Chatwal, Pharmaceutical Chemistry Inorganic, Himalaya Publishers.
5. K Somasekhar Rao, C Venkata Suresh, Pharmaceutical Inorganic Chemistry, Pharma Med Press.



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Sri Vyjayanthi Labs Pvt. Ltd.

TO WHOM SO EVER IT MAY CONCERN

Date : 30-05-2019

This is to certify Ms. Kommireddi Bhagya Venkata Sai lakshmi, D/o Kommireddi Surya Narayana Murthy (Roll No.163G1R0019) is a student of Aditya Pharmacy College, Aditya Nagar, ADB Road, Surampalem, Andra Pradesh -533437. Has undergone Industrial Training in our organization from 01/05/2019 to 30/05/2019 as a part of fulfillment of her B.Pharmacy Course.

During the period she had interacted with Regulatory Affairs, production, Environment Health & safety, Maintenance, Warehouse, **quality control**, quality Assurance, Research Development and Acquired relevant basic knowledge in these areas.

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

For Sri Vyjayanthi Labs Pvt. Ltd.

Authorised Signatory



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM 533 437

I Year - I Semester

L	T	P	C
4	1	0	3

PHARMACEUTICAL ORGANIC CHEMISTRY-I**UNIT-I****08**

Structure and reactivity of organic molecules: Types of chemical bond and hybridization, Polarity of bonds, electronic effects: Electromeric effect, Inductive effect, Mesomeric effect and Hyperconjugation and their influence on the properties of organic molecules; charged species: carbocations and carbanions, their generation, stabilities, rearrangement in the case of carbocations; Free radicals: formation and stability

LO: Understanding the basic concepts influencing the reactivity of organic molecules, understanding the mechanisms wherever applicable, applications of the above in the interpretation of various properties of organic molecules.

UNIT-II**10**

Alkanes and cycloalkanes: Nomenclature, general methods of preparation, free radical substitution, chain and conformational isomerism in the case of alkenes and their relative stabilities, Beyer's strain theory and Sachse-Mohr theory in the case of cycloalkanes and their limitations.

Alkenes: Nomenclature, general methods of preparation, characteristic electrophilic and free radical addition reactions, orientation of product formation as interpreted by Markonikov's rule and peroxide effect (Anti-Markonikov's rule), ozonolysis and allylic substitution.

Alkadienes: Nomenclature, stability of conjugated dienes, 1,2- and 1,4- reactions and their relative stabilities.

Alkynes: Nomenclature, general methods of preparation, characteristic reactions with emphasis on acidity of alkynes, formation of metal acetylides, stereospecific reduction of alkynes and addition of water involving keto-enol tautomerism

LO: Structures, equations involved in the preparations, mechanism of formation or the reaction, rearrangements if any, discussion on stabilities and applications of the characteristic reactions in synthesis.

UNIT-III**08**

Alkylhalides: Nomenclature, general methods of preparation, significance of nucleophilic substitution of alkylhalides in organic synthesis, mechanisms and salient features of S_N1 and S_N2 reactions with examples including the proof in favor of these reactions, a comparison of S_N1 and S_N2 , elimination reactions ($E1$ and $E2$): mechanisms, salient features and orientation of product formation in terms of Saytzeff's rule and Hoffmann orientation.

LO: Structures, equations involving the methods of preparations and reactions, stabilities and applications of the reactions.



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SURAMPALAM-533 497

UNIT-IV**08**

Alcohols: Nomenclature, classification, methods of preparation, industrial synthesis of ethanol and methanol, reactions of alcohols involving the replacement of hydroxyl or replacement of the hydrogen of the hydroxyl, iodoform reaction and Lucas test.

Ethers: Nomenclature, Williamson synthesis, action of hydroiodic acid on ethers.

LO: Structures, general properties, equations involving the methods of preparation and reactions, mechanisms, reactivities.

UNIT-V**10**

Stereochemistry: Isomerism and its comparison to stereoisomerism, stereoisomers, optical isomers (enantiomers), characteristics of enantiomers (chirality), racemic mixtures, methods of separation of racemic mixtures, optical activity, optical rotation, specific rotation, plane of symmetry and centre of symmetry, diastereomers, their properties and required characteristics with examples as given by Fischer projection formulae; mesoform and its characteristics; Configuration: Relative configuration (D and L), absolute configuration (R and S); Geometric isomerism: cis-trans isomerism and E and Z nomenclature.

LO: Stereochemical structures, importance of stereochemistry with respect to drugs as interpreted in terms of reactivity and the properties of chiral drugs.

UNIT-VI**06**

Grignard reagent: Preparation, characteristic nucleophilic addition and substitution reactions, applications in organic synthesis and limitations.

LO: Structure, mechanism and usefulness in synthesis.

TEXT BOOKS

1. R.T. Morrison and R.N. Boyd, Organic chemistry, pentice hall of India private limited, New Delhi.
2. Arun Bahl & B. S. Bahl, Advanced Organic Chemistry, S. Chand & Company Ltd.,
3. C. N. Pillai, Text book of Organic Chemistry, University Press.
4. Bhupinder Mehta, Manju Mehta, Organic Chemistry, PHI Learning.

REFERENCES

1. R.L Madan, *Organic Chemistry*.
2. Lloyd N. Ferguson, Text book of Organic Chemistry, 2nd edition,.
3. Raj K Bansal, A textbook of Organic Chemistry, 5th edition.



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SURAMPALAM 533 437



CERTIFICATE

Date: 10/06/2019

This is to certify that Ms.Koppana.Vineetha, B.Pharmacy, from Aditya Pharmacy College, affiliated to JNTUK, Underwent Industrial training from 10th May to 10th June 2019. She got trained in "Organic synthesis, downstream process, Analysis of Semi synthetic penicillin by Chemical and Instrumental Techniques, (HPLC and GC)." During the period she has shown great enthusiasm in learning and her work and efforts are appreciated.

We wish her all the best in the future.

For Aurobindo Pharma Ltd.

R.S.P. 10/06/2019
R.Srihivasa Rao
Sr.Manager-Quality.



AUROBINDO PHARMA LIMITED

Unit XI : Sy. No. 61-66, IDA, Pydibhimanam, Ranasthalam (Mandal, Srikakulam District - 532 409, A.P., INDIA Tel : +91 8942 288 331/332/334/292 Fax : +91 8942 264 293
Corp off: The Water Mark Building, Plot No.11, Survey No.8, Hi tech City, Kondapur, Hyderabad - 500 084 A.P., INDIA Tel : +91 40 6872 5000/1200, Fax : +91 40 6707 4053

PAN No. AABCA7366H

www.aurobindo.com



PRINCIPAL
Aditya Pharmacy College
SURAMPALM 533 437

II Year - II Semester

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PHARMACEUTICAL ANALYSIS -I LAB**Acid-base titrations**

1. Standardization of HCl, H₂SO₄ & NaOH
2. Assay of following (any 6)
 - a. Assay of Boric acid
 - b. Assay of Sodium bicarbonate
 - c. Assay of Borax
 - d. Assay of Calcium hydroxide
 - e. Assay of Zinc oxide
 - f. Assay of Calcium carbonate
 - g. Assay of Acetyl salicylic acid
 - h. Assay of Formaldehyde
 - i. Assay of NaOH in presence of Sodium carbonate.

Redox titrations:

3. Standardization of Iodine & KMnO₄
4. Assay of following (any 5)
 - a. Assay of Ferrous sulphate
 - b. Assay of Hydrogen peroxide
 - c. Assay of Sodium nitrate
 - d. Estimation of Ascorbic acid with 2,6-dichlorophenol indophenols
 - e. Assay of Mercuric chloride
 - f. Assay of Sodium metabisulphite
 - g. Assay of Copper sulphate

Precipitation titrations

5. Standardization of Silver nitrate
6. Assay of Potassium chloride or Ammonium thiocyanate or Mercuric oxide.



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SURAMPALEM-523 437



NATCO PHARMA LIMITED

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12-08-2019

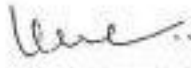
TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. S. Siri Sirisha, Aditya Pharmacy College, Surampalem. E.G Di, A .P with S/No.1894-104-19 has undergone Industrial Training from 09-05-2019 to 08-06-2019.

Ms. S. Siri Sirisha was trained in the areas of Tablets, Capsules, Quality Control, Quality Assurance, Warehouse and R&D departments. During the tenure we found her to be sincere and hard working.

We wish her all the best in all her future endeavours.

FOR NATCO PHARMA LIMITED


(K. SREEKANTH)
AGM - HR






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IV Year - I Semester

L	T	P	C
4	1	0	3

PHARMACEUTICAL JURISPRUDENCE**UNIT-I****12****Introduction**

- a. Pharmaceutical Legislations - A brief review
- b. Drugs & Pharmaceutical Industry - A brief review
- c. Pharmaceutical Education - A brief review
- d. Pharmaceutical ethics & policy

LO: To understand Pharmaceutical Legislations, Drugs & Pharmaceutical Industry, Pharmaceutical Education and Pharmaceutical ethics & policy.

UNIT-II**08**

Pharmacy Act 1948 and Drugs (Price control) order.

LO: To understand rules prescribed order, Pharmacy act, Drugs (Price control) order.

UNIT-III**08**

Drugs and Cosmetics Act 1940 and Rules 1945

LO: To understand rules, schedules of Drugs and Cosmetics Act in detail.

UNIT-IV**06**

Medicinal & Toilet Preparations (Excise Duties) Act 1955

Narcotic Drugs & Psychotropic Substances Act 1985 & A.P. N. D. P.S Rules 1986

LO: To understand and procedures under medicinal and toilet preparations act and Narcotic Drugs & Psychotropic Substances Act.



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UNIT-V**06**

Drugs and Magic Remedies (Objectionable Advertisements) Act 1954 and Rules 1955.

LO: To understand the rules and procedures under drugs and magic remedies.

UNIT-VI**10**

A study of the salient features of the following.

- a. Prevention of Cruelty to animals Act 1960.
- b. The Poisons Act.
- c. The Medical Termination of Pregnancy Act.
- d. AP State Shops & Establishments Act 1988 & Rules 1990.
- e. Factories Act 1948.
- f. WTO, GATT and the Indian Patents Act, 1970.
- g. Pharmaceutical Policy 2002.

LO: To understand the salient features of the above.

TEXT BOOKS

1. B.M.Mithal, Text book of Forensic Pharmacy, Vallabh Prakashan Publishers.
2. N.K.Jain, A text book of Forensic Pharmacy. Vallabh Prakashan Publishers.
3. Dr.S.P.Agarwal, Rajesh Khanna, Pharmaceutical Jurisprudence and Ethics (Forensic Pharmacy), Birla Publications.
4. Prof. Suresh Kumar J.N, Text book of Forensic Pharmacy by. Frontline publications
5. C.K.Kokate & S.B.Gokhale, Textbook of Forensic Pharmacy

REFERENCE BOOK

1. Bare Acts and Rules Publ by Govt of India/state Govt from time to time.
2. AIR – reported judgments of Supreme Court of India and other High Courts
3. Pharmaceutical policy of India
4. Notification from NPPA
5. Vijay Malik, Drugs & Cosmetics act 1940 and Rules, Eastern Law House Co. Delhi, Kolkata.
6. K.Sampath, Pharmaceutical Jurisprudence (Forensic Pharmacy)



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Telangana, INDIA. Tel: +91 40 23547532, Fax: +91 40 23548243
CIN: L24230TG1981PLC003201, www.natcopharma.co.in

12-08-2019

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms .V.Hema Sri, Aditya Pharmacy College, Surampalem, F.G Dt, AP bearing S/No: 1883-104-19 has undergone Industrial Training from 09-05-2019 to 08-06-2019.

Ms. V. Hema Sri was trained in the areas of Tablets, Capsules, Quality Control, Quality Assurance, Warehouse and R&D departments. During the tenure we found her to be sincere and hard working.

We wish her all the best in all her future endeavours.

FOR NATCO PHARMA LIMITED


(K. SREEKANTH)

AGM - HR




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III Year - I Semester

L	T	P	C
4	1	0	3

PHARMACEUTICAL MANAGEMENT**UNIT – I****08****Features of Business Organisations & New Economic Environment:**

Characteristic features of Business, Features and evaluation of Sole Proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types, Changing business environment in post-liberalisation scenario.

L.O: To understand business organization – types – functions.

UNIT – II**10**

Manufacturing Management: Goals of Production management and organisation – Production, Planning and Control – Plant location - Principles and types of Plant layout-Methods of production (Job, Batch and Mass Production), New product development.

L.O: To understand production management and organization – Planning and control – Layout – Product development.

UNIT – III**10**

Work Study - Basic procedure involved in Method Study and Work Measurement-Statistical **Quality Control:** \bar{X} chart, R chart, c chart, p chart, (simple problems), Acceptance sampling, Deming's contribution to quality.

L.O: To understand principles of work study – Methods – Control charts – Principles – Contribution – Quality concepts.

UNIT – IV**08**

Organisation of Distribution and Marketing: Functions of Marketing, Marketing mix, Marketing strategies based on Product life cycle., Channels of distribution – Factors influencing channels of distribution, sales organization and sales promotion.

L.O: To understand concepts in organization – Distribution – Marketing – Functions – Strategies – Factors – Sales – Sales promotions.

UNIT - V**08**

Pharma Industry: Growth of Pharma industry in India – current status and its role in building national economy and national health – Structure of Pharma industry in India – PSUs in Pharma industry –Progress in the manufacture of basic drugs, synthetic and drugs of vegetable origin. Export and import of drugs and pharmaceuticals – Export and import trade.

L.O: To understand Pharma industry – Structure – Manufacturing of drugs and Pharmaceuticals – Exports and imports.



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UNIT – VI**06**

Insurance and Pharma: Various types of insurance including marine and health insurance, Pharmaceutical associations and societies, statutory councils governing the profession, General principles of medical detailing.

L.O: To understand insurance – types – health insurance – associations and societies governing pharmacy profession.

TEXT BOOK

1. Aryasri and Subbarao, Pharmaceutical Administration, TMH.
2. Manohar A. Potdar, Pharmaceutical Plant Administration.
3. G.Vidya Sagar, Pharmaceutical Industrial Management.
4. C.V.S. Subramanyam, Pharmaceutical Production and Management

REFERENCES

1. Subbarao Chaganti, Pharmaceutical Marketing in India – Concepts and Strategy Cases, BS Publications.
2. O.P.Khanna, Industrial Management, Dhanpatrai, New Delhi.
3. Raja B Smarta, Strategic Pharmaceutical Marketing.



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Sri Vyjayanthi Labs Pvt. Ltd.

TO WHOM SO EVER IT MAY CONCERN

Date : 23-05-2019

This is to certify **Ms. Gandreddi Mounika Devi**, D/o G.Srinivasa Rao (Roll No.163G1R0011) is a student of **Aditya Pharmacy College**, Aditya Nagar, ADB Road, Surampalem, Andhra Pradesh - 533 437. Has undergone Industrial Training in our organization from **14-05-2019 to 23-05-2019** as a part of fulfillment of her B.Pharmacy Course.

During the period she had interacted with Regulatory Affairs, Production, Environmental Health & Safety, Maintenance, Warehouse, **Quality control**, Quality Assurance, Research & Development and Acquired relevant basic knowledge in these areas.

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

For Sri Vyjayanthi Labs Pvt. Ltd.

Authorised Signatory



Principal
Aditya Pharmacy College
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I Year - I Semester

L	T	P	C
4	1	0	3

HUMAN ANATOMY & PHYSIOLOGY - I**UNIT-I****Scope of Anatomy and physiology:** 05

Structure of cell, its components and their functions.

Elementary Tissues of the human body: Epithelial, connective, muscular and nervous tissues, their sub- types and properties.**Skeletal muscles:** 04

Gross anatomy, physiology of muscle contraction, physiological properties of skeletal muscles and their disorders.

Skeletal system: 04

Structure, composition and functions of skeleton. Classification of joints, types of movements at joints, disorders of joints.

LO: To understand different tissues are involved in the formation of organs and perform different functions. For example skeletal muscle produce by way of its contraction and relaxation produce movement of the skeletal, nerves are involved in the transmission of electrical impulses, bones form body frame, muscles produce contraction and help in movement, circulation, digestion and excretion. Epithelial tissues protect and secretes juices.**UNIT-II**

08

Haemopoietic system:

Composition and functions of blood, Genesis and regulation of red blood cells production, blood groups, transfusion of blood. Leukocytes, properties of white blood cells, reticulo endothelial system, blood coagulation and its mechanism, formation and circulation of lymph. Disorders of blood.

Formed elements of blood: WBC, RBC and Platelets,

Haemopoiesis and blood hormones, Blood groups and their significance, Coagulating factors, Pathways of coagulation and Mechanism of coagulation, Disorders of blood.

LO: Blood is involved in oxygen and carbon dioxide transport, maintenance of B.P, defense immunity and excretion.**UNIT III****Cardiovascular system:** 08

Basic anatomy, structure and functions of the heart and blood vessels, action potential. Excitatory and conductive system of the heart, cardiac cycle, nervous regulation of heart. Systemic coronary and hepatic blood circulation, cardiac output, blood pressure in different blood vessels, blood pressure regulations and measurements. ECG of heart. Brief outline of cardiovascular disorders



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like hypertension, hypotension, atherosclerosis, angina, myocardial infarction, congestive heart failure and cardiac arrhythmias.

Lymph and Lymphatic System:

03

Composition, formation and circulation of lymph; disorders of lymph and lymphatic system. Basic physiology and functions of spleen.

LO: Heart and blood vessels maintain BP, transport gases, nutrients and waste products. Their function is essential to sustain circulation.

UNIT IV

07

Respiratory System: Anatomy of respiratory organs. Functions of respiration, mechanism and regulation of respiration, respiratory volumes and vital capacity.

LO: To know about external and internal respiration exchanging of gases, need of oxygen for metabolism of nutrients and generation of energy and its essential for life process.

UNIT V

06

Digestive System: Anatomy, structure and functions of different parts of gastrointestinal tract, motility of alimentary canal and its regulation. Gastrointestinal secretions, their compositions, function and regulations. Digestion of food in mouth, stomach and small intestine and its absorption.

LO: To understand digestion in various parts of GIT, role of enzymes and secretions involved in the process of digestion and their function.

UNIT VI

05

Urinary System: Structure and functions of Nephron, formation of urine, renal mechanism for concentrating and diluting the urine, regulation of acid-base balance, knowledge on release of renin from kidney and its functions. Regulations of blood volume and extra cellular fluid volume. Disease related to kidney.

LO: To understand how urine is formed and various mechanisms involved in formation of urine and diseases related to the kidney.

TEXT BOOKS

1. Tortora, G.J and Anagnostokas, Principles of Anatomy and Physiology, N.P Harper & Row Publishers N.Y
2. C.C.Chatterjee, Human Physiology.
3. Ross & Wilson, Anatomy & Physiology in health and illness.
4. Donald.C Rizzo, Fundamental of Anatomy and Physiology.
5. Dr. Jayaveera K.N., Vrushabendra Swamy B.M., Human Anatomy Physiology and Health Education, S.Chand publ.

REFERENCES

1. A.C.Guyton, Text Book of Medical Physiology
2. Best & Taylor, The Living Body-A Text Book on Human Physiology



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TO WHOM SO EVER IT MAY CONCERN

Date: 30/05/2019

This is to Certify Ms. Velugula Surekha D/o Suryanarayana (Roll No: 163G1R0054) is a Student of Aditya Pharmacy College, Aditya Nagar, ADB Road, Surampalem, Andhra Pradesh-533437. Has undergone Industrial Training in our Organization from 23/05/2019 to 30/05/2019 as a part of fulfillment of her B. Pharmacy Course.

During the period, she had interacted with Regulatory Affairs, Production, Environmental Health & Safety, Maintenance, Warehouse, Quality Control, Quality Assurance, Research & Development and Acquired relevant basic Knowledge in these areas.

During aforesaid period, we found her Hard Working, Sincere and Learning Attitude.

For M/s ARENE LIFE SCIENCES LIMITED.

u 7th
30/05/2019
HR Department



[Signature]
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SURAMPATEM 533 437

II Year - I Semester

L	T	P	C
4	1	0	3

HEALTH EDUCATION & PATHOPHYSIOLOGY**UNIT-I****Concepts of health & disease:**

05

Disease causing agents and prevention of disease.

Classification of food requirements, balanced diet, nutritional deficiency disorders, their treatment and prevention, specifications for drinking water.

First aid:

Emergency treatment of shock, snake bites, burns, poisoning, fractures and resuscitation methods.

LO: To understand that disorder is a physiological change while disease is caused by infecting organisms. Prevention is better than cure concept. First aid for emergency conditions before the patient is moved for medical treatment.

UNIT - II**Demography and family planning:**

05

Demography cycle, family planning and various contraceptive methods. Medical termination of pregnancy.

LO: Problems of over population in providing basic amenities and measures to be adopted for control.

UNIT-III**Basic Principles of cell injury and adaptation:**

04

- i. Causes, pathogenesis and morphology of cell injury.
- ii. Cellular adaptations, atrophy, hypertrophy.
- iii. Disturbances of growth of cells
- iv. General biology of tumors
- v. Differences between benign and malignant tumors
- vi. Classification of tumors
- vii. Etiology and pathogenesis of cancer
- viii. Patterns of spread of cancer.

LO: Different phases of cell growth and disorder to understand normal and tumor cells.



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UNIT-IV**Inflammation & Repair:**

08

- A) i. Pathogenesis of acute inflammation
- ii. Chemical mediators in inflammation
- iii. Pathogenesis of chronic inflammation
- B) i. Wound healing mechanisms and
- ii. Factors affecting wound healing.
- C) Pain and its types.

LO: To understand that several substances are involved in producing inflammation and to understand different reasons for causing pain.

UNIT-V**Diseases of Immunity:**

03

- i) Introduction to T and B cells
- ii) MHC proteins or transplantation antigens.
- iii) Immune Tolerance

A) Hypersensitivity

04

- i. Hypersensitivity type I, II, III, IV.
- ii. Biological significance of hypersensitivity.
- iii. Allergy due to food, chemicals and drugs

B) Auto-Immunity:

05

- i. Mechanism of autoimmunity.
- ii. Classification of autoimmune diseases in man
- iii. Transplantation and allograft reactions, mechanism of rejection of allograft.
- iv. Acquired Immuno Deficiency Syndrome (AIDS)

LO: To understand about allergy and body's resistance against diseases (Natural and adoptive immunity).

UNIT-VI**Pathophysiology of Cardiac disorders:**

03

Shock, stroke, hypertension, Angina, Myocardial infarction, Congestive cardiac failure, Atherosclerosis.

Pathophysiology of Common Disorders:

10

Diabetes Mellitus, Abnormalities in Lipoproteinemia, glycogen infiltration and glycogen storage disease. Peptic ulcer, Alcoholic liver diseases, Acute and chronic renal failure, Asthma, Parkinsonism, Schizophrenia, Depression and Mania.

Infectious diseases:

03

Infective hepatitis, STD – Syphilis, Gonorrhea, HIV; Pneumonia, Typhoid, UTI, Tuberculosis,



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CIN:U24239TG2004PLCO44199

TO WHOM SO EVER IT MAY CONCERN

Date: 01/06/2019

This is to Certify Ms. **Kuchibhotla Manogna** D/o **KLNK Prasad** (Roll No: 163G1R0058) is a Student of **Aditya Pharmacy College**, Aditya Nagar, ADB Road, Surampalem, Andhra Pradesh-533437. Has undergone Industrial Training in our Organization from **23/05/2019** to **01/06/2019** as a part of fulfillment of her B. Pharmacy Course.

During the period, she had interacted with Regulatory Affairs, Production, Environmental **Health** & Safety, Maintenance, Warehouse, Quality Control, Quality Assurance, Research & Development and Acquired relevant basic Knowledge in these areas.

During aforesaid period, we found her Hard Working, Sincere and Learning Attitude.

For M/s ARENE LIFESCIENCES LIMITED.

U. J. Reddy
01/06/2019
HRD
HR Department



Prasanna
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IV Year - II Semester

L	T	P	C
4	1	0	2

QUALITY ASSURANCE, GMP & GLP**UNIT – I****06**

Concept of **Quality assurance**, philosophy of GMP, CGMP and GLP.

L.O: To understand Concept of Quality assurance, philosophy of GMP, CGMP and GLP.

UNIT – II**08**

Organization and personnel, responsibilities, training hygiene - Premises: Location, design, plan layout, construction, maintenance and sanitations, environmental control, sterile areas, control of contamination.

L.O: To understand organization and personnel, responsibilities, training hygiene - Premises: Location, design, plan layout, construction, maintenance and sanitations, environmental control, sterile areas, control of contamination.

UNIT – III**08**

Equipments: Selection, purchase specifications, maintenance, clean in place, sterilize in place - Raw materials: Purchase specifications, maintenance of stores, selection of vendors, controls and raw materials.

L.O: To understand selection, purchase specifications, maintenance, clean in place, sterilize in place - Raw materials: Purchase specifications, maintenance of stores, selection of vendors, controls and raw materials.

UNIT – IV**10**

Manufacture and controls on dosage forms, manufacturing documents master formula, batch formula records, standard operating procedures, quality audits of manufacturing processes and facilities - In process quality control on various dosage forms: sterile, biological products and non-sterile, standard operating procedures for various operations like cleaning, filling, drying, compression, coating. Packaging and labeling controls.



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L.O: To understand manufacture and controls on dosage forms, manufacturing documents master formula, batch formula records, standard operating procedures, quality audits of manufacturing processes and facilities - In process quality control on various dosage forms: sterile, biological products and non-sterile, standard operating procedures for various operations. Packaging and labeling controls.

UNIT – V

10

Quality Control Laboratory: Responsibilities, good laboratory practices, routine controls, instruments, protocols, non-clinical testing, controls on animal house, data generation and storage, quality control documents, retention samples, records, audits of quality control facilities - Finished products release: quality review, quality audits, and batch release document.

L.O: To understand responsibilities, good laboratory practices, routine controls, instruments, protocols, non-clinical testing, controls on animal house, data generation and storage, quality control documents, retention samples, records, audits of quality control facilities - Finished products release: quality review, quality audits, and batch release document.

UNIT – VI

08

Distribution and Distribution records: Handling of returned goods, recovered materials and reprocessing. Complaints and recalls, evaluation of complaints, recall procedures, related records and documents.

L.O: To understand handling of returned goods, recovered materials and reprocessing. Complaints and recalls, evaluation of complaints, recall procedures, related records and documents.

TEXT BOOKS

1. The International Pharmacopoeia Vol. 1,2,3,4, 3rd edition General methods of analysis quality specifications for Pharmaceutical substances, Excipients, dosage forms.
2. Quality Assurance of Pharmaceuticals: A compendium of guidelines and related material Vol. 1 and Vol. 2., WHO, (1999).
3. GMP-Mehra.
4. Pharmaceutical Process validation by Berry and Nash

REFERENCE BOOKS

1. Basic tests for Pharmaceutical substances - WHO (1988 & 1991)
2. How to practice GMP's – P.P.Sharma
3. The Drugs and Cosmetic Act 1940- Vijay Malik.
4. Q.A Manual by D.H.Shah.
5. SOP Guidelines by D.H.Shah.
6. Quality Assurance Guide by OPPI.



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TO WHOM SO EVER IT MAY CONCERN

Date: 30/05/2019

This is to Certify Ms. **Bande Sujitha** D/o Ammamma Ane Babulu (Roll No: 163G1R0004) is a Student of **Aditya Pharmacy College**, Aditya Nagar, ADB Road, Surampalem, Andhra Pradesh-533437. Has undergone Industrial Training in our Organization from 23/05/2019 to 30/05/2019 as a part of fulfillment of her B. Pharmacy Course.

During the period, she had interacted with Regulatory Affairs, Production, Environmental Health & Safety, Maintenance, Warehouse, Quality Control, **Quality Assurance**, Research & Development and Acquired relevant basic Knowledge in these areas.

During aforesaid period, we found her Hard Working, Sincere and Learning Attitude.

For M/s ARENE LIFE SCIENCES LIMITED.

U. 70th
30/05/2019

HR Department



[Signature]
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SURAMPALM 533 437

III Year - II Semester

L	T	P	C
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PHARMACEUTICAL BIOTECHNOLOGY LAB

1. Isolation of antibiotic producing microorganism from soil.
2. Enzyme immobilization by Ca-alginate method.
3. Determination of minimum inhibitory concentration of the given antibiotic. Antibiotic assay by cup plate method.
4. Collection, Processing, Storage and fractionation of blood.
5. Standardization of Cultures.
6. Microbiological assay of Antibiotics / Vitamins.
7. Production of alcohol by fermentation techniques.
8. Comparison of efficacy of immobilized cells.
9. Sterility testing of Pharmaceutical products.
10. Isolation of mutants by gradient plate technique.
11. Preparation of bacterial vaccine.
12. Preparation of blood products / Human normal immunoglobulin injection.
13. Extraction of DNA (*demonstration only*)
14. Separation techniques: Various types of Gel Electrophoresis, Centrifugation.

TEXT BOOK

1. Ashish S Verma, et.al., Laboratory Manual for Biotechnology, S.Chand.



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KARTHIKEYA DRUGS & PHARMACEUTICALS Pvt. Ltd.

AN ISO 9001:2008 CERTIFIED COMPANY

Date: 21-06-2019

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **UGWU ANTHONY ODINAKA**, is a bonafide student of **ADITYA PHARMACY COLLEGE**, E.G. District, Andhra Pradesh, has undergone industrial training work in our organization from **05 MAY 2019** to **20 JUNE 2019**, as a part of fulfillment of his B. Pharmacy Course bearing **H.T. No: 163G1R00A0**.

During the training period he had interacted with Quality control, Quality Assurance and production Departments In charges and acquired basic knowledge in these areas.

During the aforesaid period, we found him to be hard working, punctual & sincere. We wish him all the best for his future endeavors.

We wish him bright future



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IV Year - II Semester

L	T	P	C
4	1	0	3

CLINICAL PHARMACY, THERAPEUTICS AND PHARMACOVIGILANCE**CLINICAL PHARMACY (20H)****UNIT – I****10**

Concept and definition of Clinical Pharmacy, functions of Clinical Pharmacist, Medication history review, medication errors, essential drug concept, Rational drug use, irrational use of Antibiotics, injectables and NSAID'S. Patient Counseling, Medication Adherence, Drug Compliance and Drug Interactions.

L.O:- To understand several concepts of essential drug list, Rational drug therapy, medication errors and patient drug compliance.

UNIT – II**10**

Concept of Pharmacoeconomics, Pharmacoepidemiology, Pharmacovigilance, Therapeutic Drug Monitoring, Medication use in Neonates, Pediatrics, Geriatrics, Pregnancy & lactation, and Total Parental Nutrition.

L.O:- To understand the concept of Pharmacoeconomics, Pharmacoepidemiology, Pharmacovigilance, Therapeutic drug monitoring and Total Parental Nutrition.

THERAPEUTICS (15H)**UNIT – III****09**

Drug therapy in treatment of diseases like Tuberculosis, HIV, Malaria, Typhoid and Filariasis.

Drug therapy in the treatment of Skin disorders like Eczema, Impetigo, Psoriasis, Seborrheic dermatitis, Acne vulgaris and Glaucoma (open angle and closed angle).

L.O:- To understand the drug therapy of above diseases.

UNIT – IV**06**

Drug therapy in the treatment of Thyroid and parathyroid disorders, Menstrual cycle disorders, Menopause, Erectile dysfunction, Osteoporosis and Diabetes mellitus.

L.O:- To understand the drug therapy of above Endocrine disorders.



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PHARMACOVIGILANCE (15H)**UNIT – V****05**

Introduction to Pharmacovigilance. History of Pharmacovigilance in India, its importance, scope, outcomes and various methods in Pharmacovigilance.

L.O:- To understand the concept of Pharmacovigilance.

UNIT – VI**10**

Introduction to Adverse Drug Reactions, their classification, mechanism and susceptibility. Study of various adverse events reporting forms, quality assurance in Pharmacovigilance, Pharmacogenetics in Pharmacovigilance, Ethical consideration in Pharmacovigilance and various banned drugs.

L.O:- To understand the importance of Pharmacovigilance role in Clinical practice as described above.

TEXTBOOKS

1. Clinical Pharmacy and Therapeutics: Roger Walker and Clive Edwords.
2. Clinical Pharmacy & Therapeutics, 4th edition by Eric T. Herfindal, Dick R. Gourley and Linda Lloyd hart.
3. A text book of Clinical Pharmacy Practice – Essential Concepts and skills by G. Parthasarathi, Karin Nyfort-Hansen, Malip C. Nahata.
4. Clinical Pharmacy by Dr. H. P. Tipnis, Dr. Amrita Bajaj; Career Publications.
5. Fundamentals of Clinical Pharmacy Practice by D. Sudheer Kumar, J. Krishnaveni, P. Manjula.
6. Contemporary perspectives on Clinical Pharmacotherapeutics: Kamlesh. Kohli.
7. A textbook of Pharmacovigilance – Concept & Practice by Guruprasad Mohantha.



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**GIYAAN PHARMA**

DATE: 10/06/2019

CERTIFICATE

This is to certify that **Ms. VALLURU SATYA SRI VARALAKSHMI**, is a bonafide student of **Aditya Pharmacy College**, Surampalem. She has undergone industrial training in our organisation from 08.05.2019 to 08.06.2019, as part of partial fulfilment of her B. Pharmacy course bearing Reg. no: **163G1R00A2**.

During the training period she had interacted with Quality control, Quality assurance & production departments in charges and actively involved in the manufacturing of Tablets, Capsules and Analysis of **Pharmaceutical** Dosage forms and acquired basic knowledge in these areas.

During this aforesaid period, we found her hard working, sincere & learning attitude.

With best wishes



PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 531 417

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Regd. Office: Plot No 26, Jubilee Enclave, Serilingampally Mandal, Madhapur, Hyderabad, TS - 500081

Tel: 040 38123700 email: cs@giyaanpharma.com

IV Year - I Semester

L	T	P	C
4	1	0	3

HOSPITAL & COMMUNITY PHARMACY**UNIT-I****12**

Hospital Pharmacy: Organization and structure, organization of a hospital and hospital pharmacy, responsibilities of a hospital pharmacist, pharmacy and therapeutic committee, Budget preparation and implementation hospital formulary, organization of drug store, purchase and inventory control, patient counseling, role of pharmacist in community health care and education.

LO: To understand Hospital Pharmacy – organisation structure - Budget preparation and implementation hospital formulary, organization of drug store, purchase and inventory control, patient counseling, role of pharmacist in community health care and education.

UNIT-II**05**

The pharmacy procedural manual, drug distribution, dispensing to out-patients, in-patients and ambulatory

Patient - dispensing of ancillary and controlled substances, Drug Information Center.

LO: To understand The pharmacy procedural manual, drug distribution, dispensing to out-patients, in-patients and ambulatory

Patient - dispensing of ancillary and controlled substances, Drug Information Center.

UNIT-III**05**

Records and Reports: Prescription filling, drug profile, patient medication profile, cases on drug interaction and adverse reactions, idiosyncratic cases etc.

LO: To understand Prescription filling, drug profile, patient medication profile, cases on drug interaction and adverse reactions, idiosyncratic cases




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UNIT-IV**07****Introduction to community Pharmacy**

- Community pharmacy Practice — definition
- The role of the community pharmacy and its relationship to other local health care providers and services to nursing homes and clinics
- Professional responsibilities of community pharmacist (FIP & WHO Model)
- Prescribed medication order - interpretation and legal requirements

LO: To understand Community pharmacy – role and relationship, professional responsibilities and prescribed medication order

UNIT-V**05****Communication skills - communication with prescribers and patients****Over-the-counter (OTC) sales**

- Rational use of common OTC medications (Vitamins and tonics, iron preparations, analgesics, NSAIDs, cough mixtures, anti-diarrhoeal preparations)

LO: To understand communication with prescribers and patients, Rational use of common OTC medications

UNIT-VI**16****1. Primary health care in community pharmacy**

Family planning, First aid, Participation in primary health programs, Smoking cessation, Screening programs, Nutrition, Responding to common ailments

2. Community pharmacy management

Financial, materials, staff, infrastructure requirements, drug information resources, in community pharmacies, computer applications in community pharmacy, Education and training

3. Home Medicines Review (HMR) program: introduction and guidelines

LO : To understand Family planning, First aid, Participation in primary health programs, Smoking cessation, Screening programs, Nutrition, Responding to common ailments and Community pharmacy management and Home Medicines Review (HMR).



PRINCIPAL
Aditya Pharmacy College
SURAMPAL FM 533 437

TO WHOM SO EVER IT MAY CONCERN

Date: 30/05/2019

This is to Certify Ms. **S Sravani Maha Lakshmi** D/o Ramachandra Rao (Roll No: 163G1R0050) is a Student of **Aditya Pharmacy College**, Aditya Nagar, ADB Road, Surampalem, Andhra Pradesh-533437. Has undergone Industrial Training in our Organization from **23/05/2019 to 30/05/2019** as a part of fulfillment of her B. Pharmacy Course.

During the period, she had interacted with Regulatory Affairs, Production, Environmental **Health & Safety**, Maintenance, Warehouse, Quality Control, Quality Assurance, Research & Development and Acquired relevant basic Knowledge in these areas.

During aforesaid period, we found her Hard Working, Sincere and Learning Attitude.

For M/s ARENE LIFE SCIENCES LIMITED.

U. J. J.
30/05/2019
HR Department



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM 502 307

II Year - I Semester

L	T	P	C
4	1	0	3

PHARMACEUTICAL UNIT OPERATIONS –I**UNIT-I****10**

Fluid Flow: Types of flow, Reynold's number, viscosity, concept of boundary layer, basic equations of fluid flow, valves, flow meters, manometers and measurement of flow and pressure.

LO: To understand fluid flow concepts – Reynold's number, viscosity, flow meters and valves – measurements of flow and pressure.

UNIT-II**08**

Material handling systems:

- Liquid handling -different types of pumps.
- Gas handling -various types of fans, blowers and compressors.
- Solid handling -conveyors

LO: To understand material handling systems – liquid, gas and solid handling.

UNIT-III**08**

Filtration and Centrifugation: Theory of filtration, filter aids, filter media, industrial filters including filter press, rotary filter, edge filter, etc. Factors affecting filtration, mathematical problems on filtration, optimum-cleaning cycle in batch filters. Principles of centrifugation, industrial centrifugal filters, centrifugal filters, and centrifugal sedimenters.

LO: To understand theory and equipment of filtration and centrifugation.

UNIT-IV**08**

Crystallization: Characteristics of crystals like; purity, size, shape, geometry, habit, forms, size and factors affecting it. Solubility curves and calculation of yields. Material and heat balances around Swenson Walker Crystallizer. Supersaturation theory and its limitations. Nucleation mechanisms, crystal growth. Study of various types of crystallizers, tanks, agitated batch, single vacuum, circulating magma and crystal crystallizers. Caking of crystals and its prevention. Numerical problems on yields.

LO: To know the crystallization theory, crystallization equipment and their applications.

UNIT-V**08**

Dehumidification and Humidity control

Basic concepts and definition, wet bulb and adiabatic saturation temperature. Psychrometric chart and measurement of humidity, application of humidity measurement in pharmacy, equipments for dehumidification operations.

LO: To know the theory of dehumidification and humidity control, measurement of humidity.

Refrigeration and Air Conditioning



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SURAMPAL EM 533 437

Principles and applications of refrigeration and air conditioning.

LO: To understand the principles and applications of refrigeration and air conditioning.

UNIT-VI

08

Materials of Construction: General study of composition, corrosion, resistance, properties and applications of the materials of construction with special reference to stainless steel and glass.

Industrial hazards and safety precautions: Mechanical, Chemical, Electrical, fire and dust hazards. Industrial dermatitis, accident records etc.

LO: To understand the materials of construction, their properties and applications. To know the mechanical, chemical, fire and dust hazards and their prevention.

TEXT BOOKS

1. Prof. K. Samba Murthy, Pharmaceutical Engineering.
2. Badzer & Banchemo, Introduction to Chemical Engineering.
3. C.V.S. Subramanayam, Pharmaceutial Unit Operation, VallabhPrakashan
4. S.J. Carter, Cooper and Gunn's Tutorial Pharmacy 6ed CBS publisher, Delhi.

REFERENCES

1. Perry's Handbook of Chemical Engineering.
2. Unit Operations by McCabe& Smith.
3. Lippincott Williams and Wilkins: Remington Pharmaceutical Sciences.
4. EA Rawlins, Bently's Text Book of Pharmaceutics, 8th edition, ELBS
5. C.G. Brown, Unit Operations (Indian ed) Asia Publishing House, Bombay
6. Remington's Pharmaceutical Sciences



PRINCIPAL
Aditya Pharmacy College
SURAMPAL FM 532 437



HETERO BIOPHARMA LIMITED

H.No. 8-3-166/1 & 2, 105 to 108, 1st Floor, G Block, East Wing, Challa Estates, Erragadda,
Hyderabad, Telangana, India, 500018, Tel & Fax: +91-40-23810110
E-mail: contact.hbl@heterodrugs.com URL: <http://www.heteroworld.com>
CIN: U24290TG2016PLC111946

Date: 10-06-2019

INDUSTRIAL TRAINING CERTIFICATE

This to certify that Ms. Urmila Cherukuri, bearing Roll No. 153G1R0059, is a bonafied student of Aditya Institute of Pharmaceutical Science and Research 3G has undergone the Industrial training in our organization from 08-05-2019 to 09-06-2019.

During the training she had interacted with Quality Control, Quality Assurance and Production departments and acquired basic knowledge in these areas.

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

With Best Regards,



PRINCIPAL
Aditya Pharmacy College
5004MPAIFM-573 237

IV Year - II Semester

L	T	P	C
4	1	0	4

CONTROLLED RELEASE AND NOVEL DRUG DELIVERY SYSTEMS**UNIT – I****10**

Controlled and sustained release; Factors to be considered – Principles involved in their design – regulatory considerations.

L.O: To understand Controlled and sustained release: Factors to be considered – Principles involved in their design – regulatory considerations.

UNIT – II**10**

Oral Control Drug Delivery Systems: Fundamentals, Dissolution Controlled, Diffusion Controlled, Ion Exchange Resins, Osmotic based systems, pH Independent Systems and altered density systems.

L.O: To understand fundamentals, Dissolution Controlled, Diffusion Controlled, Ion Exchange Resins, Osmotic based systems, pH Independent Systems and altered density systems.

UNIT – III**06**

Transdermal Drug Delivery Systems: Fundamentals, types of TDDS, Materials Employed and Evaluation of TDDS.

L.O: To understand fundamentals, types of TDDS, Materials Employed and Evaluation of TDDS.

UNIT – IV**06**

Mucoadhesive Delivery Systems: Mechanism of bioadhesion, mucoadhesive materials, formulation and evaluation of mucoadhesive-based systems.

L.O: To understand mechanism of bioadhesion, mucoadhesive materials, formulation and evaluation of mucoadhesive-based systems.

UNIT – V**12**

Targeted Drug Delivery Systems: Fundamentals and applications, formulation and evaluation of Liposomes, Resealed Erythrocytes and Nano particles.

L.O: To understand fundamentals and applications, formulation and evaluation of Liposomes, Resealed Erythrocytes and Nano particles.



PRINCIPAL
Aditya Pharmacy College
SURAMPAL 533 437



Regd. Office:
Giyaan Pharma Pvt. Ltd.
1st floor Greenmark Building
jubilee enclave, Madhapur
Hyderabad TS - 500081
tel: +91 40 3812 3700
CIN No. U24100TG1992PTC015124

TIRUPATI
08/06/2019

TO WHOM IT MAY CONCERN

This is to Certify that **Ms.POTHULA DEEPIKA GAYATRI DEVI**, III year Student of **ADIYA PHARMACY COLLEGE, SURAMPALEM** Has under gone Industrial Training from **MAY 08th to JUNE 07th 2019** in our organization. She had been exposed to **Production and Quality Control Activities**.

During Her tenure we found her sincere, hard working intelligent, we wish her best for her future Endeavors.

GIYAAN PHARMA PRIVATE LIMITED


AUTHORISED SIGN  




PRINCIPAL
Adiya Pharmacy College
SURAMPALAM 517 517



Factory : Plot No. 6,
JDA Renigunta, Tirupati,
Chittoor Dist. - 517520, AP

0877 - 2271270
0877 - 2271330

info@giyaanpharma.com
www.giyaanpharma.com

III Year - II Semester

L	T	P	C
0	0	3	2

PHARMACOLOGY LAB

1. To study the inotropic and chronotropic effects of drugs on isolated frog heart.
2. To study the effect of drugs on rat ileum.
3. To study the effects of **drugs** on isolated normal and hypodynamic frog heart.
4. To determine the dose-response curve of acetylcholine using rectus abdominus muscle of frog.
5. To determine the potentiating effect of neostigmine on the action of acetylcholine on Rectus abdominus muscle of frog.
6. To find the antagonistic effect of pancuronium against the action of acetylcholine on Rectus abdominus muscle of frog.
7. To record the CRC of 5-HT on rat fundus preparation.
8. To record the CRC of histamine on guinea pig ileum preparation.
9. Experiments pertaining to analgesia. (*Only demonstration*).
10. Experiments pertaining to anti-convulsant activity. (*Only demonstration*).
11. Experiments pertaining to anti-inflammatory activity (*Only demonstration*).
12. To determine the hypoglycemic activity of drugs (second generation antidiabetic drugs) on rabbits / albino rats. (*Only demonstration*).




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 SURAMPALEM. 533 447



HETERO DRUGS LIMITED (UNIT-IX)

Plot No. 1, HETERO INFRASTRUCTURE LTD.-SEZ, N. Narasapuram (Vill.), Nakkapalli (Mandal),
VISAKHAPATNAM (Dist.) - 531 081, A.P., India. Tel : 0891-2877999, Fax : 0891- 2877740.
E-mail : contact@heterodrugs.com. URL : <http://www.heterodrugs.com>.

DATE:-11.06.2019

CERTIFICATE

This is Certify that Ms.KONDROTHU PRATHYUSHA, HT NO: 163G1R0020 is Bonafide student of Aditya Pharmacy College Surampalem A.P has undergo internship training at our Hetero Drugs Ltd. Unit-IX Located at Hetero Complex, N.Narasapuram(V), Nakkapally (M), Visakhapatnam District from 11th May 2019 to 10th June 2019.

During the training period she has undergone class room training, Practical training in HR Department & Also Known basic functionalities of other related departments in the Plant.

We found her sincere & hardworking burning attitude we wish her all success in her future endeavors.

For Hetero Drugs Limited

Authorized Signature



PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-532 332

II Year - I Semester

L	T	P	C
4	1	0	3

PHARMACEUTICAL BIOCHEMISTRY**UNIT – I****06**

Introduction to Biochemistry: Outlines of the biochemistry organization of cell organelle, Molecular constituents of cell membrane, active and passive transport processes across the cell membranes.

LO: Introduction, essentials of biochemistry with respect to pharmacy, cell, structure and functions.

UNIT –II**08**

Chemistry of carbohydrates, proteins and Lipids: definitions, classification with examples and structures, properties, reactions and biological significance of carbohydrates, proteins, lipids, nucleic acids, vitamins and minerals.

LO: Introduction, basic concepts, structures, properties, significance and uses.

UNIT – III**10**

Carbohydrate Metabolism: Glycolysis, Citric acid cycle (TCA cycle), HMP shunt, Glycogenolysis, Gluconeogenesis, Glycogenesis. Metabolic disorders of carbohydrate metabolism.

LO: Introduction to metabolism. Structure, cycles, biological significance and metabolic disorders.

UNIT – IV**10**

Lipid Metabolism: Oxidation of saturated (β - Oxidation), Ketogenesis and Ketolysis; Biosynthesis of Fatty acids, Lipids; Metabolism of cholesterol; Hormonal regulation of Lipid Metabolism. Defective metabolism of Lipids.

LO: Introduction to metabolism. Structure, cycles, biological significance and metabolic disorders.

UNIT – V**08**

Protein Metabolism: Protein turnover. Metabolism of Amino acids (Trans-amination, deamination, de-carboxylation). Urea cycle and it's metabolic disorders. Outlines of the Metabolism and regulation of Protein synthesis.

LO: Introduction to metabolism. Structure, cycles, biological significance and metabolic disorders.

UNIT – VI**08**

Handwritten signature
 PRINCIPAL
 Aditya Pharmacy College
 Bikaner

1. **Enzymes:** Classification, mode of action, factors affecting enzymes action, Coenzymes, enzyme kinetics.
 2. Brief outline of Energy rich compounds, Phosphate metabolism and Electron Transport system, Detoxification mechanisms and their biological significance.
- LO:** Introduction, properties, classes, biochemical role and mode of action.

TEXT BOOKS

1. Harper, Biochemistry
2. A.L.Lehninger, Principles of Biochemistry.
3. J.L.Jain, Fundamentals of Biochemistry.
4. Satyanarayana, Text Book of Biochemistry
5. Rama Rao, Text Book of Bio Chemistry.
6. Conn, Outlines of biochemistry

REFERENCES

1. L.Stryer, Text Book of Bio Chemistry.
2. E.E Conn & P.K. Stumpf, Outlines of Biochemistry by, John Wiley & sons, New York.
3. B.Harrow and A. Mazur, Text Book of Biochemistry, WB Saunders Co., Philadelphia.
4. Boyer Rodney, Modern experimental Bio Chemistry.
5. West, Edward Text Book of Biochemistry.
6. Conn, Outlines of Biochemistry.
7. Plummer, Practical Bio Chemistry.
8. Denniston, Topping & Caret; General, Organic, and Biochemistry, McGraw-Hill



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM 513 037



GIYAAN PHARMA

DATE: 10/06/2019

CERTIFICATE

This is to certify that **Ms. TAVVA DURGA SATYAVATHI**, is a bonafide student of **Aditya Pharmacy College**, Surampalem. She has undergone industrial training in our organisation from 08.05.2019 to 08.06.2019, as part of partial fulfilment of her B. Pharmacy course bearing Reg. no: **163G1R0096**.

During the training period she had interacted with Quality control, Quality assurance & production departments in charges and actively involved in the manufacturing of Tablets, Capsules and Analysis of **Pharmaceutical** Dosage forms and acquired basic knowledge in these areas.

During this aforesaid period, we found her hard working, sincere & learning attitude.

With best wishes



PRINCIPAL
Aditya Pharmacy College
SURAMPATEM 533 227

GIYAAN PHARMA PVT. LTD.

Factory : Plot No. 6, IDA, Renigunta, Tirupati, AP - 517520, Ph No. 0877 2274404 CIN No: U24100TG1992PTC015124

Regd. Office: Plot No 26, Jubilee Enclave, Serilingampally Mandal, Madhapur, Hyderabad, TS - 500081

Tel: 040 38123700 email: cs@giyaanpharma.com

II Year - I Semester

L	T	P	C
0	0	3	2

PHARMACEUTICAL BIOCHEMISTRY LAB**Experiments:**

1. Identification of carbohydrates
2. Identification of amino acids.
3. Identification of lipids.
4. Estimation of glucose in urine.
5. Estimation of creatinine in urine.
6. Estimation of urea in blood.
7. Estimation of creatinine in blood.
8. Estimation of Serum protein.
9. Estimation of bile pigments in serum.
10. Estimation of alkaline phosphatase in serum
11. Effect of temperature on the activity of alpha-amylase.
12. Qualitative analysis of abnormal constituents of urine.
13. Estimation of glucose by Folin-Wu method.
14. Estimation of SGOT in Serum.
15. Estimation of SGPT in Serum.
16. Determination of sodium, calcium & potassium in serum.

TEXT BOOK

1. Ashish S Verma, et.al., Laboratory Manual for Biotechnology, S.Chand.



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM 522 437


KARTHIKEYA DRUGS & PHARMACEUTICALS Pvt. Ltd.

AN ISO 9001:2008 CERTIFIED COMPANY

Date: 21-06-2019

TO WHOM SO EVER IT MAY CONCERN

This is to certify that PADALA.PRAHARSHA, is a bonafide student of ADITYA PHARMACY COLLEGE, E.G. District, Andhra Pradesh, has undergone industrial training work in our organization from 05 MAY 2019 to 20 JUNE 2019, as a part of fulfillment of her B. Pharmacy Course bearing H.T. No: 163G1R0086.

During the training period she had interacted with Quality control, Quality Assurance and production Departments In charges and acquired basic knowledge in these areas.

During the aforesaid period, we found her to be hard working, punctual & sincere. We wish her all the best for her future endeavors.

We wish her bright future




 PRINCIPAL
 Aditya Pharmacy College
 SURAMPALM 532 437



I Year - I Semester

L	T	P	C
0	0	3	2

PHARMACEUTICAL ORGANIC CHEMISTRY - I LAB

Introduction to Equipment & Glassware

Re crystallization method, determinations of Melting point, Boiling Point and distillation

I. Preparation of organic compounds (each involving a specific organic reaction covered in theory)

1. N-Acetylation: Preparation of Acetanilide from Aniline
2. O-Acetylation: Preparation of Aspirin from salicylic acid
3. Nuclear Nitration: Preparation of m-Dinitrobenzene from nitrobenzene
4. Oxidation: Preparation of Benzoic acid from Benzyl chloride
5. Esterification: Preparation of n-Butyl acetate from n-Butyl alcohol
6. Etherification: Preparation of α -Naphthyl Methyl ether from α -Naphthol
7. Halogenation: Preparation of Iodoform from Iodination of acetone
8. Extensive Nuclear Substitution: Preparation of Tribromophenol
9. Bromination of Tribromo aniline from Phenol or Aniline

II. Systematic qualitative Analysis (Identification) of Mono functional Organic Compounds:

Avoid water-soluble compounds, and compounds containing more than one functional group; at least six individual compounds to be analyzed.

REFERENCES

1. Vogel's Text Book of Practical Organic Chemistry, 5th Edition, Pearson
2. R.K. Bansal, Laboratory Manual of Organic Chemistry.
3. O.P. Agarwal, Advanced Practical Organic Chemistry.
4. F.G.Mann & B.C. Saunders, Practical Organic Chemistry.



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM 533 427



KARTHIKEYA DRUGS & PHARMACEUTICALS Pvt. Ltd.

AN ISO 9001:2008 CERTIFIED COMPANY

Date: 16-06-2019

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **ODOH IZUCHUKWU HYACINTH**, is a bonafide student of **ADITYA PHARMACY COLLEGE**, E.G. District, Andhra Pradesh, has undergone industrial training work in our organization from **01 MAY 2019 to 15 JUNE 2019**, as a part of fulfillment of his B. Pharmacy Course bearing **H.T. No: 163G1R0081**.

During the training period he had interacted with Quality control, Quality Assurance and production Departments In charges and acquired basic knowledge in these areas.

During the aforesaid period, we found him to be hard working, punctual & sincere. We wish him all the best for his future endeavors.

We wish him bright future



Pharmacist
Aditya Pharmacy College
SURAMPALAM - 505 437



K. P. Srinivasulu

I Year - II Semester

L	T	P	C
4	1	0	3

PHARMACEUTICAL ORGANIC CHEMISTRY-II**UNIT-I****10**

Benzene: Kekule's structure, Aromaticity, Huckle's rule, resonance energy, characteristic electrophilic substitution reactions: Nitration, Halogenations, Sulfonation, Friedel-Craft's alkylation and acylation with limitations, orientation in mono substituted benzenes.

Polynuclear aromatic hydrocarbons: Nomenclature, methods of preparation of Naphthalene, Anthracene and Phenanthrene, their oxidation and reduction reactions, relative susceptibilities to oxidation as interpreted in terms of sacrifice of resonance energies, Electrophilic substitution reactions.

Arylhalides: Nomenclature, comparison of reactivity with respect to alkylhalides, mechanism of nucleophilic substitution (Benzyne concept).

LO: Understanding the properties of aromatic compounds, mechanisms of reactions and their usefulness in organic synthesis, electronic factors influencing orientation.

UNIT-II**08**

Carbonyl compounds: Nomenclature, important methods of preparation, characteristic nucleophilic addition reactions (addition of bisulphate, Grignard reagent, hydrogen cyanide, hydrazine derivatives and alcohols); Aldol condensation, Cannizzaro reaction and Perkin reaction.

LO: General properties, relative reactivities towards nucleophilic addition, mechanisms and applications.

UNIT-III**08**

Carboxylic acids: Nomenclature, important methods of preparation, characteristic reactions (acidity, relative acidities, reduction, H-V-Z reaction, conversion into acid chlorides, amides and esters); methods of preparation of important esters (Acetoacetic ester and Malonic ester) and their applications in organic synthesis.

LO: General properties, measurement of relative acidities, equations involving the reactions and mechanisms, applications in synthesis.

UNIT-IV**08**

Phenols: Nomenclature, general methods of preparation, industrial synthesis of phenol by Dow process, characteristic reactions (acidity and its comparison to alcohols and carboxylic acids as interpreted by resonance, ether formation, ester formation, Kolbe reaction, Reimer-Tiemann Reaction, Bromination and nitration).

LO: Structures, equations, mechanisms, importance of these reactions in pharmaceutical organic synthesis.



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SURAMPALM 533 437

UNIT-V**08**

Amines and Diazonium compounds: Nomenclature, methods of preparation, characteristic reactions (basicity and relative basicities, alkylation and exhaustive alkylation, nitration and orientation), separation of all three classes of amines by Hinsberg's method; formation of Diazonium compounds, characteristic reactions (replacement by hydrogen, Sandmeyer reaction, replacement by nitrile, and their applications in synthesis and coupling reactions).

LO: Properties, structures, equations, mechanisms, orientations and applications.

UNIT-VI**08**

Name reactions: Beckmann rearrangement, Mannich reaction, Fries rearrangement, Michael addition, Schmidt reaction, Benzoin condensation.

LO: General reaction, structures and mechanism, applications in organic synthesis.

TEXT BOOKS

1. R.T. Morrison and R.N. Boyd, Organic chemistry, pentice hall of India private limited, New Delhi.
2. Arun Bahl & B. S. Bahl, Advanced Pharmaceutical Organic Chemistry, S. Chand & Company Ltd.
3. C. N. Pillai, Text book of Organic Chemistry, University Press.
4. Bhupinder Mehta, Manju Mehta, Organic Chemistry, PHI Learning

REFERENCES

1. R.L Madan, *Organic Chemistry*.
2. Lloyd N. Ferguson, Text book of Organic Chemistry, 2nd edition,.
3. Raj K Bansal, A textbook of Organic Chemistry, 5th edition.



PRINCIPAL
Aditya Pharmacy College
SURAMPALAM 533 437



KARTHIKEYA DRUGS & PHARMACEUTICALS Pvt. Ltd.

AN ISO 9001:2008 CERTIFIED COMPANY

Date: 21-06-2019

TO WHOM SO EVER IT MAY CONCERN

This is to certify that MATTAPALLI KAMALA SUPRAJA, is a bonafide student of ADITYA PHARMACY COLLEGE, E.G. District, Andhra Pradesh, has undergone industrial training work in our organization from 05 MAY 2019 to 20 JUNE 2019, as a part of fulfillment of her B. Pharmacy Course bearing H.T. No: 163G1R0078.

During the training period she had interacted with Quality control, Quality Assurance and production Departments In charges and acquired basic knowledge in these areas.

During the aforesaid period, we found her to be hard working, punctual & sincere. We wish her all the best for her future endeavors.

We wish her bright future



Chandra

PRINCIPAL
Aditya Pharmacy College
SURAMPATEM-533 437



II Year - I Semester

L	T	P	C
0	0	3	2

PHARMACEUTICAL MICROBIOLOGY LAB

1. Study of apparatus used in experimental microbiology.
2. Sterilization techniques and their validations.
3. Preparation of various culture media.
4. Sterilization of glass ware and culture media.
5. Aseptic transfer of culture into different types of media.
6. Staining methods - Simple staining, Gram's staining, Acid fast and Negative staining.
7. Motility testing by hanging drop method.
8. Enumeration of bacteria by pour plate/spread plate technique.
9. Enumeration of bacteria by direct microscopic count.
10. Isolation of pure cultures by streak plate, spread plate, pour plate.
11. Evaluation of antiseptics and disinfectants, sterility of pharmaceutical products as per IP requirements.
12. Observation of colony characteristics.
13. Bio chemical reactions:
 - i) Indole test.
 - ii) Methyl red test.
 - iii) Voges Proskauer Test
 - iv) Starch hydrolysis test.
 - v) Fermentation of carbohydrates.
14. Morphology of molds, yeasts.
15. Preservation of microorganisms (slant and stab cultures)



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SURAMPALEM 533 437


KARTHIKEYA DRUGS & PHARMACEUTICALS Pvt. Ltd.

AN ISO 9001:2008 CERTIFIED COMPANY

Date: 21-06-2019

TO WHOM SO EVER IT MAY CONCERN


This is to certify that **KAVALA YASWANTH**, is a bonafide student of **ADITYA PHARMACY COLLEGE**, E.G. District, Andhra Pradesh, has undergone industrial training work in our organization from **05 MAY 2019** to **20 JUNE 2019**, as a part of fulfillment of his B. Pharmacy Course bearing **H.T. No: 163G1R0076**.

During the training period he had interacted with Quality control, Quality Assurance and production Departments In charges and acquired basic knowledge in these areas.

During the aforesaid period, we found him to be hard working, punctual & sincere. We wish him all the best for his future endeavors.

We wish him bright future




PRINCIPAL
 Aditya Pharmacy College
 SURAMPALAM-533 437



ADVANCED INSTRUMENTAL ANALYSIS (MPA 201T)

Scope

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

Objectives

After completion of course student is able to know,

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

THEORY

60 Hrs

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

12
Hrs

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

12
Hrs

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

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

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

12
Hrs

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



development in CE, Crown ethers as buffer additives in capillary electrophoresis. CE-MS hyphenation.

- 4 Mass spectrometry: Principle, theory, instrumentation of mass spectrometry, different types of ionization like electron impact, chemical, field, FAB and MALD, APCI, ESI, APPI mass fragmentation and its rules, meta stable ions, isotopic peaks and applications of mass spectrometry. LC-MS hyphenation and DART MS analysis. Mass analysers (Quadrupole, Time of flight, FT-ICR, ion trap and Orbitrap) instruments. MS/MS systems (Tandem: QqQ, TOF-TOF; Q-IT, Q-TOF, LTQ-FT, LTQ-Orbitrap). 12 Hrs
- 5 NMR spectroscopy: Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR with reference to ^{13}C NMR: Spin spin and spin lattice relaxation phenomenon. ^{13}C NMR, 1-D and 2-D NMR, NOESY and COSY techniques, Interpretation and Applications of NMR spectroscopy. LC-NMR hyphenations. 12 Hrs

REFERENCES

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, Sixth edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis - Douglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis – Willards, 7th edition, CBS publishers.
4. Organic Spectroscopy - William Kemp, 3rd edition, ELBS, 1991.
5. Quantitative analysis of Pharmaceutical formulations by HPTLC - P D Sethi, CBS Publishers, New Delhi.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi, 1997.
7. Pharmaceutical Analysis- Modern methods - Part B - J W Munson, Volume 11, Marcel Dekker Series.
8. Organic Spectroscopy by Donald L. Pavia, 5th Edition.



PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

**ARPHILEC METHOD FOR SIMULTANEOUS ESTIMATION OF FLUCLOXACILLIN
AND METRONIDAZOLE IN DRUG SAMPLES**

Is a Dissertation Submitted to the



Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS

BY

DANDUBOYINA SATYA SOWJANYA

(Regd. No. 183GIS1601)

Under the guidance of

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

Professor



Department of Pharmaceutical Analysis,

Aditya Pharmacy College

Surampalem – 533 437

2018- 2020

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Aditya Pharmacy College
SURAMPALAM 533 437



ADITYA PHARMACY COLLEGE

(Approved by PCI & AICTE, Affiliated to JNTUK)

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

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "A RPHPLC Method For Simultaneous Estimation Of Flucloxacillin And Metronidazole In Drug Samples" is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutical Analysis. This is a bonafied work carried out by Danduboyina Satya Sowjanya (Regd No: 183GIS1601) under the guidance and supervision of Dr. D.Sathis Kumar, Professor, Aditya Pharmacy College, Surampalem

Date:

SIGNATURE OF EVALUATOR 1

Place:

SIGNATURE OF EVALUATOR 2




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DECLARATION

I, Danduboyina Satya Sowjanya (Regd No: 183G1S1601), do hereby declare that the dissertation entitled "A RPHPLC Method For Simultaneous Estimation Of Flucloxacillin And Metronidazole In Drug Samples" is a record of genuine research work carried out by me under the supervision of Dr. D.SathisKumar, Professor, Aditya Pharmacy College, Surampalem. The work reported here in has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

D. Satya Sowjanya
(Danduboyina Satya Sowjanya)

Regd no: 183G1S1601

Place: Surampalem

Date:



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SUMMARY AND CONCLUSION

8.2 CONCLUSION:

Accurate, Linear and Precise method was developed for the simultaneous estimation of the metronidazole and flucloxacillin in bulk and tablet dosage form using RP HPLC. Our method was developed with less retention time for estimation of metronidazole and flucloxacillin, So it consume less mobile phase with short running time. Finally, we concluded that our developed method was simple and economical that can be adopted in regular quality control test in industries.



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PHARMACEUTICAL ANALYSIS(MPA)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (MPA 101T)

Scope

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

Objectives

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

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

THEORY

60 Hrs

1. a. **UV-Visible** spectroscopy: Introduction, Theory, Laws, 10 Hrs
Instrumentation associated with UV-Visible spectroscopy, Choice of solvents and solvent effect and Applications of UV-Visible spectroscopy, Difference/ Derivative spectroscopy.
b. IR spectroscopy: Theory, Modes of Molecular vibrations, Sample handling, Instrumentation of Dispersive and Fourier - Transform IR Spectrometer, Factors affecting vibrational frequencies and Applications of IR spectroscopy, Data Interpretation.
c. Spectrofluorimetry: Theory of Fluorescence, Factors affecting fluorescence (Characteristics of drugs that can be analysed by fluorimetry), Quenchers, Instrumentation and Applications of fluorescence spectrophotometer.
d. Flame emission spectroscopy and Atomic absorption spectroscopy: Principle, Instrumentation, Interferences and Applications.
2. NMR spectroscopy: Quantum numbers and their role in NMR, 10 Hrs
Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and ¹³C NMR. Applications of NMR spectroscopy.
3. Mass Spectroscopy: Principle, Theory, Instrumentation of Mass 10

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**QBD DRIVEN DEVELOPMENT OF UV-VISIBLE SPECTROPHOTOMETER
FOR QUANTIFICATION OF CARISOPRODOL IN BULK AND TABLET
DOSAGE FORM**

Is a Dissertation Submitted to the



Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS

By

KUCHIPUDI LAKSHMI GANGA

(Regd. No. 183G1S1602)

Under the guidance of

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

Professor



Department of Pharmaceutical Analysis

Aditya Pharmacy College

Surampalem – 533 437

2018-2020



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(Approved by PCI & AICTE, Affiliated to JNTUK)

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

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "QbD driven development of UV-Visible spectrophotometer for quantification of carisoprodol in bulk and tablet dosage form" is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutical Analysis. This is a bonafied work carried out by Kuchipudi Lakshmi Ganga (Regd No: 183G1S1602) under the guidance and supervision of Dr. D.Sathis Kumar, Professor, Aditya Pharmacy College, Surampalem

Date:

SIGNATURE OF EVALUATOR 1

Place:

SIGNATURE OF EVALUATOR 2



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SURAMPALAM 533 437

DECLARATION

I, KUCHIPUDI LAKSHMI GANGA (Regd No: 183G1S1602), do hereby declare that the dissertation entitled "QbD driven development of UV-Visible spectrophotometer for quantification of carisoprodol in bulk and tablet dosage form" is a record of genuine research work carried out by me under the supervision of Dr. D. Sathis Kumar, 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.

K.L. Ganga
(KUCHIPUDI LAKSHMI GANGA)

Regd no: 183G1S1602

Place: Surampalem

Date:



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CONCLUSION:

A QbD approach was implemented for developing a robust UV spectrophotometric method for estimation of carisoprodol. Employing the QbD workflow ensured quality of the analytical method. The results suggest the UV spectrophotometric method can be concluded as accurate, precise, robust, specific and economic. Statistical studies of the method validation results suggest appropriateness of the developed methods for use in quality control laboratories. This method is suitable for determining carisoprodol without interference from commonly used excipients. Implementation of QbD approach in UV spectrophotometric method can produce consistent, reliable, and quality data throughout the process and also save time and money. Therefore, this method can be used for routine analysis purpose.

Several methods have been proposed for the estimation of carisoprodol, but no studies reported so far include the application of Analytical Quality by Design for the determination of carisoprodol. So an attempt was made to develop the method and the developed method has been validated.



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QUALITY CONTROL AND QUALITY ASSURANCE (MPA 203T)

Scope

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

Objectives

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

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

THEORY

60 hrs

1. Concept and Evolution of Quality Control and Quality Assurance 12 Hrs
 Good Laboratory Practice, GMP, Overview of ICH Guidelines - QSEM, with special emphasis on Q-series guidelines.
 Good Laboratory Practices: Scope of GLP, Definitions, Quality assurance unit, protocol for conduct of non clinical testing, control on animal house, report preparation and documentation.
2. cGMP guidelines according to schedule M, USFDA (inclusive of CDER and CBER) Pharmaceutical Inspection Convention (PIC), WHO and EMEA covering: Organization and personnel responsibilities, training, hygiene and personal records, drug industry location, **design**, construction and plant lay out, maintenance, sanitation, environmental control, utilities and maintenance of sterile areas, control of contamination and Good Warehousing Practice. CPCSEA guidelines. 12 Hrs
3. Analysis of raw materials, finished products, packaging materials, in process quality control (IPQC). Developing specification (ICH Q6 and Q3) 12 Hrs



Purchase specifications and maintenance of stores for raw materials. In process quality control and finished products quality control for following formulation in Pharma industry according to Indian, US and British pharmacopoeias: tablets, capsules, ointments, suppositories, creams, parenterals, ophthalmic and surgical products (How to refer pharmacopoeias), Quality control test for containers, closures and secondary packing materials.

4. Documentation in pharmaceutical industry: Three tier documentation, Policy, Procedures and Work instructions, and records (Formats), Basic principles- How to maintain, retention and retrieval etc. Standard operating procedures (How to write), Master Formula Record, Batch Formula Record, Quality audit plan and reports. Specification and test procedures, Protocols and reports. Distribution records. Electronic data. 12 Hrs
5. Manufacturing operations and controls: Sanitation of manufacturing premises, mix-ups and cross contamination, processing of intermediates and bulk products, packaging operations, IPQC, release of finished product, process deviations, charge-in of components, time limitations on production, drug product inspection, expiry date calculation, calculation of yields, production record review, change control, sterile products, aseptic process control, packaging. 12 Hrs

REFERENCES

1. Quality Assurance Guide by organization of Pharmaceutical Procedures of India, 3rd revised edition, Volume I & II, Mumbai, 1996.
2. Good Laboratory Practice Regulations, 2nd Edition, Sandy Weinberg Vol. 69, Marcel Dekker Series, 1995.
3. Quality Assurance of Pharmaceuticals- A compedium of Guide lines and Related materials Vol I & II, 2nd edition, WHO Publications, 1999.
4. How to Practice GMP's - P P Sharma, Vandana Publications, Agra, 1991.
5. The International Pharmacopoeia - vol I, II, III, IV & V - General Methods of Analysis and Quality specification for Pharmaceutical Substances, Excipients and Dosage forms, 3rd edition, WHO, Geneva, 2005.
6. Good laboratory Practice Regulations - Allen F. Hirsch, Volume 38, Marcel Dekker Series, 1989.
7. ICH guidelines
8. ISO 9000 and total quality management



**DESIGN OF EXPERIMENTS (DOE) BASED ON OPTIMIZED RPHPLC METHOD
FOR ESTIMATION OF ETHACIZINE IN BULK AND TABLET FORMULATIONS**

Is a Dissertation Submitted to the JNTU-K University in partial fulfillment of the
requirements for the degree of master of pharmacy



Jawaharlal Nehru Technological University, Kakinada, A.P

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS

By

KURAKULA TEJASWI

(Regd. No.183GIS1603)

Under the guidance of

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

Professor




Department of Pharmaceutical Analysis

Aditya Pharmacy College

Surampalem – 533 437

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

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "Design of Experiments (DOE) Based On Optimized RPHPLC Method For Estimation of Ethacizine In Bulk And Tablet Formulations" is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutical Analysis. This is a bonafied work carried out by Kurakula Tejaswi (Regd No: 183G1S1603) under the guidance and supervision of Dr. D.Sathis Kumar, Professor, Aditya Pharmacy College, Surampalem

Date:

SIGNATURE OF EVALUATOR 1

Place:

SIGNATURE OF EVALUATOR 2



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SURAMPALAM-533 437

DECLARATION

Kurakula Tejaswi (Regd No: 183GIS1603), do hereby declare that the dissertation entitled "Design of Experiments (DOE) Based On Optimized RPHPLC Method For Estimation of Ethacizine In Bulk And Tablet Formulations" is a record of genuine research work carried out by me under the supervision of Dr. D.Sathiskumar, Professor, Aditya Pharmacy College, Surampalem. The work reported here in has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

Place: Surampalem

Date:

K. Tejaswi
(KURAKULA TEJASWI)

Regd no: 183GIS1603



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DESIGN OF EXPERIMENT (DOE) BASED ON OPTIMIZED RP/HPLC METHOD FOR ESTIMATION OF ETHACIZINE IN BULK AND TABLET FORMULATIONS

7.1 Conclusion

A simple and selective RP- HPLC method is described for the determination of Ethacizine. Chromatographic separation was achieved on a C_{18} column using mobile phase. The linearity of Ethacizine was found to be linear with a correlation coefficient of 0.999, which shows that the method is capable of producing good sensitivity. From the above experimental results and parameters it was concluded that, this newly developed method for the estimation of Ethacizine was found to be simple, precise, accurate and high resolution and shorter retention time makes this method more acceptable and cost effective and it can be effectively applied for routine analysis in research institutions. DOE (design of experiments) concept allows statistical modelling of few experiments to establish a relation between the individual factors and the predicted responses. Hence DOE experimentation table with possible combination different variables of all selected factors was obtained. The model was evaluated for ANOVA and to built a design with the help of different tools like ANOVA. Once the model was confirmed all the responses are evaluated for subsequent effect of different selected factors. It was observed that pH of mobile phase, buffer composition having less significant effect with efficacy of RP-HPLC.



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Scope

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

Objective

After completion of the course students shall able to know,

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

THEORY

60 Hrs

1. Impurity and stability studies:

10

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

Hrs

Impurities in new drug products:

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

Impurities in residual solvents:

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

2 Elemental impurities:

10

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

Hrs



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Stability testing protocols:

Selection of batches, container orientation, test parameters, sampling frequency, specification, storage conditions, recording of results, concept of stability, commitment etc. Important mechanistic and stability related information provided by results of study of factors like temperature, pH, buffering species ionic strength and dielectric constant etc. on the reaction rates. With practical considerations.

- | | | |
|---|---|-----------|
| 3 | Impurity profiling and degradant characterization: Method development, Stability studies and concepts of validation accelerated stability testing & shelf life calculation, WHO and ICH stability testing guidelines, Stability zones, steps in development, practical considerations. Basics of impurity profiling and degradant characterization with special emphasis. Photostability testing guidelines, ICH stability guidelines for biological products | 10
Hrs |
| 4 | Stability testing of phytopharmaceuticals: Regulatory requirements, protocols, HPTLC/HPLC finger printing, interactions and complexity. | 10
Hrs |
| 5 | Biological tests and assays of the following:
a. Adsorbed Tetanus vaccine b. Adsorbed Diphtheria vaccine
c. Human anti haemophilic vaccine d. Rabies vaccine e. Tetanus Anti toxin f. Tetanus Anti serum g. Oxytocin h. Heparin sodium IP i. Antivenom. PCR, PCR studies for gene regulation, instrumentation (Principle and Procedures) | 10
Hrs |
| 6 | Immunoassays (IA)
Basic principles, Production of antibodies, Separation of bound and unbound drug, Radioimmunoassay, Optical IA, Enzyme IA, Fluoro IA, Luminiscence IA, Quantification and applications of IA. | 10
Hrs |

REFERENCES

1. Vogel's textbook of quantitative chemical analysis - Jeffery J Bassett, J. Mendham, R. C. Denney, 5th edition, ELBS, 1991.
2. Practical Pharmaceutical Chemistry - Beckett and Stenlake, Vol II, 4th Edition, CBS publishers, New Delhi, 1997.
3. Textbook of Pharmaceutical Analysis - K A Connors, 3rd Edition, John Wiley & Sons, 1982.




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**RP-HPLC METHOD DEVELOPMENT AND ITS VALIDATION ON
NABUMETONE, ISOLATION AND CHARACTERISATION OF FORCED
DEGRADATION SUBSTANCE FROM NABUMETONE**

Is a Dissertation Submitted to the



Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

In

PHARMACEUTICAL ANALYSIS

By

NANISETTI BALATRIPURASUNDARI

(Regd. No. 183GIS1604)

Under the guidance of

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

Professor



Department of Pharmaceutical Analysis

Aditya Pharmacy College

Surampalem – 533 437

2018- 2020



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(Approved by PCI & AICTE, Affiliated to JNTUK)

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

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "RP-HPLC Method Development And Its Validation On Nabumetone, Isolation And Characterisation Of Forced Degradation Substance From Nabumetone" is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutical Analysis. This is a bonafied work carried out by Naniseti Balatripurasundari (Regd No: 183G1S1604) under the guidance and supervision of Dr. D.Sathis Kumar, Professor, Aditya Pharmacy College, Surampalem

Date:

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SIGNATURE OF EVALUATOR 2



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ABSTRACT

A simple and selective RP- HPLC method was developed for the estimation of Nabumetone in tablet dosage form. Chromatographic separation was achieved on a C18 column using mobile phase consisting of a mixture of volumes of methanol, Volumes of Acetonitrile and 20 volumes of water with detection of 230nm at flow rate of 1ml/min. Temperature was maintained at 25°C. Retention time of Nabumetone was found to be 3.591 min. % assay was obtained $104 \pm 4\%$ w/w as for Nabumetone. The linearity range was found to lie from 50 µg/ml to 150 µg/ml of Nabumetone. And the drug was subjected to forced degradation studies using various stress parameters like acidic, basic, oxidation, photolysis and thermal condition. It was concluded that our method is isolated and characterized the degraded substances by using IR, NMR with good resolution. So, our developed method was simple, precise, stable and economical.

Key words: RP- HPLC, Nabumetone, IR, NMR



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RP-HPLC METHOD DEVELOPMENT AND ITS VALIDATION ON
NABUMETONE, ISOLATION AND CHARACTERISATION OF FORCED
DEGRADATION SUBSTANCE FROM NABUMETONE

7.2 CONCLUSION:

Accurate, Rugged, Robust, Linear and precise method was developed for the estimation of the nabumetone in bulk and tablet dosage form. Our method was developed with less retention time for estimation of nabumetone, so it may consume less mobile phase with short running time. with short running time, our method can also isolate the degraded products from the pure drug. It was proved by forced degradation studies. Our method was satisfied with all the validated parameters. Finally, we concluded that our developed method was simple and economical that can be adopted in regular quality control test in industries.



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PHARMACEUTICS PRACTICALS - I
(MPH 105P)

1. Analysis of pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on HPLC
4. Experiments based on Gas Chromatography
5. Estimation of riboflavin/quinine sulphate by fluorimetry
6. Estimation of sodium/potassium by flame photometry
7. To perform In-vitro dissolution profile of CR/ SR marketed formulation
8. Formulation and evaluation of sustained release matrix tablets
9. Formulation and evaluation osmotically controlled DDS
10. Preparation and evaluation of Floating DDS- hydro dynamically balanced DDS
11. Formulation and evaluation of Muco adhesive tablets.
12. Formulation and evaluation of trans dermal patches.
13. To carry out preformulation studies of tablets.
14. To study the effect of compressional force on tablets disintegration time.
15. To study Micromeritic properties of powders and granulation.
16. To study the effect of particle size on dissolution of a tablet.
17. To study the effect of binders on dissolution of a tablet.
18. To plot Heckal plot, Higuchi and peppas plot and determine similarity factors.



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**FORMULATION DEVELOPMENT AND *IN VITRO* EVALUATION OF FAST
DISSOLVING TABLETS OF LACOSAMIDE BY USING SUPER DISINTEGRANTS**

Dissertation submitted to the JNTU – K University in partial fulfillment of the
requirements for the degree of Master of Pharmacy



Jawaharlal Nehru Technological University, Kakinada, A.P

in partial fulfillment of the requirements for the degree of

MASTER OF PHARMACY

IN

PHARMACEUTICS

By

MANURI PRASHANTHI

(Regd. No. 183G1S0302)

Under the guidance of

Dr. V. Ravi Sankar M.Pharmacy., Ph.D.

Professor



Department of Pharmaceutical Analysis and Quality assurance

Aditya Pharmacy College

Surampalem – 533 437

2018- 2020



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EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "**FORMULATION DEVELOPMENT AND IN VITRO EVALUATION OF FAST DISSOLVING TABLETS OF LACOSAMIDE BY USING SUPER DISINTEGRANTS**" is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutics. This is a bonafide work carried out by **MANURI PRASHANTHI** (Regd. No. 183G1S0302) under the guidance and supervision of **Dr. V.Ravi Sankar**, Professor, Aditya Pharmacy College, Surampalem

Date:

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ABSTRACT

Contemporary developments in expeditious dissolving pills have brought consolation in dosing to pediatric and elderly patients who have trouble in swallowing capsules. The goal of the present work is to prepare fast dissolving tablets of lacosamide for better analgesia. There is a want to ameliorate components for this drug which surmounts quandaries at the side of project in swallowing, inconvenience in administration even as visiting, and patient's acceptability. Ergo, the current-day investigation have been undertaken as a way to enhance an expeditious dissolving tablet of lacosamide which offers an incipient range of merchandise having preferred inclinations and meant blessings. First rate disintegrant consisting of fenugreek seed mucilage was optimized. The medication have been organized with the useful resource of direct compression method. The tablets have been evaluated for hardness, friability, weight version, disintegration time, and uniformity of content. Optimized contrivance was evaluated with the avail of manner of in vitro dissolution take an optical canvassing of drug-exciipient compatibility. it grow to be as soon as concluded that expeditious dissolving drugs of lacosamide were formulated efficiently with desired tendencies which disintegrated abruptly and greater congruous the affected character consolation and compliance. The dihydrogen monoxide absorption ratio of formulation f8 is relatively high and displayed shorter wetting time than other formulations. *In vitro* drug release of f8 is found to be 97.37% at 45 min which is superior to other formulations. From the results of drug release, disintegration time and wetting research it is able to be concluded that the machine f8 is the best formula.



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9. CONCLUSION:

- The present investigation of this work "Design and development of Fast Dissolving tablets by employing natural super- disintegrants" were developed and leads to improvement of bioavailability, present work explain the mechanism of drug release from tablets using natural superdisintegrants.
- The standard curve of Lacosamide was obtained and good correlation was obtained with R2 value of 0.999 , the medium selected was pH 6.8 phosphate buffer. Suitable analytical method based on UV- Visible spectrophotometer was developed for Lacosamide λ_{max} of 215nm was identified in pH 6. 8 phosphate buffer solution.
- Direct compression method was established to manufacture fast dissolving tablets. Fast dissolving tablets of Lacosamidewere successfully prepared using Ocimum Mucilage, Gellan Gum and Fenu Greek Seed Mucilage natural superdisintegrants.
- The precompression blend of Lacosamide were characterized with respect to angle of repose , bul k density, tapped density, Carr's index and Hausner's ratio. Angle of repose and Carr's index val ues were precompression blend of all the batches indicating good to fair floability and compressi bility. Hausner's ratio was all batches indicating good flow properties. The results of the weight variation, hardness, thickness, friability, and drug content of tablets are given in table.
- All the tablets of different batches complied with the official requirement of passes the limit. Thus all physical attributes of the prepared tablets were found to be practically within e ontrol limits. Lacosamide was mixed with various proportions of excipients showed no colour change at the en d of two months , providing no drug -excipient interactions.



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MODERN PHARMACEUTICS (MPH 103T)

Scope

Course designed to impart advanced knowledge and skills required to learn various aspects and concepts at pharmaceutical industries

Objectives

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

- The elements of preformulation studies.
- The Active Pharmaceutical Ingredients and Generic drug Product development
- Industrial Management and GMP Considerations.
- Optimization Techniques & Pilot Plant Scale Up Techniques
- Stability Testing, sterilization process & packaging of dosage forms.

THEORY

60 HRS

1. a. Preformation Concepts – Drug Excipient interactions - 10 Hrs
different methods, kinetics of stability, Stability testing. Theories of dispersion and pharmaceutical Dispersion (Emulsion and Suspension, SMEDDS) preparation and stability Large and small volume parental – physiological and formulation consideration, Manufacturing and evaluation.
- b. **Optimization** techniques in Pharmaceutical Formulation: 10 Hrs
Concept and parameters of optimization, Optimization techniques in pharmaceutical formulation and processing. Statistical design, Response surface method, Contour designs, Factorial designs and application in formulation
2. Validation : Introduction to Pharmaceutical Validation, Scope & 10 Hrs
merits of Validation, Validation and calibration of Master plan, ICH & WHO guidelines for calibration and validation of equipments, Validation of specific dosage form, Types of validation. Government regulation, Manufacturing Process Model, URS, DQ, IQ, OQ & P.Q. of facilities.
3. cGMP & Industrial Management: Objectives and policies of 10 Hrs
current good manufacturing practices, layout of buildings, services, equipments and their maintenance Production management: Production organization, , materials management, handling and transportation, inventory management and control, production and planning control, Sales forecasting, budget and cost control, industrial and personal relationship. Concept of Total Quality Management.



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- 4 Compression and compaction: Physics of tablet compression, 10
compression, consolidation, effect of friction, distribution of Hrs
forces, compaction profiles. Solubility.
- 5 Study of consolidation parameters; Diffusion parameters, 10
Dissolution parameters and Pharmacokinetic parameters, Heckel Hrs
plots, Similarity factors - f_2 and f_1 , Higuchi and Peppas plot,
Linearity Concept of significance, Standard deviation, Chi square
test, students T-test, ANOVA test.

REFERENCES

1. Theory and Practice of Industrial Pharmacy By Lachmann and Libermann
2. Pharmaceutical dosage forms: Tablets Vol. 1-3 by Leon Lachmann.
3. Pharmaceutical Dosage forms: Disperse systems, Vol, 1-2; By Leon Lachmann.
4. Pharmaceutical Dosage forms: Parenteral medications Vol. 1-2; By Leon Lachmann.
5. Modern Pharmaceutics; By Gillbert and S. Banker.
6. Remington's Pharmaceutical Sciences.
7. Advances in Pharmaceutical Sciences Vol. 1-5; By H.S. Bean & A.H. Beckett.
8. Physical Pharmacy; By Alfred martin
9. Bentley's Textbook of Pharmaceutics - by Rawlins.
10. Good manufacturing practices for Pharmaceuticals: A plan for total quality control, Second edition; By Sidney H. Willig.
11. Quality Assurance Guide; By Organization of Pharmaceutical producers of India.
12. Drug formulation manual; By D.P.S. Kohli and D.H.Shah. Eastern publishers, New Delhi.
13. How to practice GMPs; By P.P.Sharma. Vandhana Publications, Agra.
14. Pharmaceutical Process Validation; By Fra. R. Berry and Robert A. Nash.
15. Pharmaceutical Preformulations; By J.J. Wells.
16. Applied production and operations management; By Evans, Anderson, Sweeney and Williams.
17. Encyclopaedia of Pharmaceutical technology, Vol I - III.



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"DESIGN, FORMULATION AND STATISTICAL OPTIMIZATION OF NADOLOL LOADED ORAL WAFER"

Dissertation submitted to the JNTU – K University in partial fulfillment of the requirements for the degree of Master of Pharmacy



Jawaharlal Nehru Technological University, Kakinada, A.P

**MASTER OF PHARMACY
IN PHARMACEUTICS**

BY

USMAN AL-MUSTAPHA ORUMA (183G1S0303)



Under the guidance of

Dr. A. Harani M.Pharmacy, Ph.D

Associate Professor

Department of Pharmaceutics

Aditya Pharmacy College

Surampalem- 533 437

2018-2020



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SURAMPALEM 533 437**

EVALUATION CERTIFICATE



This is to certify that the dissertation entitled "DESIGN, FORMULATION AND STATISTICAL OPTIMIZATION OF NADOLOL LOADED ORAL WAFER" is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutics. This is a bonafied work carried out by Usman Al-mustapha Oruma (183G1S0303) under the guidance and supervision of Dr. A. Harani, Associate Professor, Aditya Pharmacy College, Surampalem.

Date: 23/12/2020

Place: Surampalem

SIGNATURE OF EVALUATOR 1

SIGNATURE OF EVALUATOR 2



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SURAMPALAM 533 437

DECLARATION



I, Usman Al-mustapha Oruma (183G1S0303), do hereby declare that the dissertation entitled "DESIGN, FORMULATION AND STATISTICAL OPTIMIZATION OF NADOLOL LOADED ORAL WAFER" is a genuine research work carried out by me under the supervision of Dr. A. Harani, Associate Professor, Aditya Pharmacy College, Surampalem. The work reported herein has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

(USMAN AL-MUSTAPHA ORUMA)

183G1S0303



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6.2. CONCLUSION

Enhancement of bioavailability aided by enhanced permeability is the key point of focus in the present research.

The present work is focused on development of nadolol loaded wafers, which serves the purpose of increasing permeability due to reduced affective surface area. The polyethylene glycol, sodium lauryl sulphate and saliva stimulating agent are the important excipients in the formulation of wafers.

Using Design Expert Software various proportions of the PEG and SLS, and SSA were decided. The nadolol loaded wafers were formulated and evaluated. They were evaluated for disintegration time and folding endurance, and analyzed by Design Expert Software. Finally, optimized formulation was subjected to in vitro dissolution studies and kinetic fitting model.

It was observed that the formulation consisting of 24% of PEG, 1.5% of SLS and 3% of SSA are the optimal concentrations in making effective formulations by extrusion method with desired responses. It showed a drug release of 93.75% in hrs.

Thus by this work, we could conclude that Nadolol loaded wafers can be used as efficient means of formulation to enhance permeability and helping to enhance the bioavailability of the drug and as efficient oral drug delivery system for Nadolol.



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3.3 PHARMACOTHERAPEUTICS – II (THEORY)

Theory : 3 Hrs./Week

1. **Scope of the Subject:** This course is designed to impart knowledge and skills necessary for contribution to quality use of medicines. Chapters dealt cover briefly pathophysiology and mostly therapeutics of various diseases. This will enable the student to understand the pathophysiology of common diseases and their management.
2. **Objectives of the Subject** Upon completion of the subject student shall be able to –
 - a. know the pathophysiology of selected disease states and the rationale for drug therapy
 - b. know the therapeutic approach to management of these diseases;
 - c. know the controversies in drug therapy;
 - d. know the importance of preparation of individualised therapeutic plans based on diagnosis; and
 - e. appreciate the needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects).

Text books (Theory)

Clinical Pharmacy and Therapeutics - Roger and Walker, Churchill Livingstone publication

Reference books (Theory)

- a. Pharmacotherapy: A Pathophysiologic approach - Joseph T. Dipiro et al. Appleton & Lange
- b. Clinical Pharmacy and Therapeutics - Eric T. Herfindal, Williams and Wilkins Publication
- c. Applied Therapeutics: The clinical Use of Drugs. Lloyd Young and Koda-Kimble MA]

3. Detailed syllabus and lecture wise schedule :

Etiopathogenesis and pharmacotherapy of diseases associated with following systems / diseases –

Title of the topic

1. **Infectious disease:** Guidelines for the rational use of antibiotics and surgical Prophylaxis, Tuberculosis, Meningitis, Respiratory tract infections, Gastroenteritis, Endocarditis, Septicemia, Urinary tract infections, Protozoal infection- Malaria, HIV & Opportunistic infections, **Fungal infections**, Viral infections, Gonorrhoea and Syphilis
2. **Musculoskeletal disorders**
Rheumatoid arthritis, Osteoarthritis, Gout, Spondylitis, Systemic lupus erythematosus.
3. **Renal system**
Acute Renal Failure, Chronic Renal Failure, Renal Dialysis, Drug induced renal disorders




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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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EPIDEMIOLOGICAL STUDY AND DRUG UTILISATION PATTERN IN VARIOUS SKIN DISEASED PATIENTS OF DERMATOLOGY OUTPATIENT DEPARTMENT

A Project Report Submitted to



Jawaharlal Nehru Technological University, Kakinada

in partial Fulfillment of the requirements of the Award of Degree of

DOCTOR OF PHARMACY

BY

BALLA UDAYA SRI

(Reg.No.153G1T0002)

ENJETY SRAVEENA

(Reg.No.153G1T0006)

KOKKIRIMETLA VEERA VENKATA SATYAVATHI

(Reg.No.153G1T0010)

NALLAMILLI ANIL KUMAR REDDY

(Reg.No.153G1T0017)

Under the Guidance of

Dr. K. GOWTHAMI (PHARM .D)

Assistant professor



DEPARTMENT OF PHARMACY PRACTICE & PHARM D

ADITYAPHARMACY COLLEGE

SURAMPALEM

ANDHRA PRADESH

2019 - 2020

INTERNAL EXAMINER



EXTERNAL EXAMINER


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Dr.V.Ravi Sankar, M Pharm., PhD
 Principal & Professor

CERTIFICATE

This is to certify that the dissertation work entitled "EPIDEMIOLOGICAL STUDY AND DRUG UTILISATION PATTERN IN VARIOUS SKIN DISEASED PATIENTS OF DERMATOLOGY OUTPATIENT DEPARTMENT" is submitted to the Jawaharlal Nehru Technological University, Kakinada(JNTUK) in partial fulfillment for the award of degree of Doctor of Pharmacy. This is a bonafied work carried out by B.UDAYA SRI (Reg.No.153GIT0002), E.SRAVEENA (Reg.No. 153GIT0006), K.V.V. SATYAVATHI (Reg.No.153GIT0010), N. ANIL KUMAR REDDY (Reg.No. 153GIT0017), under the guidance and supervision of Dr.K.GOWTHAMI, Pharm D Assistant Professor, Aditya Pharmacy College, Surampalem.

Date:

Place: Surampalem

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Pin: 533437, Ph: 08852 200005

DECLARATION BY THE CANDIDATES

We B.Udaya Sri, E.Sraveena, K.V.V.Satyavathi, N.Anil Kumar Reddy hereby declare that the investigations, findings in the dissertation entitled "EPIDEMIOLOGICAL STUDY AND DRUG UTILISATION PATTERN IN VARIOUS SKIN DISEASED PATIENTS OF DERMATOLOGY OUTPATIENT DEPARTMENT" is a bonafied research work done under the guidance of Dr.K.Gowthami, Assistant Professor, in partial fulfillment of the requirement of V year Doctor of Pharmacy (PharmD).

BALLA UDAYA SRI (Reg.No.153GIT002)

E.Sraveena.

ENJETY SRAVEENA (Reg.No.153GIT006)

K.V.V. SatyaVathi
KOKKIRIMETLA VEERA VENKATA SATYAVATHI (Reg.No.153GIT0010)

NALLAMILLI ANIL KUMAR REDDY (Reg.No.153GIT0017)



[Signature]
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ABSTRACT

AIM:

To study the epidemiology of various skin diseases and drug utilization trends in dermatology out-patient department at a tertiary care teaching hospital.

ABSTRACT:

Dermatological conditions account for up to 2% of consultations in general practice worldwide. Skin diseases in developing countries have a serious impact on quality of life. This study is conducted to identify the epidemiology and drug utilisation trends of various skin diseases.

CONCLUSION:

Among all the skin diseases, fungal infections, eczematous diseases, parasitic infections were more commonly observed conditions in our study area and anti histamines, anti-fungal drugs, antibiotics, anti-inflammatory drugs were the most commonly prescribed drugs in our dermatology unit.



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CONCLUSION


CONCLUSION:

Our present study focused on epidemiological study and drug utilization pattern in dermatological diseases. Fungal infections, eczematous diseases, parasitic infections were more commonly observed conditions in our study area. Anti histamines, anti-fungal drugs, antibiotics, anti-inflammatory drugs were the most commonly prescribed drugs in our dermatology unit. As the research has demonstrated, people should be educated regarding the prevalent diseases. It is also clear that all the prescribed medications are relevant to the diagnosis made and prescribing pattern is rational.

FUTURE DIRECTIONS:

In terms of future directions, we hope that the data presented here may be of use to future dermatological expeditions on a large scale and also to provide better health care to patients.




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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 **Neurological 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
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6. Time allocated for presentation may be 8+2 Min.

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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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**A CROSS-SECTIONAL STUDY ON PSYCHIATRIC SCREENING
AND PRESCRIPTION PATTERNS IN ELDERLY PATIENTS
ATTENDING PSYCHIATRIC OPD OF A TERTIARY CARE
TEACHING HOSPITAL**

A Project Report Submitted To



Jawaharlal Nehru Technological University, Kakinada

In Partial Fulfillment Of The Requirements Of The Award Of Degree Of

DOCTOR OF PHARMACY

BY

G.S.R. SURENDRANATH (Reg. No : 153GIT0007)

MD. AHAMED ALISHA (Reg. No : 153GIT0013)

M. LILLY GRACE (Reg. No : 153GIT0014)

Under the Guidance of

CLINICAL GUIDE

[Dr. V NIVEDITHA M.D, Assistant Professor, Department Of Psychiatry, GGH, Kakinada.

INSTITUTIONAL GUIDE

[DR. M KRISHNA PRIYA PHARM D, Asst Professor, Department Of Pharmacy Practice,
Aditya Pharmacy College.



DEPARTMENT OF PHARMACY PRACTICE & PHARM D

ADITYA PHARMACY COLLEGE

SURAMPalem-533437

2019-2020



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08852 200005

Dr. V. RAVI SHANKAR,
Principal & Professor

CERTIFICATE

This is to certify that the dissertation work entitled "A CROSS-SECTIONAL STUDY ON PSYCHIATRIC MORBIDITIES AND PRESCRIPTION PATTERNS IN ELDERLY PATIENTS ATTENDING PSYCHIATRIC OPD OF A TEACHING HOSPITAL" is submitted to the JNTUK University, Kakinada in partial fulfillment for the award of degree of Doctor Of Pharmacy. This is a bonafide work carried out by G.S.R. SURENDRANATH (REG. NO. 153G1T0007), MD. AHAMED ALISHA (REG. NO. 153G1T0013), M. LILLY GRACE (REG. NO. 153G1T0014), under the guidance and supervision of Dr. M. KRISHNA PRIYA, Assistant Professor, Aditya Pharmacy College, Surampalem and Dr. V. NIVEDITHA M.D, Department of Psychiatry, GGH, Kakinada

Date:
Place: Surampalem



R. Shankar

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(Dr. V. RAVI SHANKAR)
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 08852 200005

DECLARATION BY THE CANDIDATES

We G. S. R. SURENDRANATH, MD. AHAMED ALISHA & M. LILLY GRACE here by declare that the investigations, findings in the dissertation entitled "A CROSS-SECTIONAL STUDY ON PSYCHIATRIC MORBIDITIES AND PRESCRIPTION PATTERNS IN ELDERLY PATIENTS ATTENDING PSYCHIATRIC OPD OF A TEACHING HOSPITAL" is a bonafide research work done under the guidance of Dr. M. KRISHNA PRIYA (Pharm D), Assistant Professor, in partial fulfillment of the requirement of V year Doctor Of Pharmacy (Pharm.D)

G. S. R. SURENDRANATH

(Reg.No. 153G1T0007)

MD. AHAMED ALISHA

(Reg.No. 153G1T0013)

M. LILLY GRACE

(Reg.N0. 153G1T0014)




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ABSTRACT

PURPOSE

To assess psychiatric morbidities in elderly patients according to ICD-10 criteria and to assess the prescription patterns in the elderly patients based on WHO prescribing indicators

METHODS

All the new cases of elderly patients attending psychiatric OPD over a 60 day period will be covered in a study only after the approval for the study was sought from the Institutional Ethics Committee (IEC) and informed consent was taken from all the participants . Patients diagnosed clinically by the psychiatrist using standard diagnostic guidelines ICD -10. Prescriptions prescribed by the psychiatrist were considered as study population. A specially designed proforma was used to collect the demographics, diagnosis and prescription data in the following format: Types of psychotic disorders diagnosed , Pattern of drugs prescribed, Average number of drugs in the prescription , Class of drugs that are involved and Average number of antipsychotics. No followup of the patient was done. Data from all the patients included in the study was entered in predictive and analytical software. After analyzing the data for demographics and clinical profiles, the results were compared with the standard prescription guidelines of WHO (World Health Organization). The prescribing indicators include:

Average number of drugs per encounter, Percentage of drugs prescribed by generic name, Percentage of encounters with antibiotics prescribed, Percentage of encounters with injection prescribed and Percentage of drugs prescribed from essential drug list or formula.

Data collected will be analyzed by various statistical methods. Mean age of the patients with psychiatric morbidities would be calculated. The correlation of the factors like age, gender on prevalence and incidence of psychiatric morbidities would be calculated by SPSS. The prescribing pattern of drugs with respect to class of drug and also individual drugs in each class would be expressed in percentage values.




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ABSTRACT

RESULTS

In our study of psychiatric morbidities among elderly patients, there are 127 patients are involved in the study. The most common age group for psychiatric disorders in elderly patients was 50-59 years with 62.99 % of total cases. The least common group is 80-89 and above with 3.14 % and 0 % respectively. In comparison of gender, the males are with 54 % of total cases and females are only with 46 % of total cases, this indicates that males are more prone to the psychiatric disorders than females. The most common psychiatric disorder in elderly patients was psychosis with 34.64 % of patients followed by schizophrenia and depression with 9.44 %. From the ICD 10 diagnosis codes there are different types of psychiatric disorders, are classified. The most common class of psychiatric disorders are F00-F09 (Mental disorders due to known physiological conditions) with 34.64 % followed by F30-F39 (Mood [affective] disorders) with 25.98 %. Here the most commonly used class of drugs are antipsychotics with 23.5 % followed by benzodiazepines 20.5 %. The prescribing indicators are The average number of drugs per encounter is 2 in 127 patients, Percentage of drugs prescribed by generic name is 100 %, Percentage of encounters with antibiotics prescribed is 0 %, Percentage of encounters with injections prescribed is 0 %, Percentage of drugs prescribed from essential drug list/formulary is 40.62 %.

CONCLUSION

The age group of 50-59 years are more prone to the psychiatric disorders in elderly patients than other age groups and Males are more prone to the psychiatric illness than the females in elderly patients but in most common psychiatric disorder (psychosis) females are more prone to it. The most common disorder in elderly psychiatric patients is psychosis with 34.64% followed by the schizophrenia and depression with 9.44 % and the most commonly prescribed drugs are antipsychotics with 23.5 % followed by benzodiazepines with 20.5 %. The prescription follows the WHO guidelines except in the case of essential drug list/formulary with only 40.62 %. The average number of drugs per encounter is 2 in 127 patients, Percentage of drugs prescribed by generic name is 100 %, Percentage of encounters with antibiotics prescribed is 0 %, Percentage of encounters with injections prescribed is 0 % and Percentage of drugs prescribed from essential drug list/formulary is 40.62 %.



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iv

CONCLUSION

CONCLUSION:

In our study of psychiatric morbidities in elderly out patients and their prescription pattern, we concluded that:

- The age group of 50-59 years are more prone to the psychiatric disorders in elderly patients than other age groups.
 - Males are more prone to the psychiatric illness than the females in elderly patients but in most common psychiatric disorder (psychosis) females are more prone to it.
 - The most common disorder in elderly psychiatric patients is psychosis with 34.64% followed by the schizophrenia and depression with 9.44 %.
 - The most commonly prescribed drugs are antipsychotics with 23.5 % followed by benzodiazepines with 20.5 %.
 - The prescription follows the WHO guidelines except in the case of essential drug list/formulary with only 40.62 %.
1. The average number of drugs per encounter is 2 in 127 patients.
 2. Percentage of drugs prescribed by generic name is 100 %.
 3. Percentage of encounters with antibiotics prescribed is 0 %.
 4. Percentage of encounters with injections prescribed is 0 %.
 5. Percentage of drugs prescribed from essential drug list/formulary is 40.62 %.




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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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**ASSESSMENT OF DEMOGRAPHIC DETAILS AND DRUG
UTILIZATION OF ANTI-EPILEPTICS IN PEDIATRIC
PATIENTS WITH SEIZURES IN TERTIARY CARE TEACHING
HOSPITAL- A RETROSPECTIVE STUDY**

A Project Report Submitted to



Jawaharlal Nehru Technological University, Kakinada
in partial Fulfillment of the requirements of the Award of Degree of

DOCTOR OF PHARMACY

BY

Guttula Sunil Paul (Reg. No. 153GIT0009)

Theophilus Adeyi Loko (Reg. No. 153GIT0012)

Basagnia Emmanuel Kojo (Reg. No. 183GIT0101)

Under the Guidance of

DR. K. JEMINI CHARAN (PHARM.D)

Assistant professor



DEPARTMENT OF PHARMACY PRACTICE & PHARM D

ADITYA COLLEGE OF PHARMACY

SURAMPALEM

ANDHRA PRADESH

MARCH 2020

(Handwritten signature)



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 Pin: 533437, Ph: 08852 200005

CERTIFICATE

This is to certify that the dissertation work entitled "ASSESSMENT OF DEMOGRAPHIC DETAILS AND DRUG UTILIZATION OF ANTIEPILEPTICS IN PEDIATRIC PATIENTS WITH SEIZURES IN TERTIARY CARE TEACHING HOSPITAL- A RETROSPECTIVE STUDY" is submitted to the Jawaharlal Nehru University Kakinada in partial fulfillment for the award of degree of Doctor of Pharmacy (Pharm. D). This is a bonafied work carried out by GUTTULA SUNIL PAUL (Reg.No: 153G1T0009), THEOPHILUS ADEYI LOKO (Reg.No. 153G1T0012), BASAGNIA EMMANUEL KOJO (Reg.no.183G1T0101), under the guidance and supervision of Dr. JEMINI CHARAN, Assistant Professor, Aditya College Of Pharmacy, Surampalem.



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[Signature]
 PRINCIPAL

Dr. V. Ravi Shankar
 (Principal & Professor)

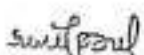
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DECLARATION BY THE CANDIDATES

We **GUTTULA SUNIL PAUL** (Reg. No: 153GIT0009), **THEOPHILUS ADEYI LOKO** (Reg.No.153GIT0012), **BASAGNIA EMMANUEL KOJO** (Reg.no.183GIT0101), hereby declare that the investigations, findings in the dissertation entitled "**ASSESSMENT OF DEMOGRAPHIC DETAILS AND DRUG UTILIZATION OF ANTIEPILEPTICS IN PEDIATRIC PATIENTS WITH SEIZURES IN TERTIARY CARE TEACHING HOSPITAL-A RETROSPECTIVE STUDY**" is a bonafied research work done under the guidance of Dr. K. JEMINI CHARAN, Assistant Professor, in partial fulfillment of the requirement of V year Doctor of Pharmacy (Pharm. D).


GUTTULA SUNIL PAUL (Reg No: 153GIT0009)


THEOPHILUS ADEYI LOKO (Reg No: 153GIT0012)


BASAGNIA EMMANUEL KOJO (Reg No: 183GIT0101)




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SURAMPALAM 533 437

ABSTRACT

ASSESSMENT OF DEMOGRAPHIC DETAILS AND DRUG UTILIZATION OF ANTIEPILEPTICS IN PEDIATRIC PATIENTS WITH SEIZURES IN TERTIARY CARE TEACHING HOSPITAL- A RETROSPECTIVE STUDY

ABSTRACT

PURPOSE: To assess the demographic details and utilization pattern of antiepileptics in pediatric patients with seizures in order to find out the most effective anti epileptic (monotherapy), combination therapy (dual therapy and polytherapy). And to find out most commonly used antiepileptic.

METHODS: A retrospective review of patient records in the pediatrics department of government general hospital, kakinada. Descriptive and inferential statistical analyses were then performed on the findings.


RESULTS: A total of 200 case records were analyzed. Based on the results we find that the first generation AEDs still dominate epilepsy treatment in the government general hospital with Phenytoin (41.61%), Clobazam (24.83%), Sodium Valproate(23.48%) being mostly prescribed. Seizures occurred more commonly in the age group of 1 year (19%) and below 1 year (17%) with males (58.5%) being the most number of cases. Majority of the cases having the medication history with Phenytoin (29.16%) and Sodium Valproate (29.16%) . The majority of patients were on Monotherapy (74.5%). Most of patients in this study had active Epilepsy (71%). The most common comorbidity associated with seizure in this study was Fever (48.83%), Global Developmental Delay (15.50%), Respiratory Tract Infections (12.40%). People with previous history of seizure (72%), global developmental delay (7.51%) and head injuries (5.26%) were at high risk of suffering a seizure.

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ABSTRACT

CONCLUSION: This study shows that seizures are common in children with fever, global developmental delay and infections being the most common comorbidities. Phenytoin and sodium valproate are the most effective and commonly used antiepileptic.




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CONCLUSION

Conclusion:

This study shows that seizures are common in children, with fever, global developmental delay and infections being the most common comorbidities. Phenytoin and sodium valproate are the most commonly used antiepileptic. Leviteracetam is the only newer antiepileptic drug being used in the hospital. In almost all the cases physicians are still hanging to older antiepileptics which have more adverse effects and drug interactions. Mostly related to tolerability, safety and pharmacokinetics, to believe that the newer antiepileptic drugs may be advantageous. According to our study, seizure are mostly occurring in children in the age group of 0-5 years predominantly in males. Epilepsy affects everyone in different ways. Many people have their seizures controlled by epilepsy medicines or other treatments, such as surgery and vagus nerve stimulation. But some people continue having seizures, even though they have tried different medicines and other treatments. Epilepsy can have a major impact on everyday life. People with epilepsy may also have to deal with unfair treatment from other people. This is often because other people don't know much about the condition. Some people find that epilepsy has an impact on their education especially children, or when they are at work. Issues can include health and safety and having to deal with discrimination. In some of the cases seizures were happening due to noncompliance, which can be avoided by proper patient counselling and some patients stop using the drug without taking advise from the health care professionals which can also be avoided by educating the patient about his medical condition and the drugs. Apart from pharmacological therapy, healthcare professionals must consider cognitive behavioral therapy, educational interventions and relaxation therapy as the best interventions to reduce the seizure frequency.




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APPENDIX-A

(See regulation 8)

PHARM.D. SYLLABUS

First Year

1.1 HUMAN ANATOMY & PHYSIOLOGY (THEORY)

Theory : 3 Hrs. /Week

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

Text books

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

Reference books

 - a. Guyton arthur, C. *Physiology of human body*. Publisher: Holtsaunders.
 - b. Chatterjee, C.C. *Human physiology*. Volume 1&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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- 10 Nervous system
 - a) Definition and classification of nervous system
 - b) Anatomy, physiology and functional areas of cerebrum
 - c) Anatomy and physiology of cerebellum
 - d) Anatomy and physiology of mid brain
 - e) Thalamus, hypothalamus and Basal Ganglia
 - f) Spinal cord: Structure & reflexes – mono-poly-planter
 - g) Cranial nerves – names and functions
 - h) ANS – Anatomy & functions of sympathetic & parasympathetic N.S.
- 11 Urinary system
 - a) Anatomy and physiology of urinary system
 - b) Formation of urine
 - c) Renin Angiotensin system – Juxtaglomerular apparatus - acid base Balance
 - d) Clearance tests and micturition
- 12 Endocrine system
 - a) Pituitary gland
 - b) Adrenal gland
 - c) Thyroid and Parathyroid glands
 - d) Pancreas and gonads
- 13 Reproductive system
 - a) Male and female reproductive system
 - b) Their hormones – Physiology of menstruation
 - c) Spermatogenesis & Oogenesis
 - d) Sex determination (genetic basis)
 - e) Pregnancy and maintenance and parturition
 - f) Contraceptive devices
- 14 Sense organs
 - a) Eye
 - b) Ear
 - c) Skin
 - d) Tongue & Nose
- 15 Skeletal muscles
 - a) Histology
 - b) Physiology of Muscle contraction
 - c) Physiological properties of skeletal muscle and their disorders (definitions)
- 16 Sports physiology
 - a) Muscles in exercise, Effect of athletic training on muscles and muscle performance,
 - b) Respiration in exercise, CVS in exercise, Body heat in exercise, Body fluids and salts in exercise,
 - c) Drugs and athletics




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A STUDY OF ASSOCIATION BETWEEN CO-MORBIDITIES, PRESCRIBING PATTERNS AND OUTCOMES OF ACUTE KIDNEY INJURY AND CHRONIC KIDNEY DISEASE PATIENTS IN A TERTIARY CARE HOSPITAL: A PROSPECTIVE OBSERVATIONAL STUDY

V-Pharm D (Doctor of Pharmacy) Dissertation submitted to the
Jawaharlal Nehru Technological University, KAKINADA



By

D.PRAVEEN	(Reg. No. 153G1T0005)
N.USHA RANI	(Reg. No. 153G1T0018)
V.DURGA BHAVANI	(Reg. No. 153G1T0025)
Y.LAKSHMI SINDHUSHA	(Reg.No. 153G1T0026)

Under the Guidance of

Dr .K. SUKEERTHI PharmD

Assistant Professor




Department of Pharmacy Practice & PharmD

ADITYA PHARMACY COLLEGE

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2019 - 2020




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DECLARATION BY THE CANDIDATES

We D.Praveen, N.Usha Rani,V.Durga Bhavani, Y.Sindusha hereby declare that the investigations, findings in the dissertation entitled "A STUDY OF ASSOCIATION BETWEEN CO-MORBIDITIES, PRESCRIBING PATTERNS AND OUTCOMES OF ACUTE KIDNEY INJURY AND CHRONIC KIDNEY DISEASE PATIENTS IN A TERTIARY CARE HOSPITAL: A PROSPECTIVE OBSERVATIONAL STUDY." is a bonafide research work done under the guidance of Dr . K .Sukeethi, Assistant Professor ,in partial fulfillment of the requirement of V year Doctor of Pharmacy(Pharm.D)

D.PRAVEEN

(Reg. No. 153G1T0005)

N.USHA RANI

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CONCLUSION

In conclusion, the results suggest that association exists between co-morbidities, prescribing patterns and outcome of AKI and CKD. The results show that among total population 67% were suffering with CKD, 33% were suffering with AKI. The mostly seen co-morbidities are **HYPERTENSION** and **DIABETES** with both CKD and AKI. The prescription patterns study help to know that Furosemide diuretic, is commonly used in both CKD and AKI, and for AKI amlodipine is used. The outcome helped us to understand that CKD, who are under dialysis, there is more recovery rate. The AKI has less need of dialysis as it is initial stage of kidney disease and it has more recovery rate with prescription.




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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)




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- Amyloidosis

- 4 **Cancer:** differences between benign and malignant tumors, Histological diagnosis of malignancy, invasions and metastasis, patterns of spread, disturbances of growth of cells, classification of tumors, general biology of tumors, spread of malignant tumors, etiology and pathogenesis of cancer.
- 5 Types of shock, mechanisms, stages and management
- 6 Biological effects of radiation
- 7 Environmental and nutritional diseases
 - i) Air pollution and smoking- SO₂, NO, NO₂, and CO
 - ii) Protein calorie malnutrition, vitamins, obesity, pathogenesis of starvation.
- 8 Pathophysiology of common diseases
 - a. Parkinsonism
 - b. Schizophrenia
 - c. Depression and mania
 - d. Hypertension
 - e. Stroke (ischaemic and hemorrhage)
 - f. Angina, CCF, Atherosclerosis, Myocardial infarction
 - g. Diabetes Mellitus
 - h. Peptic ulcer and inflammatory bowel diseases
 - i. Cirrhosis and Alcoholic liver diseases
 - j. Acute and chronic renal failure
 - k. Asthma and chronic obstructive airway diseases
- 9 Infectious diseases :
Sexually transmitted diseases (HIV, Syphilis, Gonorrhea), Urinary tract infections, Pneumonia, Typhoid, Tuberculosis, Leprosy, Malaria Dysentery (bacterial and amoebic), Hepatitis- infective hepatitis.

4. Assignments :

Title of the Experiment

- 1 Chemical Mediators of inflammation
- 2 Drug Hypersensitivity
- 3 Cigarette smoking & its ill effects
- 4 Biological Effects of Radiation
- 5 Etiology and hazards of obesity
- 6 Complications of diabetes
- 7 Diagnosis of cancer
- 8 Disorders of vitamins
- 9 Methods in Pathology- Laboratory values of clinical significance
- 10 Pathophysiology of Dengue Hemorrhagic Fever (DHF)

Format of the assignment

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



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ASSESSMENT OF SEVERITY OF STROKE BASED ON NATIONAL INSTITUTE OF HEALTH STROKE SCALE AMONG STROKE PATIENTS

Vth year Pharm.D (Doctor of Pharmacy) Dissertation Submitted to the NTUK



BY

AMAH CHUKWUEBUKA BONIFACE	(Reg.No.153GIT0001)
GEDDAM MOUNIKA	(Reg.No.153GIT0008)
PAPPULA SAI ANITHA	(Reg. No.153GIT0019)
PASUPUREDDI SASIKALA	(Reg. No.153GIT0020)

Under the Guidance of

Dr. K. Jemini Charan	Dr.M.V.V.Tirumala Rao
Assistant Professor,	Head of the Department,
Department of Pharmacy Practice,	Department of General Medicine,
Aditya Pharmacy College,	RMC/GGH,
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DEPARTMENT OF PHARMACY PRACTICE & PHARM D

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Dr. V.Ravi Sankar,
Principal & HOD

CERTIFICATE

This is to certify that the dissertation work entitled "ASSESSMENT OF SEVERITY OF STROKE BASED ON NATIONAL INSTITUTE OF HEALTH STROKE SCALE." is submitted to the Jawaharlal Nehru University Kakinada in partial fulfillment for the award of degree of Doctor of Pharmacy. This is a bonafide work carried out by Amah Chukwuebuka Boniface (Reg. No.153GIT0001), G. Mounika (Reg. No. 153GIT0008), P. Sai Anitha (Reg. no.153GIT0019), P. Sasikala (Reg. No. 153GIT0020), under the guidance and supervision of Dr. Karri Jemini Charan, Pharm D Assistant Professor, Aditya Pharmacy College, Surampalem.

Date:
Place: Surampalem



(Signature)

PRINCIPAL

(Dr. V. Ravi Sankar)

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DECLARATION BY THE CANDIDATES

We Amah Chukwuebuka Boniface, G. Mounika, P. Sai Anitha, P.Sasikala, hereby declare that the investigations, findings in the dissertation entitled "ASSESSMENT OF SEVERITY OF STROKE BASED ON NATIONAL INSTITUTE OF HEALTH STROKE SCALE" is a bonafide research work done under the guidance of Mr.Dr. Karri. Jemini Charan, Assistant Professor, in partial fulfillment of the requirement of V year Doctor of Pharmacy (Pharm.D)

Amah Chukwuebuka Boniface

(Reg. No. 153G1T0001)

Geddam Mounika

(Reg. No. 153G1T0008)

Pappula Sai Anitha

(Reg. No.153G1T0019)

Pasupureddi Sasikala

(Reg. No. 153G1T0020)



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ABSTRACT

Aim

To determine the severity of stroke among cerebrovascular accident individuals based on National Institute of Health Stroke Scale (NIHSS) in a tertiary care hospital.

Abstract:

The National Institute of Health Stroke Scale (NIHSS) is rapid and a standard method for the documentation of clinical progress in patients with both ischemic and hemorrhagic stroke. The scale is made up of 11 different questions that evaluate specific ability. The score for each ability is between "0-4". The patient's final score is calculated by adding the score for each element of the scale. "0" being normal functioning and "4" being completely impaired; "42" is the highest possible score in NIHSS, the higher the score more is the impairment in stroke patient.

Methodology:

The present study is conducted in the department of general medicine, government general hospital, Kakinada for about a period of 6 months. This study is a prospective observational study, where the sample size was about 150 individuals who are suffering from stroke. Information is collected from the data collection form which contains the 11 questions from the NIHSS and are given a score based on their severity.

Results:

According to the data obtained people in the age group of 51-60 are more affected and males are mostly affected than the females, but females have more severe condition than the males. The people with co-morbidities like hypertension or diabetes are mostly said to suffer from stroke. In the study of MRI of patients



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the people with the effect on cerebellar hemisphere are said to develop stroke severely. Mostly the symptoms are shown by the effect on the motor arm and leg.

Discussion:

The NIHSS is a widely use scale for quick assessment of the severity of stroke experienced by a patient. The NIHSS consists of 11 items which evaluate specific ability. The score for each ability is a number between 0 and 4. 0 indicates normal functioning and 4 indicates complete impairment of specific ability. The individual score from each item were added and final NIHSS score was obtained. The score 0 indicates no stroke symptoms, 1-4 indicates minor stroke, 5-15 indicates moderate stroke, 16-20 indicates moderate to severe stroke and 21-42 indicates severe stroke.

Conclusion:

This study shows that among the total population, 7% were affected with minor stroke, 38% were affected with moderate stroke, 14% were affected with moderate to severe stroke and 40% were affected with severe stroke.



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BP107P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)**4 Hours/week**

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

1. Study of compound microscope.
2. Microscopic study of epithelial and connective tissue
3. Microscopic study of muscular and nervous tissue
4. Identification of axial bones
5. Identification of appendicular bones
6. Introduction to hemocytometry.
7. Enumeration of white blood cell (WBC) count
8. Enumeration of total red blood corpuscles (RBC) count
9. Determination of bleeding time
10. Determination of clotting time
11. Estimation of hemoglobin content
12. Determination of blood group.
13. Determination of erythrocyte sedimentation rate (ESR).
14. Determination of heart rate and pulse rate.
15. Recording of blood pressure.

Recommended Books (Latest Editions)

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York
3. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, Riverview, MI USA
4. Text book of Medical Physiology- Arthur C, Guyton and John E. Hall. Miamisburg, OH, U.S.A.
5. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.



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Name P. Satya lakshmi PIN No. 19361R0075

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

Mr. / Ms. P. Satya lakshmi

a student of D-B-pharmacy with Regd. No. 19361R0075

in the Human Anatomy & Physiology Laboratory during the year 2019-20.

No. of Experiments Conducted 12

No. of Experiments Attended 12

[Signature]
Signature - Faculty incharge

[Signature]
Signature - Head of the Department

Submitted for the Practical examination held on
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[Signature]
EXAMINER-1

[Signature]
EXAMINER-2



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WIKAS, NLR

DUCT



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DEPARTMENT OF

HUMAN ANATOMY AND PHYSIOLOGY



Name G. Surya Naga Lakshmi PIN No. 19361R0029

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Mr. / Ms. GEESALA SURYA NAGA LAKSHMI

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in the Human anatomy & physiology Laboratory during the year 2019-20

No. of Experiments Conducted 17

No. of Experiments Attended 16

G. Prasanna
Signature - Faculty incharge

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[Signature]
EXAMINER-1

[Signature]
EXAMINER-2



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BP108P. PHARMACEUTICAL ANALYSIS (Practical)

4 Hours / V

- 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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in the PHARMACEUTICAL ANALYSIS Laboratory during the year 2019-20

No. of Experiments Conducted 20

No. of Experiments Attended 20

Signature - Faculty incharge

Signature - Head of the Department

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EXAMINER-1

EXAMINER-2

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
*)	21/09/2019	Introduction	1-4	8/7/14/14
1)	21/09/2019	Calibration of Volumetric Apparatus	5-7	8/7/14/14
2)	30/09/2019	Preparation and Standardisation of 0.1M of HCl	8-9	8/7/14/14
3)	14/10/2019	Preparation and Standardisation of 0.1M of H_2SO_4	10-11	8/7/14/14
4)	21/10/2019	Preparation and Standardisation of 0.1M of NaOH	12-13	8/7/14/14
5)	21/10/2019	Preparation and Standardisation of 0.1N of $KMnO_4$	14-15	8/7/14/14
6)		Limit Test For		
6)	28/10/2019	Assay of Ammonium chloride by acid - base titration	16-17	8/7/14/14
7)	28/10/19	Limit Test For chlorides.	18-19	8/7/14/14
8)	28/10/19	Limit Test For Sulphates	20-21	8/7/14/14
9)	4/11/19	Limit Test For Iron	22-23	8/7/14/14
10)	18/11/19	Preparation and Standardisation of 0.1M Certric Ammonium Sulphate	24-25	8/7/14/14
11)	18/11/19	Assay of Ferrous Sulphate by Cerniometry	26-28	8/7/14/14
12)	25/11/19	Assay of Hydrogen Peroxide by Permanganometry	29-30	8/7/14/14
13)	25/11/19	Preparation and Standardisation of Sodium Thiasulphate $[Na_2S_2O_3]$	31-32	8/7/14/14
14)	02/12/19	Assay of Copper Sulphate	33-34	8/7/14/14
15)	02/12/19	Assay of Sodium chloride	35-37	8/7/14/14



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A WIKAS PRODUCT

Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
16)	09/12/19	Assay of Sodium benzoate by Non-aqueous titration	38-40	(2/3) 8.5 ✓
17)	16/12/19	Potentiometric titration of Strong acid Vs Strong base	41-42	(2/3) 8.5 ✓
18)	16/12/19	Conductometric titration of Strong acid Vs Strong base	43-44	(2/3) 8.5 ✓
19)	23/12/19	Assay of calcium gluconate	45-47	(2/3) 8.5 ✓
20)	30/12/19	Assay of Sodium Thiosulphate	48-49	(2/3) 8.5 ✓
<div style="text-align: center;"> <p>Completed</p> <p>20/12/20</p> </div>				



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BP109P. PHARMACEUTICS I (Practical)**3 Hours / week****1. Syrups**

- a) Syrup IP'66
- b) Compound syrup of Ferrous Phosphate BPC'68

2. Elixirs

- a) Piperazine citrate elixir
- b) Paracetamol pediatric elixir

3. Linctus

- a) Terpin Hydrate Linctus IP'66
- b) Iodine Throat Paint (Mandles Paint)

4. Solutions

- a) Strong solution of ammonium acetate
- b) Cresol with soap solution
- c) Lugol's solution

5. Suspensions

- a) Calamine lotion
- b) Magnesium Hydroxide mixture
- c) 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

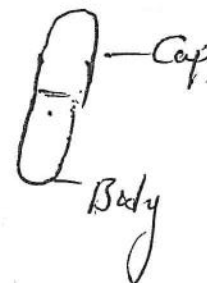
- a) Glycero gelatin suppository
- b) Cocoa butter suppository
- c) Zinc Oxide suppository

8. Semisolids

- a) Sulphur ointment
- b) Non staining-iodine ointment with methyl salicylate
- c) Carbopol gel

9. Gargles and Mouthwashes

- a) Iodine gargle
- b) Chlorhexidine mouthwash

Recommended Books: (Latest Editions)

10 / 156

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.



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ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF PHARMACEUTICS

Name G. YAMINI NAGA DEVI PIN No. 193GIR0028

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Mr. / Ms. G. YAMINI NAGA DEVI

a student of 1st B. Pharmacy 1st semester with Regd. No. 193GIR0028

in the pharmaceutics Laboratory during the year 2019-2020

No. of Experiments Conducted 30

No. of Experiments Attended 30

Signature - Faculty incharge

Signature - Head of the Department
PRINCIPAL

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EXAMINER-1

EXAMINER-2



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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
	16/9/19	General procedure for writing about the experiment.	1	
I		Syrups.	2-4	
1.	23/09/19	Simple syrup	5-6	} <u>AT</u> <u>W</u>
2	23/09/19	Vasaka Syrup	7-8	
3	30/10/19	paracetamol pediatric syrup	9-10	
4	30/10/19	Ferrous sulphate syrup	11-12	
II		Elixirs	13	
5.	14/10/19	Piperazine citrate elixir	14-15	} <u>AT</u> <u>W</u>
6.	14/10/19	paracetamol pediatric elixir	16-17	
III		Solutions	18	
7.	21/10/19	Strong Ammonium acetate solution	19-20	
8	21/10/19	cresol with soap solution	21-22	
9	21/10/19	Aqueous Iodine solution	23-24	
IV		Linctus		
10	14/10/19	Terpin hydrate Linctus.	25-26	} <u>AT</u> <u>W</u>
V		Emulsions	27-28	
11	28/10/19	Turpentine Liniment	29-30	
12	18/11/19	Liquid paraffin Emulsion	31-32	} <u>AT</u> <u>W</u>
VI		Suspensions	33-34	
13	28/10/19	calamine Lotion	35-36	
14	25/11/19	Magnesium hydroxide mixture	37-39	} <u>AT</u> <u>W</u>
15	25/11/19	Aluminium hydroxide mixture	40-41	
VII		Gargles and Mouthwashes	42	
16	2/12/19	Iodine Gargle	43	} <u>AT</u> <u>W</u>
17	2/12/19	chloro hexidine mouth wash	44-45	
18	2/12/19	Mandles paint.	46-47	} <u>AT</u> <u>W</u>
VIII		Powders	48-49	

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BP110P. PHARMACEUTICAL INORGANIC CHEMISTRY (Practical)**4 Hours / Week**

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

Recommended Books (Latest Editions)

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


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DEPARTMENT OF

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in the Inorganic chemistry Laboratory during the year 2019-20

No. of Experiments Conducted 20

No. of Experiments Attended 18

CHV App
Signature - Faculty incharge

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Aditya Pharmacy College
Signature - Head of the Department

Submitted for the Practical examination held on

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EXAMINER-1

EXAMINER-2



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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
0.	17-9-19	INTRODUCTION FOR LIMIT TEST	1-3	CH.V. Appoos 29/10/19
1.	24-9-19	LIMIT TEST FOR CHLORIDES	4-5	
2.	1-10-19	LIMIT TEST FOR SULPHATES	6-7	
3.	15-10-19	LIMIT TEST FOR IRON	8-10	CH.V. Appoos 29-10-19
4.	15-10-19	LIMIT TEST FOR LEAD	11-13	
5.	22-10-19	LIMIT TEST FOR HEAVY METALS	14-17	
6.	29-10-19	Modified limit test for chlorides & sulphides using $KMnO_4$	18-20	CH.V. Appoos 29/10/19
7.	29-10-19	LIMIT TEST FOR ARSENIC	21-25	
8.	12/11/19	preparation of potash alum	26-27	CH.V. Appoos 31/12/19
9.	19/11/19	preparation of boric acid	28	
10.	26/11/19	preparation of ferrous sulphate	29	
11.	3/12/19	Test for identification of ferrous sulphate	30-31	CH.V. Appoos 31/12/19
12.	7/12/19	Test for identification of copper sulphate	32-33	
13.	10/12/19	Test for identification of Calcium gluconate	34-36	CH.V. Appoos 21/12/19
14.	14/12/19	Test for identification of sodium bicarbonate	37-38	CH.V. Appoos 21/12/19
15.	17/12/19	Test for identification of Magnesium hydroxide	39	
16.	21/12/19	Swelling power of Bentonite	40-41	CH.V. Appoos 31/12/19
17.	24/12/19	Neutralising capacity of Aluminium hydroxide gel	42-43	
18.	28/12/19	Determination of Iodates in potassium Iodide	44	CH.V. Appoos 31/12/19
19.	31/12/19	preparation of Magnesium Sulphate	45	



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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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a student of ... pharm-D 1st year ... with Regd. No. 19361T0005

in the pharmaceutical organic chemistry Laboratory during the year 2019-2020

No. of Experiments Conducted 20

No. of Experiments Attended 18

Signature - Faculty incharge

Signature - Head of the Department

Submitted for the Practical examination held on

EXAMINER-1

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No. of Experiments Conducted 26

No. of Experiments Attended 26

Signature - Faculty incharge

Signature - Head of the Department




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EXAMINER-1

EXAMINER-2

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1	16.09.19	The apparatus used in volumetric analysis	1-7	} 
2	23.09.19	calibration of analytical apparatus	8-9	
3	30.09.19	standardisation of HCl	10-11	
4	14.10.19	Assay of Boron	12-13	
5	21.10.19	standardisation of NaOH by PHP	14-15	
6	21.10.19	Assay of Ammonium chloride	16-17	
7	28.10.19	Assay of NaHCO_3	18-19	
8	11-11.19	Non aqueous titration	20	
9	11-11.19	standardisation of 0.1M HClO_4	21-22	
10	18.11.19	Assay of sodium Benzoate	23-24	} 
11	25-11.19	complexometric titrations	25-26	
12	25-11.19	standardisation of disodium EDTA	27-28	
13	2-12.19	Assay of Calcium gluconate	29-31	
14	23-12.19	Redox titrations	32	
15	23-12.19	permanganometry.	33	
16	23-12.19	ceriometry	34	
17	23.12.19	assay of Ferrus sulphate	35-36	
18	23.12.19	Assay of H_2O_2	37-38	
19	30.12.19	Iodimetry	39	
20	30.12.19	standardisation of 0.05M I_2 solution	40-41	} 
21	20.1.20	Assay of sodium thiosulphate	42	
22	27.1.20	Iodometry	43	
23	27.1.20	standardisation of sodium thiosulphate	44-45	
24	27.1.20	assay of CuSO_4	46-48	
25	24.2.20	precipitation titration	49-50	
26	24.2.20	Assay of NaCl	50-53	

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UNIT V**07 Hours**

- Enzymes**

Introduction, properties, nomenclature and IUB classification of enzymes

Enzyme kinetics (Michaelis plot, Line Weaver Burke plot)

Enzyme inhibitors with examples

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

Therapeutic and diagnostic applications of enzymes and isoenzymes

Coenzymes –Structure and biochemical functions

BP 209 P. BIOCHEMISTRY (Practical)**4 Hours / Week**

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

Recommended Books (Latest Editions)

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

BP 204T.PATHOPHYSIOLOGY (THEORY)**45Hours**

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

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

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

Course content:**Unit I****10Hours**

- **Basic principles of Cell injury and Adaptation:**

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



ADITYA PHARMACY COLLEGE

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Name G. Bhavya Tejaswi PIN No. 193G1R0033

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in the Biochemistry Laboratory during the year 2019-2020

No. of Experiments Conducted 16

No. of Experiments Attended 16

Signature - Faculty incharge

[Signature]
11/11/20

Signature - Head of the Department
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Aditya Pharmacy College
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Submitted for the Practical examination held on

EXAMINER-1

EXAMINER-2



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Pointer

No.	Date	Name of the Experiment	Page No.	Remarks
	18/2/20	General procedure of Identification of carbohydrates	1-8	
1.	28/2/20	Identification test for carbohydrate sample-1	9-11	
2.	3/3/20	Identification test for carbohydrate Sample-2	12-13	
3	5/3/20	Identification test for carbohydrates Sample-3	14-15	
4	17/11/20	Identification test for carbohydrates sample-4	16-17	
5	17/11/20	Identification test for carbohydrates sample-5	18-19	
6	18/11/20	Identification test for carbohydrate sample-6.	20-21	
7	19	General procedure for identification of proteins	22-29	
8	20/11/20	Identification of proteins sample-1	30-31	
9	20/11/20	Qualitative analysis of abnormal constituents of urine	32-33	
10	21/11/20	Abnormal constituents of urine.	34-36	
1	21/11/20	Determination of Blood creatinine	40-41	
2	21/11/20	Determination of Blood sugars by follin-wu tube method.	42-43	
3	22/11/20	Determination of Serum total cholesterol.	44	
14	22/11/20	Preparation of standard total cholesterol solutions & its pH measurements	45-47	

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BP306P. PHYSICAL PHARMACEUTICS – I (Practical)

4 Hrs/week

1. Determination the solubility of drug at room temperature
2. Determination of pKa value by Half Neutralization/ Henderson Hasselbalch equation.
3. Determination of Partition co- efficient of benzoic acid in benzene and water
4. Determination of Partition co- efficient of Iodine in CCl_4 and water
5. Determination of % composition of NaCl in a solution using phenol-water system by CST method
6. Determination of surface tension of given liquids by drop count and drop weight method
7. Determination of HLB number of a surfactant by saponification method
8. Determination of Freundlich and Langmuir constants using activated char coal
9. Determination of critical micellar concentration of surfactants
10. Determination of stability constant and donor acceptor ratio of PABA-Caffeine complex by solubility method
11. Determination of stability constant and donor acceptor ratio of Cupric-Glycine complex by pH titration method

Recommended Books: (Latest Editions)

1. Physical Pharmacy by Alfred Martin
2. Experimental Pharmaceutics by Eugene, Parott.
3. Tutorial Pharmacy by Cooper and Gunn.
4. Stocklosam J. Pharmaceutical Calculations, Lea &Febiger, Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-1 to 3, MarcelDekkar Inc.
6. Liberman H.A, Lachman C, Pharmaceutical Dosage forms. Disperse systems, volume 1, 2, 3. Marcel Dekkar Inc.
7. Physical Pharmaceutics by Ramasamy C and ManavalanR.
8. Laboratory Manual of Physical Pharmaceutics, C.V.S. Subramanyam, J. Thimma settee
9. Physical Pharmaceutics by C.V.S. Subramanyam
10. Test book of Physical Phramacy, by Gaurav Jain & Roop K. Khar


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DEPARTMENT OF PHYSICAL PHARMACEUTICS - I

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in the PHYSICAL PHARMACEUTICS-I Laboratory during the year 2019-2020

No. of Experiments Conducted

12

No. of Experiments Attended

12

[Signature]
Signature - Faculty incharge

[Signature]
Signature - Head of the Department

Principal
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the Practical examination held on

[Signature]
EXAMINER-1

[Signature]
EXAMINER-2



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SURAMPALEM 533 437

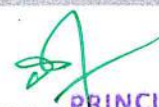
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S.No.	Date	Name of the Experiment	Page No.	Remarks
01.	31/07/19	Determination of Solubility drug at Room temperature.	01-02	} JH 6/9/19
02.	07/08/19	Determination of PK^a value by Half Neutralisation method.	03-04	
03.	14/8/19	Determination of partition coefficient of Benzoic acid in benzene and water.	05-06	
04.	30/8/19	Determination of Partition coefficient of iodine in CCl_4 and water	07-08	
05.	6/9/19	Determination of % Composition of NaCl in a solution using phenol-water system by CST Method.	09-10	} JH 4/10/19
06.	13/9/19	Determination of Surface tension of the given liquid by using drop count method.	11-13	
07.	27/9/19	Determination of the HLB number of a surfactant by saponification method.	17-20	
08.	4/10/19	Determination of Surface tension of the given using drop weight method.	14-16	} JH 11/11/19
09.	18/10/19 8/19/10/19	Determination of Freundlich and Langmuir constants using activated charcoal.	21-24	
10.	21/10/19	Determination of Critical micellar concentrations of surfactants.	25-27.	
11.	1/11/19	Determination of Stability constant and donor acceptor ratio of PA BA - caffeine complex by solubility method.	28-30	



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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.



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

PHARMACEUTICAL ORGANIC CHEMISTRY.

Name KISAKYE VANESSA WILLIAMS

PIN No. 19391R0049

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

Mr. / Ms. KISAKYE VANESSA WILLIAMS

a student of Aditya Pharmacy College with Regd. No. 19391R0049

in the Pharmaceutical Organic Chemistry-I Laboratory during the year 2019-2020

No. of Experiments Conducted

91

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

EXAMINER-1

EXAMINER-2



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SURAMPALEM 533 437

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33/156

Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	28-2-20	LAB SAFETY PRECAUTIONS.	1.	(8) 26/11/2020
2.	28-2-20	LABORATORY RULES	2-3	
3.	28-2-20	PURIFICATION OF ORGANIC COMPOUNDS	4-10	
4.	4-3-20	EXPERIMENT 1: DETERMINATION OF MELTING POINT	11-12A ⁺	(8) 26/11/2020
5.	6-3-20	DETERMINATION OF BOILING POINT.	13-14A ⁺	
6.	11-3-20	SYSTEMIC PROCEDURE FOR ORGANIC COMPOUND ANALYSIS.	15-29	(8) 26/11/2020
7.	11-3-20	SYSTEMIC ANALYSIS OF UNKNOWN ORGANIC COMPOUND SAMPLE 1.	30-33 A ⁺	
8.	18-3-20	QUALITATIVE ANALYSIS OF UNKNOWN ORGANIC COMPOUND SAMPLE 2.	34-37. A ⁺	(8) 26/11/2020
9.	18-11-20	QUALITATIVE ANALYSIS OF UNKNOWN ORGANIC COMPOUND SAMPLE 3.	38-39 A ⁺	(8) 26/11/2020
10.	18-11-20	QUALITATIVE ANALYSIS OF UNKNOWN ORGANIC COMPOUND SAMPLE 4.	40-43 A ⁺	
11.	18-11-20	QUALITATIVE ANALYSIS OF UNKNOWN ORGANIC COMPOUND SAMPLE 5.	44-48. A ⁺	(8) 26/11/2020
12.	18-11-20	QUALITATIVE ANALYSIS OF UNKNOWN ORGANIC COMPOUND SAMPLE 6	49-50 A ⁺	(8) 26/11/2020
13.	19-11-20	QUALITATIVE ANALYSIS OF UNKNOWN ORGANIC COMPOUND SAMPLE 7.	51-53 A ⁺	(8) 26/11/2020
14.	19-11-20	QUALITATIVE ANALYSIS OF UNKNOWN ORGANIC COMPOUND SAMPLE 8.	54-58. A ⁺	
15.	19-11-20	DERIVATIVES OF ALDEHYDES AND KETONES.	59-60 A ⁺	
16.	19-11-20	DERIVATIVES OF ALCOHOLS AND PHENOLS	61-64 A ⁺	(8) 26/11/2020
17.	19-11-20	PREPARATION OF ACETANILINE FROM ANILINE	65-66 A ⁺	



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BP 307P.PHARMACEUTICAL MICROBIOLOGY (Practical)

4 Hrs/week

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

Recommended Books (Latest edition)

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



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

MICRO BIOLOGY

Name O. vijaya Lakshmi

PIN No. 183G1R0066

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

Mr. / Ms. O. vijaya Lakshmi

a student of 1st - B Pharm with Regd. No. 183G1R0066

in the Microbiology Laboratory during the year 2019-2020

No. of Experiments Conducted 23

No. of Experiments Attended 23

H. P. R.
15-11-2019
Signature - Faculty incharge

V. R.
Signature - Head of the Department

PRINCIPAL
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SURAMPALEM-533 437

Submitted for the Practical examination held on

V. G. S. S.
EXAMINER-1

W. S. S.
EXAMINER-2



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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
01	31/07/19	Introduction To Microbiology	1-3	<i>PN</i> 31.7.2019
02	31/07/19	Common laboratory rules and regulations for Safety	4-6	<i>PN</i> 31.7.2019
03	7/8/19	Study of Apparatus and Equipm ^{ts} used Experimental microbiology.	7-15	<i>PN</i> 14.8.2019
04	14/8/19	Preparation and Sterilization of Nutrient Broth	16-17	<i>PN</i> 21.8.2019
05	14/8/19	Preparation & Sterilization of Nutrient Agar	18-19	<i>PN</i> 21.8.2019
06	21/08/19	Sterilization of Glass-ware	19-22	<i>PN</i> 28.8.2019
07	28/08/19	Aseptic transfer (sub culturing) of bacteria and fungi in to different media.	23-24	<i>PN</i> 4.09.2019
08	28/08/19	Preparation and Subculturing of x Nutrient Agar slants & Stabs	25	<i>PN</i> 11.09.2019
09	4/09/19	Isolation of ^{pure} culture x	26-28	<i>PN</i> 18.9.2019
10	11/09/19	Staining Techniques	29-30	<i>PN</i> 25.9.2019
11	18/09/19	Simple Staining	31-32	<i>PN</i> 2.10.2019
12	25/09/19	Gram staining	33-35	<i>PN</i> 15.10.2019
13	2/10/19	Acid fast staining x	36-37	<i>PN</i> 15.10.2019



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Date	Name of the Experiment	Page No.	Remarks
10/19	Motility of Bacteria by Hanging Drop method ✓	38-40	PN2 16.10.2019
10/19	Microbiological Assay of Antibiotics by cup plate method	41-44	PN2 23.10.2019
10/19	Microbiological assay of Antibiotic by using Turbidimetric Method	45-47	PN2 5.11.2019
10/19	Test for sterility for Sterile water for injection ✓	48-50	PN2 6.11.2019
11/19	Test for sterility for Solids ✓	51-53	PN2 12.11.2019
11/19	Biochemical Test for the Identification of Microorganisms - Methyl Red Test	54-55	PN2 13.11.2019
11/19	Biochemical Test for the Identification of Microorganisms - Voges-Proskauer Test	56-57	PN2 15.11.2019
11/19	Biochemical test for the Identification of Microorganisms - Indole Production Test.	58-59	PN2 15.11.2019
11/19	Microbiological Examination of water	60-62	PN2 15.11.2019
11/19	Widal Test	63-65	PN2 15.11.2019



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name

C. Vincesha

PIN No.

--	--	--	--	--	--	--	--	--	--

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

Mr. / Ms.

Vincesha

a student of Pharm.D. - (I) with Regd. No. 123456789

in the Micro - Biology Laboratory during the year 2019-20

No. of Experiments Conducted

23

No. of Experiments Attended

20

Signature - Faculty incharge

Durgadevi
18/03/20

Signature - Head of the Department
PRINCIPAL

R. Raman
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the Practical examination held on

EXAMINER-1

Durgadevi
21/03/2020

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

EXAMINER-2

Durgadevi
22/03/2020

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	7-8-19	Introduction to Micro Biology.	1-3	
	7-8-19	Common laboratory rules & regulations for Safety.	4-6	
2.	14-8-19	Study of Apparatus & Equipments used in Experimental Micro Biology.	7-13	
3.	28-8-19	Sterilization of glassware.	14-16	
4.	28-8-19	Preparation & Sterilization of Nutrient - Broth.	17-18	
5.	28-8-19	Preparation & Sterilization of Nutrient Agar	19-20	
6.	4-9-19	Inoculation of Culture in to different - media.	21-22	
7.	08-9-19	Staining Techniques.		
8.	05-9-19	Gram staining.	23-24	
9.	16-10-19	Motility of Bacteria.	25-27.	
10.	03-10-19	Study of Isolation of pure culture	28-30	
11.	06-11-19	Enumeration of Bacteria.	31-32	
12.	13-11-19	Enumeration of Bacteria by Direct - Microscopic Count Method.	33-34	
13.	20-11-19	Test for sterility for sterile water for - injection.	35-37.	
14.	27-11-19	Test for sterility for solids.	38-39	
15.	11-12-19	Microbiological Assay of Antibiotic by - cup plate Method.	40-41	
16.	18-12-19	Microbiological Assay of Antibiotic turbidimetric Method.	42-43	
17.	8-1-19	Biochemical test for Identification - by micro. organisms Fermentation of Carbohydrates.	44-45	



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.





ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.



DEPARTMENT OF

pharmaceutical Engineering



Name A. yashoda Krishna PIN No. 18361R0006

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

Mr. / Ms. A. yashoda Krishna

a student of b. pharmacy with Regd. No. 18361R0006

in the ph. engineering Laboratory during the year 2019-20

No. of Experiments Conducted 18

No. of Experiments Attended 18

Signature - Faculty incharge

M. S. S.
12/11/19

Signature - Head of the Department

V. K.

PRINCIPAL

Aditya Pharmacy College

SURAMPALEM-533 437

Submitted for the Practical examination held on

EXAMINER-1

V. K. Suresh

EXAMINER-2

M. S. S.
12/12/19



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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.		Introduction	1-3	
2.	30-7-19	Determination of Radiation Constant of Iron	4-5	See 3/8/19 A
3.	3-8-19	Determination of Radiation Constant of brass	6-7	See 6/8/19 A
4.	6-8-19	Determination of Radiation Constant of unpainted glass.	8-9	See 10/8/19 A
5.	10-8-19	Determination of Radiation Constant of painted glass.	10-11	See 13/8/19 A
6.	13-8-19	To verify the laws of size reduction using ball mill and determining Kick's, Rittenger Bonds Co-efficient using ball mill.	12-13	See 17/8/19 A
7.	17-8-19	particle size distribution of a powder by sieving method.	14-15	See 24/8/19 A
8.	24-8-19	Demonstration of pharmaceutical equipments.	16-21	See 31/8/19 A
9.	24-8-19	evaluation of factors affecting rate of evaporation.	22-24	See 3/9/19 A
10.	31-8-19	Crystallization of potassium nitrate by shock-cooling technique	25-26	See 13/9/19 A
11.	3-9-19	Determination of drying rate of calcium carbonate	27-28	See 5/10/19 A
12.	7-9-19	Determination of drying rate of starch	29-30	
13.	24-9-19	factors affecting the rate of filtration	31-34	
14.	5-10-19	Mixing Index of blender by using calcium carbonate and talc.	35-41	See 15/10/19 A
15.	15-10-19	Determination of humidity of air by dew-point method.	42-43	See 22/10/19 A
16.	28-9-19	Determination of efficiency of steam	35-36	See 22/10/19 A



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DEPARTMENT OF PHARMACEUTICS

Name INDUGULA SUNEETHA PIN No. 173GIR0021

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

Mr. / Ms. Indugula Suneetha

a student of II - B. pharmacy with Regd. No. 173GIR0021

in the Industrial pharmacy - I Laboratory during the year 2019-20

No. of Experiments Conducted 17

No. of Experiments Attended 16

Harani A

Signature - Faculty incharge

Ok

Signature - Head of the Department

Submitted for the Practical examination held on Aditya Pharmacy College
SURAMPATEM-533-437

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EXAMINER-1

Harani A

EXAMINER-2



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S.No.	Date	Name of the Experiment	Page No.	Remarks
	12-06-19	Introduction to Pharmaceutical formulations.	01	
1.	15-06-19	formulation of Paracetamol tablets by wet Granulation method.	05	
2.	18-06-19	Evaluation of formulated Paracetamol tablets.	08	
3.	25-06-19	formulation of soluble Acetyl salicylic acid tablets.	12	
4.	02-07-19	Evaluation of formulated Acetyl salicylic acid tablets	15	
5.	09-07-19	Preparation & Evaluation of tetracycline capsules	19	
6.	16-07-19	film coating of prepared tablets	24	
7.	23-07-19	Evaluation of marketed paracetamol tablets	29	
8.	13-08-19	formulation of Ascorbic acid injection	33	
9.	20-08-19	formulation of calcium gluconate injection	36	
10.	27-08-19	Evaluation of marketed loperamide capsules	39	
11.	03-09-19	Preparation & Evaluation of Pilocarpine eye drops	41	
12.	10-09-19	Preparation & Evaluation of chloramphenicol eye ointment	43	
13.	17-09-19	Evaluation of Glass containers	45	
14.	24-09-19	Introduction to cosmetics.	48	
15.	24-09-19	Preparation of cold cream	50	

Harani
12/7/19

16/7/19

03/9/19

17/9/19

18/9/19

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Page 52

BP406P. MEDICINAL CHEMISTRY – I (Practical)

4 Hours/Week

I Preparation of drugs/ intermediates

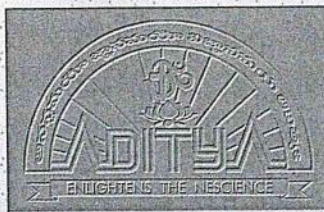
- 1 1,3-pyrazole
- 2 1,3-oxazole
- 3 Benzimidazole
- 4 Benztriazole
- 5 2,3- diphenyl quinoxaline
- 6 Benzocaine
- 7 Phenytoin
- 8 Phenothiazine
- 9 Barbiturate

II Assay of drugs

- 1 Chlorpromazine
- 2 Phenobarbitone
- 3 Atropine
- 4 Ibuprofen
- 5 Aspirin
- 6 Furosemide

III Determination of Partition coefficient for any two drugs**Recommended Books (Latest Editions)**

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



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF Medicinal chemistry

Name N. Tapika Sri PIN No. 183G1R0060

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

Mr. / Ms. N. Tapika Sri

a student of IInd year B-pharm with Regd. No. 183G1R0060

in the Medicinal chemistry Laboratory during the year 2019-2020

No. of Experiments Conducted 7

No. of Experiments Attended 7

CHV Appasa

Signature - Faculty incharge

R. Pradeep
PRINCIPAL

Aditya Pharmacy College
SURAMPALEM-533 437

Signature - Head of the Department

Submitted for the Practical examination held on

EXAMINER-1

12/11/2020

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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.

BP 407P. PHYSICAL PHARMACEUTICS- II (Practical)**3 Hrs/week**

1. Determination of particle size, particle size distribution using sieving method
2. Determination of particle size, particle size distribution using Microscopic method
3. Determination of bulk density, true density and porosity
4. Determine the angle of repose and influence of lubricant on angle of repose
5. Determination of viscosity of liquid using Ostwald's viscometer
6. Determination sedimentation volume with effect of different suspending agent
7. Determination sedimentation volume with effect of different concentration of single suspending agent
8. Determination of viscosity of semisolid by using Brookfield viscometer
9. Determination of reaction rate constant first order.
10. Determination of reaction rate constant second order
11. Accelerated stability studies

Recommended Books: (Latest Editions)

1. Physical Pharmacy by Alfred Martin, Sixth edition
2. Experimental pharmaceutics by Eugene, Parott.
3. Tutorial pharmacy by Cooper and Gunn.
4. Stocklosam J. Pharmaceutical calculations, Lea & Febiger, Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-1 to 3, Marcel Dekkar Inc.
6. Liberman H.A, Lachman C, Pharmaceutical dosage forms. Disperse systems, volume 1, 2, 3. Marcel Dekkar Inc.
7. Physical Pharmaceutics by Ramasamy C, and Manavalan R.





ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Physical Pharmaceutics-II

Name *Ch. Anjana Sailaja*

PIN No.

1	8	3	6	1	R	0	0	2	7
---	---	---	---	---	---	---	---	---	---

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

Mr. / Ms. *Ch. Anjana Sailaja*

a student of *B. Pharmacy* with Regd. No. *18361 R0027*

in the *Physical Pharmaceutics* Laboratory during the year *2019-2020*

No. of Experiments Conducted

07

No. of Experiments Attended

07

Signature - Faculty incharge

M. S. S.
25/11/20

Signature - Head of the Department

R. Shankar
Principal
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the Practical examination held on

EXAMINER-1

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SURAMPALEM-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

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,



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ADITYA INSTITUTE OF PHARMACEUTICAL
SCIENCES & RESEARCH
SURAMPALAM - 533 437



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF
Pharmacology - I

Name **ABHJEET RAJ** PIN No. **18341R0003**

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

Mr. / Ms. **ABHJEET RAJ**

a student of **B-Pharmacy 2nd year** with Regd. No. **18341R0003**

in the **Pharmacology - I** Laboratory during the year .. **2019-2020**

No. of Experiments Conducted **11**

No. of Experiments Attended **11**

[Signature]
Signature - Faculty incharge

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

Submitted for the Practical examination held on

[Signature]
EXAMINER-1
3/11/2020

[Signature]
EXAMINER-2



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Aditya Pharmacy College
SURAMPALEM 533 437

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
01	11-01-2020	Introduction Of EXPERIMENTAL Pharmacology	01	PLW 25-01-2020
02	25-01-2020	Basic Equipments used in Experimental Pharmacology	02-06	PLW 11/2/2020
03	01-02-2020	Study of common laboratory Animals.	07-09.	
04	08-02-2020	Maintenance of Laboratory Animals as per CPCSEA Guidelines.	10-15	
05	15/2/2020	Common Laboratory techniques	16-24	
06	22/2/2020	Study of different routes of Drug Administration in mice / rats	27-30	
07	29/2/2020	Study the effect of Hepatic Microsomal Enzyme Inducers on the Phenobarbitone sleeping time in mice	31-32	
08	7/3/2020	Effect of drugs on ciliary motility of frog oesophagus	33-34	
09	14/3/2020	Effect of Drugs on Rabbit eye (Mydriatic & Miotic Effect)	35-36	
10	14/3/2020	Evaluation of muscle relaxant property of Diazepam using Rota-Rod Apparatus.	37-38	



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SURAMPALAM 533 437

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BP408 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, 11th edition, Birla publications, New Delhi, 2007
8. Practical Pharmacognosy: C.K. Kokate, Purohit, Gokhale
9. Anatomy of Crude Drugs by M.A. Iyengar



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Pharmacognosy

Name A. Preethi PIN No. 183G1R0005

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

Mr. / Ms. A. Preethi

a student of IInd B. pharm with Regd. No. 183G1R0005

in the Pharmacognosy Laboratory during the year 2019-2020

No. of Experiments Conducted 90

No. of Experiments Attended 90

Signature - Faculty incharge

Durga Devi
25/11/20

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

R. Sankar

Submitted for the Practical examination held on

EXAMINER-1

P. Lakshmi
25/11/20

EXAMINER-2

M. Hanumanth

PRINCIPAL

Aditya Pharmacy College
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WIKAS, NLR

63/156

DUCT

BP 507 P. PHARMACOLOGY-II (Practical)

4Hrs/Week

1. Introduction to *in-vitro* pharmacology and physiological salt solutions.
2. Effect of drugs on isolated frog heart.
3. Effect of drugs on blood pressure and heart rate of dog.
4. Study of diuretic activity of drugs using rats/mice.
5. DRC of acetylcholine using frog rectus abdominis muscle.
6. Effect of physostigmine and atropine on DRC of acetylcholine using frog rectus abdominis muscle and rat ileum respectively.
7. Bioassay of histamine using guinea pig ileum by matching method.
8. Bioassay of oxytocin using rat uterine horn by interpolation method.
9. Bioassay of serotonin using rat fundus strip by three point bioassay.
10. Bioassay of acetylcholine using rat ileum/colon by four point bioassay.
11. Determination of PA_2 value of prazosin using rat anococcygeus muscle (by 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, E.G. Dist.

DEPARTMENT OF

Pharmacology - II

Name V. Janani

PIN No. 1736180055

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

Mr. / Ms. VATTURI JANANI

student of B. Pharmacy with Regd. No. 1736180055

in the Pharmacology - II Laboratory during the year 2019

No. of Experiments Conducted 15

No. of Experiments Attended 15

Signature - Faculty incharge

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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WIKAS, NLR

Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1	10/6/19	Introduction to invitro pharmacology & physiological salt solution.	1	K.G.
2	17/6/19	Effect of drugs on isolated frog heart.	9	15.G.
3	24/6/19	Effect of various drugs on blood pressure and heart rate of dog.	13	15.G.
4	11/7/19	Study of diuretic activity of drugs using rats/mice.	17	K.G.
5	8/7/19	DRC of Acetylcholine by using frog's rectus abdominis muscle	19	K.G.
6	15/7/19	Effect of physostigmine & atropine on DRC of Acetyl choline using Frog's Rectus Abdominus muscle & Rat's ileum.	23	K.G. 15.G.
7	22/7/19	Bioassay of histamine Using Guinea pig ileum by matching method	27	15.G.
8	29/7/19 30/11	Bioassay of Oxytocin using Rat Uterine horn by interpolation method.	29	



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3.




WIKAS-NLR.

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, IInd edition, Birla publications, New Delhi, 2007
6. Herbal Cosmetics by H.Pande, Asia Pacific Business press, Inc, New Delhi.
7. A.N. Kalia, Textbook of Industrial Pharmacognosy, CBS Publishers, New Delhi, 2005.
8. R Endress, Plant cell Biotechnology, Springer-Verlag, Berlin, 1994.
9. Pharmacognosy & Pharmacobiotechnology. James Bobbers, Marilyn KS, VE Tylor.
10. The formulation and preparation of cosmetic, fragrances and flavours.
11. Remington's Pharmaceutical sciences.
12. Text Book of Biotechnology by Vyas and Dixit.
13. Text Book of Biotechnology by R.C. Dubey.


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DEPARTMENT OF

PHARMACOGNOSY & PHYTOCHEMISTRY

Name B. Mercy Jyothi

PIN No. 17301R0003

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

Mr. / Ms. RANDELA MERCY JYOTHI

a student of B. Pharmacy with Regd. No. 17301R0003

in the Pharmacognosy & Phytochemistry Laboratory during the year 2018-2019

No. of Experiments Conducted 20

No. of Experiments Attended 20

Signature - Faculty incharge

4/10/19

Signature - Head of the Department

Aditya Pharmacy College
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Submitted for the Practical examination held on

EXAMINER-1

12/10/19

EXAMINER-2

17/10/19



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Pointer

No.	Date	Name of the Experiment	Page No.	Remarks
	22/6/19	Morphology, Microscopy and Powder Microscopy of clove.	1-3	Muh 27/7/19
2.	29/6/19	Morphology, Microscopy and Powder microscopy of Senna.	4-7	Muh 27/7/19
3.	13/7/19	Morphology, Microscopy and Powder microscopy of Cinnamon.	8-10	Muh 27/7/19
4.	20/7/19	Morphology and Powder Microscopy of Cinchona.	11-12	Muh 17/8/19
5.	27/7/19	Morphology and Microscopy of Fennel.	13-15	Muh 17/8/19
6.	10/8/19.	Morphology, Microscopy and Powder Microscopy of Coriander.	16-18	Muh 17/8/19
7.	17/8/19	MORPHOLOGY, MICROSCOPY and POWDER MICROSCOPY OF EPHEDRA.	19-21	Muh 1/10/19
	24/8/19	Distillation of Volatile oil	22-24	Muh 1/10/19
	7/9/19	Analysis of Alopecetida by chemical test	25	Muh 1/10/19
	7/9/19	Analysis of Benzoin by chemical test	26	Muh 1/10/19
	14/9/19	Analysis of Colophony by chemical test	27	Muh 1/10/19



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BP607P. MEDICINAL CHEMISTRY- III (Practical)

4 Hours /week

I Preparation of drugs and intermediates

- 1 Sulphanilamide
- 2 7-Hydroxy, 4-methyl coumarin
- 3 Chlorobutanol
- 4 Triphenyl imidazole

5 Tolbutamide

6 Hexamine

II Assay of drugs

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

III Preparation of medicinally important compounds or intermediates by Microwave irradiation technique**IV Drawing structures and reactions using chem draw®****V Determination of physicochemical properties such as logP, clogP, MR, Molecular weight, Hydrogen bond donors and acceptors for class of drugs course content using drug design software Drug likeliness screening (Lipinskies RO5)****Recommended Books (Latest Editions)**

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

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ADITYA PHARMACY COLLEGE

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DEPARTMENT OF *Medicinal chemistry*

Name *A. P. Prathi*

PIN No.

1	8	3	4	1	R	D	0	0	5
---	---	---	---	---	---	---	---	---	---

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

Mr. / Ms. *A. P. Prathi*

a student of *B-Pharmacy* with Regd. No. *18341R0005*

in the *Medicinal Chemistry* Laboratory during the year *2021*

No. of Experiments Conducted

08

No. of Experiments Attended

08

CHV Aravind

Signature - Faculty incharge

[Signature]

Signature - Head of the Department

Principal
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the Practical examination held on

EXAMINER-1



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EXAMINER-2

WIKAS, NLR

BP 608 P. PHARMACOLOGY-III (Practical)

4Hrs/Week

1. Dose calculation in pharmacological experiments
2. Antiallergic activity by mast cell stabilization assay
3. Study of anti-ulcer activity of a drug using pylorus ligand (SHAY) rat model and NSAIDS induced ulcer model.
4. Study of effect of drugs on gastrointestinal motility
5. Effect of agonist and antagonists on guinea pig ileum
6. Estimation of serum biochemical parameters by using semi- autoanalyser
7. Effect of saline purgative on frog intestine
8. Insulin hypoglycemic effect in rabbit
9. Test for pyrogens (rabbit method)
10. Determination of acute oral toxicity (LD50) of a drug from a given data
11. Determination of acute skin irritation / corrosion of a test substance
12. Determination of acute eye irritation / corrosion of a test substance
13. Calculation of pharmacokinetic parameters from a given data
14. Biostatistics methods in experimental pharmacology(student's t test, ANOVA)
15. Biostatistics methods in experimental pharmacology (Chi square test, Wilcoxon Signed Rank test)

**Experiments are demonstrated by simulated experiments/videos*

Recommended Books (Latest Editions)

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, 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, E.G. Dist.



DEPARTMENT OF

pharmacology - III Laboratory



Name B- Taraka priya PIN No. 173G1R0064

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

Mr./Ms. B- Taraka priya

a student of 3rd year 2nd semester with Regd. No. 173G1R0064

in the pharmacology - III Laboratory during the year 2019-20

No. of Experiments Conducted 15

No. of Experiments Attended 15

S. Nagappan
Signature - Faculty incharge 15/3/20

R. Pradeep
Signature - Head of the Department
PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the Practical examination held on

MA. Sheena Mini
EXAMINER-1

[Signature]
EXAMINER-2



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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	18/11/19	Dose calculation in pharmacological experiments.	1-3	}
2.	25/11/19	Anti Allergic activity by mast cell stabilisation Assay	4-6	
3.	2/12/19	The antitumor activity of a drug using pylorus ligand (SHAY) rat model and NASIADs induced ulcer model.	7-9	
4.	9/12/19	Study of effect of drug on gastrointestinal motility	10-12	}
5.	16/12/19	To study the effect of agonist and Antagonist on guinea pig ileum.	13-15	
6.	30/12/19	Study of effect saline purgative on frog intestine.	16-18	}
7.	30/12/19	Study of insulin by hypoglycaemia effect in rabbit.	19-21	
8.	6/1/20	Test for pyrogens (Rabbit method)	22-24	}
9.	11/1/20	Determination of acute oral toxicity (LD-50) of a drug from given data	25-26	



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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, E.G. Dist.



DEPARTMENT OF
Herbal drug technology



Name S. Jyotsna PIN No. 17361R0088

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

Mr./Ms. S. Jyotsna

a student of IIIrd -B pharmacy with Regd. No. 17361R0088

in the Herbal drug technology Laboratory during the year 2019-20

No. of Experiments Conducted 17

No. of Experiments Attended 16

Signature - Faculty incharge

M. Jayaraman
16/3/20

Signature - Head of the Department

R. Shankar

Submitted for the Practical examination held on

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM

P. Retna
EXAMINER-1 19/10/20

S. S. S. S.
EXAMINER-2

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SURAMPALEM-533 437

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Pointer

Date	Name of the Experiment	Page No.	Remarks
19/11/19	preliminary phytochemical screening of crude drugs	1-6	Muhap 17/12/19
3/12/19	Determination of alcohol content in Asava and Arishta	7-8	-
10/12/19	evaluation of excipients of natural origin	9-18	Muhap 20/12/19
20/12/19	Monograph analysis of herbal drugs from recent pharmacopoeias of senna.	19-21	Muhap 9/1/2020
31/12/19	Monograph analysis of Nigamant from recent pharmacopoeia.	22-24	Muhap 9/1/2020
31/12/19	Monograph analysis of castor oil from recent pharmacopoeia.	25-26	Muhap 9/1/2020
31/12/19	Monograph analysis of Haridra from recent pharmacopoeia.	27-29	Muhap 9/1/2020
28/1/20	formulation and evaluation of vasaka syrup → major	30-32	Muhap 11/2/20
4/2/20	preparation, formulation and evaluation of cinnamon tablets	33-34	Muhap 18/2/20
11/2/20	preparation, formulation and evaluation of senna tablets.	35-36	
18/2/20	Determination of Aldehyde content → minor	37-38	1
25/2/20	preparation of methi-shikakai shampoo	39-40	Muhap 16/3/20
3/3/20	preparation and evaluation of churna powder → major	41-43	
13/3/20	formulation and evaluation of	44-46	



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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

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

PHARMACEUTICAL ANALYSIS PRACTICAL - III

(MPA 205PA)

1. Comparison of absorption spectra by UV and Wood ward – Fiesure rule
2. Interpretation of organic compounds by FT-IR
3. Interpretation of organic compounds by NMR
4. Interpretation of organic compounds by MS
5. Determination of purity by DSC in pharmaceuticals
6. Identification of organic compounds using FT-IR, NMR, CNMR and Mass spectra
7. Bio molecules separation utilizing various sample preparation techniques and Quantitative analysis of components by gel electrophoresis.
8. Bio molecules separation utilizing various sample preparation techniques and Quantitative analysis of components by HPLC techniques.
9. Isolation of analgesics from biological fluids (Blood serum and urine).
10. Protocol preparation and performance of analytical / Bioanalytical method validation.
11. Protocol preparation for the conduct of BA/BE studies according to guidelines.

PHARMACEUTICAL ANALYSIS PRACTICAL - IV

(MPA 205PB)

1. In process and finished product quality control tests for tablets, capsules, parenterals and creams
2. Quality control tests for Primary and secondary packing materials
3. Assay of raw materials as per official monographs
4. Testing of related and foreign substances in drugs and raw materials
5. Preparation of Master Formula Record.
6. Preparation of Batch Manufacturing Record.
7. Quantitative analysis of rancidity in lipsticks and hair oil
8. Determination of aryl amine content and Developer in hair dye
9. Determination of foam height and SLS content of Shampoo.
10. Determination of total fatty matter in creams (Soap, skin and hair creams)
11. Determination of acid value and saponification value.
12. Determination of calcium thioglycolate in depilatories

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DEPARTMENT OF

Name Ch. Snavani PIN No.

1	9	3	6	1	5	1	6	0	2
---	---	---	---	---	---	---	---	---	---

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

Mr. / Ms. chegondi snavani

a student of I-M. Pharmacy-II-Semester With Regd. No. 1936151602

in the pharmaceutical Analysis-IV Laboratory during the year .. 2020

No. of Experiments Conducted

9

No. of Experiments Attended

9

Signature - Faculty incharge

Signature - Head of the Department

Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the Practical examination held on

EXAMINER-1

EXAMINER-2
PRINCIPAL

Aditya Pharmacy College
SURAMPALEM-533 437

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Aditya Pharmacy College
SURAMPALEM-533 437



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.



DEPARTMENT OF



Name Ch. Sravani PIN No. 1936151602

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

Mr. / Ms. Chegondi Sravani

a student of T-M Pharmacy T-Sem with Regd. No. 1936151602

in the pharmaceutical analysis-II Laboratory during the year 2019-2020

No. of Experiments Conducted 19

No. of Experiments Attended 19

Signature - Faculty incharge

Signature - Head of the Department
PRINCIPAL

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

WIKAS, NLR

Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
	3-10-19	Introduction	1	①
1.	4-10-19	Assay of salicylic acid using direct comparison method (or) single point method.	2	P 17/10/19
2.	17-10-19	Estimation of salicylic acid using double point standardisation method.	4	P 18/10/19
3.	18-10-19	Assay of paracetamol by $A_{1cm}^{1\%}$ Method.	7	P 24/10/19
4.	24-10-19	Construction of calibration curve for paracetamol using double beam spectrophotometer.	9	P 25/10/19
5.	25-10-19	Assay of paracetamol by chemical Derivatisation Method.	12	P 31/10/19
6.	31-10-19	Assay of sulphacetamide sodium eye drops by colorimetry.	14	P 11/11/19
7.	1-11-19	Concentration determination of sodium benzoate and caffeine in the given mixture by simultaneous equation Method.	17	P 21/11/19
8.	7-11-19	Assay of Frousemide	20	P 28/11/19
9.	8-11-19	Calibration of HPLC	22	P 14/11/19



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Aditya Pharmacy College
SURAMPARAN 533 4327

Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
10.	14-11-19	SOP FOR GIC	27	P 15/11/19
11.	15-11-19	Determination of Total reducing sugars.	29	P 21/11/19
12.	21-11-19	determination of Acid value in food products.	32.	P 22/11/19
13.	22-11-19	determination of Iodine value in food products.	34.	P 28/11/19
14.	28-11-19	Determination of saponification value in food products.	36.	P 24/11/19
15.	29-11-19	Determination of peroxide value in food products.	38.	P 5/12/19
16.	5-12-19	determination of proteins	40.	P 6/12/19
17.	6-12-19	Determination of fat content and rancidity of In food products.	46.	P 12/12/19
18.	12-12-19	Simultaneous concentration determination of individual drug in a mixture of absorption Ratio method.	48.	P 13/12/19
19.	13-12-19	Determination of total reducing sugars by DNSA Method.	51.	P 28/12/19



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ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.



DEPARTMENT OF



Name D. Divya PIN No. 1936151604

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

Mr. / Ms. D. Divya

a student of I - M. Pharmacy II - Semester with Regd. No. 1936151604

in the pharmaceutical Analysis - III Laboratory during the year 2020

No. of Experiments Conducted ☐

No. of Experiments Attended ☐

Signature - Faculty incharge

Signature - Head of the Department
PRINCIPAL

Aditya Pharmacy College
SURAMPALEM-533 437

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)	18/2/20	INTERPRETATION OF ORGANIC COMPOUNDS BY FT-IR	1-4	SA
(2)	24/2/20	INTERPRETATION OF ORGANIC COMPOUNDS BY ^1H -NMR	5-7	SA
(3)	25/2/20	INTERPRETATION OF ORGANIC COMPOUND BY ^{13}C NMR	8-10	SA
(4)	2/3/20	INTERPRETATION OF ISOPHENOL USING DEPT SPECTRUM	11-12	SA
(5)	16/3/20	DETERMINATION OF J-COUPPLINGS [THROUGH BOND] IN 2-NITROPROPANE BY COSY SPECTRA	13-15	SA
(6)	16/3/20	COMPARISON OF ABSORPTION SPECTRA OF SODIUM BENZOATE AND ASPIRIN INDIVIDUALLY BY U.V & WOODWARD FIESER RULE	16-22	SA
(7)	17/3/20	COMPARISON OF ABSORPTION SPECTRA OF PARACETAMOL & SALICYLIC ACID INDIVIDUALLY BY UV & WOODWARD FISCHER RULE.	23-24	SA



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ADITYA PHARMACY COLLEGE

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DEPARTMENT OF



Name Bolem Renuka Sai Sn PIN No. 1936181601

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Mr. / Ms. Bolem Renuka Sai Sn

a student of 1st M. pharmacy with Regd. No. 1936181601

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No. of Experiments Conducted 17

No. of Experiments Attended 17

Signature [Signature] Faculty incharge

[Signature] PRINCIPAL
Aditya Pharmacy College
Signature Head of the Department

Submitted for the Practical examination held on 14/2/20

[Signature]
EXAMINER-1

14/2/20



[Signature]
EXAMINER-2

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
	30/9/19	Introduction	1-4	R (S) 2/10/19
1.	1/10/19	Calibration of UV-Visible spectrophotometer.	5-8	R (S) 2/10/19
2.	14/10/19	Assay of paracetamol using $A_{1cm}^{1\%}$	9-10	R (S) 2/10/19
3.	15/10/19	Assay of Fenemide.	11	R (S) 2/10/19
4.	21/10/19	Assay of salicylic acid using Direct comparison method (or) single point method.	12-13	R (S) 2/10/19
5.	22/10/19	Estimation of Riboflavin by Fluorimetry	14-15	R (S) 2/10/19
6.	28/10/19	Estimation of sodium and potassium by Flame photometry.	16-17	R (S) 2/10/19
7.	29/10/19	Assay of sulphacetamide sodium eye drops by colorimetry.	18-19	R (S) 2/10/19
8.	4/11/19	Calibration of HPLC.	20-23	R (S) 2/10/19
9.	5/11/19	SOP for GC.	24-25	R (S) 2/10/19
10.	11/11/19	Calibration of pH meter.	26-28	R (S) 2/10/19
11.	18/11/19	Calibration of balances.	29-31	R (S) 2/10/19
12.	19/11/19	Quantitative determination of Hydroxyl Group	32-33	R (S) 2/10/19



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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
13.	25/11/19	Quantitative determination of Amino group	34-35	(9/5) 9/11
14.	26/11/19	Assay of Metronidazole.	36-37	(9/5) 9/11
15.	2/12/19	Assay of Albendazole.	38-39	(9/5) 9/11
16.	9/12/19	Assay of magnesium sulphate.	40-41	(9/5) 9/11
17.	16/12/19	Assay of Ascorbic acid.	42-43	(9/5) 9/11
<p>Completed 16/11/2020</p>				



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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.

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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PHARMACEUTICS PRACTICAL - III

(MPH 205PA)

1. To study the effect of temperature change , non solvent addition, incompatible polymer addition in microcapsules preparation
2. Preparation and evaluation of Alginate beads
3. Formulation and evaluation of gelatin /albumin microspheres
4. Formulation and evaluation of liposomes/niosomes
5. Formulation and evaluation of spherules
6. Improvement of dissolution characteristics of slightly soluble drug by Solid dispersion technique.
7. Comparison of dissolution of two different marketed products /brands
8. Protein binding studies of a highly protein bound drug & poorly protein bound drug
9. Bioavailability studies of Paracetamol in animals.
10. Pharmacokinetic and IVIVC data analysis by Winnoline^R software
11. In vitro cell studies for permeability and metabolism

PHARMACEUTICS PRACTICAL - IV

(MPH 205PB)

1. DoE Using Design Expert[®] Software
2. Formulation data analysis Using Design Expert[®] Software
3. Quality-by-Design in Pharmaceutical Development
4. Computer Simulations in Pharmacokinetics and Pharmacodynamics
5. Computational Modeling Of Drug Disposition
6. To develop Clinical Data Collection manual
7. To carry out Sensitivity Analysis, and Population Modeling.
8. Development and evaluation of Creams
9. Development and evaluation of Shampoo and Toothpaste base
10. Formulation Development of Multi Vitamin Syrup
11. Use of Optimization techniques in Formulation Development of Tablets



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF
PHARMACEUTICS

Name J. N. V. L. F. padmaja PIN No. 1936150303

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Mr. / Ms. J. N. V. L. F. padmaja

a student of M. pharmacy - Ist year with Regd. No. 1936150303

in the Pharmaceutical Practical Laboratory during the year

No. of Experiments Conducted 12

No. of Experiments Attended 12

DN 10/1/2020
Signature - Faculty incharge

DN
Signature - Head of the Department

PRINCIPAL
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Submitted for the Practical examination held on

EXAMINER-1

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EXAMINER-2



Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
	27/9/19	INTRODUCTION.	01-04	ATTN 6/11/20
1	4/10/19	ASSAY of paracetamol using A ^y cm	5-6	ATTN 6/11/20
2	18/10/19	ASSAY of Furosemide.	7-8	ATTN 6/11/20
3	25/10/19	ESTIMATION of salicylic acid using Single point standardisation method	9-10	ATTN 6/11/20
4	1/11/19	ASSAY of Sodium benzoate and caffeine by Simultaneous equation method.	11-13	ATTN 6/11/20
5	8/11/19	ASSAY of Sulphacetamide Sodium in eye drops.	14-16	ATTN 6/11/20
6	22/11/19	Experiment based on HPLC	17-18	ATTN 6/11/20
7	29/11/19	Experiment based on gas chromatography	19-20	ATTN 6/11/20
8	6/12/19	ESTIMATION of Riboflavin by Fluorimetry.	21-22	ATTN 6/11/20
9	13/12/19	ESTIMATION of sodium and potassium by Flame photometry.	23-24	ATTN 6/11/20



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ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF PHARMACEUTICS

Name VEGESNA CHANDINI PIN No. 1936150306

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Mr. / Ms. V. CHANDINI

a student of Iyr. M. Pharmacy with Regd. No. 1936150306

in the PHARMACEUTICS PRACTICAL - II Laboratory during the year 2019-2020

No. of Experiments Conducted 09

No. of Experiments Attended 09

Signature - Faculty incharge

Signature - Head of the Department
PRINCIPAL

Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the Practical examination held on

EXAMINER-1

PRINCIPAL EXAMINER-2

Aditya Pharmacy College

SURAMPALEM-533 437

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
	1-10-19	INTRODUCTION	1-3	} Harani
01	15-10-19	To study the effect of particle size on dissolution of tablet.	4-7	
		A++		
02	22-10-19	To study the effect of binder on dissolution of tablet	8-11	} Harani
	29-10-19	A++		
03	5-11-19	To plot Heckel plot, Higuchi and peppas plot and determine similarity factors.	12-14	Harani
	19-11-19			
04	26-11-19	To perform In-vitro dissolution profile of CR/SR marketed formulations.	15-18	Harani
		A		
05	3-12-19	Formulation and Evaluation of Sustained release matrix tablets.	19-20	Harani
	10-12-19	A++		
06	3-12-19	Formulation and Evaluation of Osmotically Controlled DDS.	21-24	Harani
	10-12-19	A+		
07	17-12-19	Preparation and Evaluation of Floating DDS - hydrodynamically balanced DDS	25-29	Harani
	24-12-19	A+		
08	17-12-19	Formulation and Evaluation of Mucoadhesive tablets.	30-32	Harani
	24-12-19	A++		
09	31-12-19	Formulation and Evaluation of transdermal patches.	33-35	Harani
		A+		

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Completed

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ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF PHARMACEUTICS

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in the Pharmaceutics practical - III Laboratory during the year 2020

No. of Experiments Conducted 4

No. of Experiments Attended 4

Harani A

Signature - Faculty incharge

R. Parkin

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

Submitted for the Practical examination held on

Chinnappa
EXAMINER-1

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SURAMPALEM 533 437

Harani A
EXAMINER-2



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DEPARTMENT OF



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in the Pharmaceutical Laboratory Laboratory during the year 2020

No. of Experiments Conducted 5

No. of Experiments Attended 5

Ram Kumar 2/11/2020
Signature - Faculty incharge

Ram Kumar
Signature - Head of the Department

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the Practical examination held on

EXAMINER-1



PRINCIPAL EXAMINER-2
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DUCT

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

1.2 PHARMACEUTICS (PRACTICAL)

Practical : 3 Hrs./Week

List of Experiments:

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

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).



ADITYA PHARMACY COLLEGE

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DEPARTMENT OF



Name LALAM MOONIKA PIN No. 19361T0013

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Mr. / Ms. LALAM MOONIKA

a student of Ist Pharm D with Regd. No. 19361T0013

in the Pharmaceutics Laboratory during the year 2019-2020

No. of Experiments Conducted 25

No. of Experiments Attended 23

K. Gautham
Signature - Faculty incharge

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

Submitted for the Practical examination held on

[Signature]
EXAMINER-1

K. Gautham
EXAMINER-2 11/06/20

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SURAMPALEM 533 477

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
* 21-9-19		General procedure for writing experiments	1-4	28/9/19
* 21-9-19		Syrups	2-4	
1. 21-9-19		Simple syrup (IP)	5	
2. 28-9-19		Vasaka syrup (IP)	6	
3. 5-10-19		Orange syrup (BP)	7	
4. 19-10-19		Compound ferrous phosphate syrup BP	8-9	23/11/19
5. 26-10-19		Ephedrine hydrochloride syrup	10	
* 2-11-19		Solutions	11	
6. 2-11-19		Aqueous iodine solution (IP)	12-13	
7. 2-11-19		Strong Iodine solution (IP)	14-15	
8. 2-11-19		Lacresol with soap solution (IP)	16-17	21/12/19
9. 16-11-19		Strong ammonium acetate solution (IP)	18-19	
* 23-11-19		Elixirs	20	
10. 23-11-19		Paracetamol elixir (BPC)	21	
11. 30-11-19		Piperazine citrate elixir (BP)	22-23	
12. 30-11-19		Cascara elixir (BPC)	24-25	4/1/20
* 7-12-19		Linctuses	26	
13. 7-12-19		Simple linctus	27	
14. 7-12-19		Paediatric simple linctus	28	
* 14-12-19		Liniments	29	
15. 14-12-19		Camphor liniments (BP)	30	
16. 14-12-19		Turpentine liniments	31-32	
* 21-12-19		SUSPENSIONS	33	
17. 21-12-19		Calamine lotion I.P	35-36	
18. 21-12-19		Magnesium hydroxide mixture	37-38	
* 28-12-19		EMULSION	39-40	
19. 28-12-19		LIQUID PARAFFIN EMULSION	41-42	
20. 4-1-20		COD LIVER OIL EMULSION	43-44	

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4.3 CLINICAL PHARMACY (PRACTICAL)

Practical : 3 Hrs./Week

Students are expected to perform 15 practicals in the following areas covering the topics dealt in theory class.

- a. Answering drug information questions (4 Nos)
- b. Patient medication counselling (4 Nos)
- c. Case studies related to laboratory investigations (4 Nos)
- d. Patient medication history interview (3 Nos)

Assignment:

Students are expected to submit THREE written assignments (1500 – 2000 words) on the topics given to them covering the following areas dealt in theory class.

Drug information, Patient medication history interview, Patient medication counselling, Critical appraisal of recently published articles in the biomedical literature which deals with a drug or therapeutic issue.

Format of the assignment:

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

20/18



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Clinical Pharmacy

Name Karabi Das

PIN No. 1639170009

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

Mr./Ms. Karabi Das

a student of IV Pharmacy D with Regd. No. 1639170009

in the Clinical Pharmacy Laboratory during the year 2019-2020

No. of Experiments Conducted

20

No. of Experiments Attended

17

Signature - Faculty incharge

Signature - Head of the Department

PRINCIPAL
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SURAMPALEM-533 437

Submitted for the Practical examination held on

EXAMINER-1

EXAMINER-2

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
I	29/6/19	Introduction to clinical pharmacy	1	} 21/7/19
II	29/6/19	Introduction to Drug Information queries	2 to 4	
1	6/7/19	Drug Information query-1	5 to 6	} 21/8/19
2	13/7/19	Drug Information query-2	7 to 9	
3	20/7/19	Drug Information query-3	10 to 12	
4	27/7/19	Drug Information query-4	13 to 14	
5	3/8/19	Drug Information query-5	15 to 17	
III	10/8/19	patient counselling and education	18 to 19	} 21/8/19
1	24/8/19	patient counselling-1	20 to 22	
2	31/8/19	patient counselling-2	23 to 28	
3	7/9/19	patient counselling-3	29 to 32	
4	14/9/19	patient counselling-4	33 to 35	
5	28/9/19	patient counselling-5	36 to 39	} 21/10/19
IV	19/10/19	Introduction to Medication history Interview	40 to 42	
1	26/10/19	Medication History Interview-1	43 to 44	} 21/11/19
2	2/11/19	Medication history Interview-2	45 to 46	
3	9/11/19	Medication history Interview-3	47 to 48	} 21/12/19
4	16/11/19	Medication history Interview-4	49 to 50	
5	30/11/19	Medication history Interview-5	51 to 52	
V	14/12/19	Introduction to Laboratory Data Interpretation	53 to 56	} 21/2/20
1	21/12/19	laboratory data Interpretation-1	57 to 59	
2	11/1/20	laboratory data Interpretation-2	60 to 62	
3	1/2/20	laboratory data Interpretation-3	63 to 65	
4	8/2/20	laboratory data Interpretation-4	66 to 68	
5	15/2/20	laboratory data Interpretation-5	69 to 71	

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).

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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 ADITYA INSTITUTE OF PHARMACEUTICAL
 SCIENCES & RESEARCH
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ADITYA PHARMACY COLLEGE

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DEPARTMENT OF

Name

Karobi Das

PIN No.

16361T0009

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Mr. / Ms.

Karobi Das

a student of

Aditya Pharmacy College

with Regd. No.

16361T0014

in the

pharmacotherapeutics - II

Laboratory during the year 2019-2020

No. of Experiments Conducted

20

No. of Experiments Attended

19

Signature - Faculty incharge

28/1/20

Signature - Head of the Department

PRINCIPAL
Aditya Pharmacy College

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.	4/10/19	Soap notes	1-2	4/10/19
2.	4/10/19	Study on Bipolar Anxiety Disorder	3-5	4/10/19
3.	18/10/19	Study on U9I bleed with duodenal ulcer with Type II Diabetes	6-9	25/10/19
4.	28/10/19	Study on Alcoholic liver disease	10-12	11/11/19
5.	11/11/19	Multiple organs Dysfunction Syndrome with Pneumonitis with sepsis with acute kidney disease with hepatitis	13-16	8/11/19
6.	8/11/19	Study on chronic kidney disease with hypertension	17-19	15/11/19
7.	15/11/19	Study on Jaundice	20-22	20/11/19
8.	22/11/19	Study on Epilepsy with postictal psychosis	23-26	24/11/19
9.	29/11/19	Study on pancreatic pseudocyst	27-29	13/12/19
10.	13/12/19	Study on diabetic Nephropathy with cellulitis	30-32	20/12/19
11.	20/12/19	Tuberculosis	33-34	23/12/19
12.	27/12/19	Depression	35-36	31/12/19
13.	31/12/2020	Study on chondroma right knee	37-38	10/1/20
14.	10/1/2020	Inter-trochanteric fracture	39-41	10/1/20
15.	24/1/2020	Large bowel obstruction	42-44	5/1/20
16.	3/1/2020	Study on congestive heart failure with NSTEMI	45-49	7/1/20
17.	7/2/2020	Right Inguinal hernia with right testicular carcinoma	50-52	14/1/20
18.	14/2/2020	Study on osteomyelitis	53-55	14/2/20
19.	14/2/2020	Study on varicocele	56-57	14/2/20

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).



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

pharmaceutical Formulations

Name Gr. Navya Sni PIN No. 1736170004

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

Mr. / Ms. Gr. Navya Sni

a student of III pharm-D with Regd. No. 1736170004

in the pharmaceutical formulation Laboratory during the year .. 2019-2020 ..

No. of Experiments Conducted 20

No. of Experiments Attended 17

Signature - Faculty incharge

Signature - Head of the Department

Submitted for the Practical examination held on

EXAMINER-1

EXAMINER-2

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SURAMPALEM-533 437



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S.No.	Date	Name of the Experiment	Page No.	Remarks
I	13/6/19	Introduction	1-4	
1	20/6/19	Formulations of paracetamol tablets By wet granulation method	5-7	<div style="border: 1px solid black; border-radius: 50%; padding: 5px; display: inline-block;">A⁺</div> 13/19
2	27/7/19	Formulations of Diclofenac sodium tablets By direct compression	8-10	
3	18/7/19	Formulations of Soluble Acetylsalicylic acid tablets	11-13	
4	01/8/19	Formulations of Laxative chewable tablets	14-15	
5	22/8/19	Formulations and filling of the hard gelatin capsules	16-18	
II	22/8/19	Introduction of parentals	19-20	W 29/2/20 A ⁺
6	22/8/19	Formulation of Ascorbic Acid injection	21	
7	28/8/19	Formulation of calcium Gluconate injection	22	
8	19/9/19	Formulation of NaCl Injection	23	
9	26/9/19	Formulation of dextrose and NaCl injection	24	
10	17/10/19	Evaluation of formulated paracetamol tablets	25-29	11 29/2/20 A ⁺
11	17/10/19	Formulation of Aluminium hydroxide gel Antacid suspension	30-33	
12	31/10/19	Formulation of paracetamol syrup and evaluation	34-36	
13	7/11/19	Formulation of Salicylic acid and benzoic acid ointment	37-38	W 29/2/20 A ⁺
14	14/11/19	Formulation of Diclofenac sodium gel and evaluation by assay	39-42	
III	19/12/19	Introduction of Cosmetics	42-43	W 29/2/20 A ⁺
15	26/12/19	Preparation of Cold cream	44	
16	23/1/20	Preparation of vanishing cream	45	
17	30/1/20	Preparation of lipstick	46-48	



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, Toranto.
- d. A Text Book of Medicinal Chemistry Vol. I and II by Surendra N. Pandeya, ✓ S.G. Publisher, 6, Dildayal Nagar, Varanasi -10.
- e. Indian Pharmacopoeia 1985 and 1996. The Controller of Publications, Civil Lines, Delhi - 54.
- f. Current Index of Medical Specialities (CIMS) and MIMS India, MIMS, A.E. Morgan Publications (I) Pvt. Ltd, New Delhi-19.
- g. Organic Drug Synthesis-Ledniser Mitzsher Vol. I and II.
- h. Pharmaceutical Chemistry drug Synthesis Vol. I and II by H. J. Roth and A. Kleemann.
- i. The Science and Practice of Pharmacy Vol. 1 and 2, Remington, MACK Publishing Company, Easton, Pennsylvania.



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name NALLAPARATHU LALITHA SANJANA

PIN No. 17361T0011

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

Mr. / Ms. NALLAPARATHU LALITHA SANJANA

a student of III PHARM-D with Regd. No. 17361T0011

in the Medicinal Chemistry Laboratory during the year 2019-2020

No. of Experiments Conducted

22

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

No. of Experiments Attended

18

(Signature)

(Signature)
Signature - Faculty incharge

Signature - Head of the Department

Submitted for the Practical examination held on

(Signature)
EXAMINER-1

EXAMINER-2

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S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	27.06.19	Preparation of Benzocaine from p-amino benzoic acid	1-2	✓ 27/6/19
2.	28.06.19	Preparation of 7-hydroxy 4-methyl coumarin	3-4	✓ 28/6/19
3.	5.07.19	Preparation of Benzimidazole	5-6	✓ 5/7/19
4.	12.07.19	Preparation of Benzotriazole	7-8	✓ 12/7/19
5.	23/7/19	Synthesis of benzoic acid	9-10	✓ 23/7/19
6.	9/8/19	Preparation of Fluorescein	11-12	✓ 9/8/19
7.	23/8/19	Preparation of 5,5 diphenyl hydantoin	13-14	✓ 23/8/19
8.	13/9/19	Preparation of 2,3 diphenyl quinoxaline	15-16	✓ 13/9/19
9.	20/9/19	Assay of Ascorbic acid	17-18	✓ 20/9/19
10.	27/9/19	Assay of sulphamonomide	19-20	✓ 27/9/19
11.	11/10/19	Assay of Isoniazide	21-22	✓ 11/10/19
12.	18/10/19	Assay of Metronidazole	23-24	✓ 18/10/19
13.	8/11/19	Assay of diclofenac sodium	25-26	✓ 8/11/19
14.	15/11/19	Assay of chloroquine phosphate	27-28	✓ 15/11/19
15.	22/11/19	Assay of dapsone	29-30	✓ 22/11/19
16.	29/11/19	Assay of benzocaine	31-32	✓ 29/11/19
17.	20/12/19	Identification of sulphamonomide	33	✓ 20/12/19
18.	27/12/19	Identification of Metronidazole	34	✓ 27/12/19
19.	3/1/20	Identification of ascorbic acid	35-36	✓ 3/1/20
20.	24/1/20	Identification of Isoniazide	37	✓ 24/1/20
21.	31/1/20	Identification of benzocaine	38	✓ 31/1/20
22.	7/2/20	QSAR	39-44	✓ 7/2/20

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4. **Oncology:** Basic principles of Cancer therapy, General introduction to cancer chemotherapeutic agents, Chemotherapy of breast cancer, leukemia. Management of chemotherapy nausea and emesis

5. **Dermatology:** Psoriasis. Scabies. Eczema. Impetigo

3.3 PHARMACOTHERAPEUTICS – II (PRACTICAL)

Practical : 3 Hrs./Week

Practicals :

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

The student shall be trained to understand the principle and practice involved in selection of drug therapy including clinical discussion.

A minimum of 20 cases should be presented and recorded covering most common diseases.

Assignments :

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

Format of the assignment :

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

Scheme of Practical Examination :

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

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



ADITYA PHARMACY COLLEGE

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DEPARTMENT OF

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

Mr. / Ms. NALLAPARATHU LALITHA SANJANA

a student of III PHARM-D with Regd. No. 17361T0011

in the Pharmacotherapeutics - II Laboratory during the year 2019-2020

No. of Experiments Conducted 20

No. of Experiments Attended 18

[Signature]
Signature - Faculty incharge

[Signature]
Signature - Head of the Department

LEADER - PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 505 437

Submitted for the Practical examination held on 17/03/2020

[Signature]
EXAMINER-1

[Signature]
EXAMINER-2

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SURAMPALEM 505 437

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
I.	26.9.19	Introduction to soap format	1-2	26/9/19
1.	26.9.19	Case study on typhoid	3-5	26/9/19
2.	16.10.19	Case study on liver cirrhosis with portal hypertension	6-8	26/10/19
3.	24.10.19	Case study on Malaria with thrombocytopenia	9-12	24/10/19
4.	31.10.19	Case study on seizures	13-16	31/10/19
5.	7.11.19	Case study on Pemphigus Vulgaris	17-19	7/11/19
6.	14.11.19	Case study of Acute Pancreatitis with DKA	20-22	14/11/19
7.	21.11.19	Case study on Steven Johnson Syndrome	23-25	21/11/19
8.	28.11.19	Case study on Gross Abites	26-28	28/11/19
9.	5.12.19	Case study on aortic stenosis with COPD	29-31	5/12/19
10.	12.12.19	Case study on chondromalacia (patella)	32-35	12/12/19
11.	12.12.19	Case study on Rheumatoid arthritis	36-38	12/12/19
12.	9.1.20	Case study on Pelvic osteotomy	39-41	9/1/20
13.	23.1.20	Case study on Mixed connective tissue disorder	42-43	23/1/20
14.	23.1.20	Case study on Psoriatic erythroderma	44-46	23/1/20
15.	6.2.20	Case study on fixed drug eruption	47-49	6/2/20
16.	6.2.20	Case study on osteoarthritis	50-52	6/2/20
17.	14.2.20	Case study on Eczema	53-55	14/2/20

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ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPalem, E.G. DIST.

DEPARTMENT OF

PHARMACEUTICAL ANALYSIS

ne: PABBINEEDI SRUJANA

PIN No. 17361T0015

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

Mr./Ms. SRUJANA PABBINEEDI

a student of III PHARM.D with Regd. No. 17361T0015

in the Pharmaceutical Analysis Laboratory during the year 2019-2020

No. of Experiments Conducted 21

No. of Experiments Attended 18

Signature - Faculty in-charge

Signature - Head of the Department
PRINCIPAL

Aditya Pharmacy College
SURAMPalem

Submitted for the practical examination held on

EXAMINER - 1

EXAMINER - 2

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SURAMPalem

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S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	25/6/19	Separation and identification of amino acids by ascending paper chromatography	1-3	P 8/7/19
2.	2/7/19	Separation and identification of amino acids by radial paper chromatography	4-6	
3.	9/7/19	Identification of Metronidazole in given sample by using ascending chromatography	7-9	P 17/7/19
4.	16/2/19	Prep ⁿ of TLC Plate Preparation of Metronidazole in a given sample by using ascending chromatograph	10-11	P 22/2/20
5.	23/2/19	Separation & Identification of Sulfanaylamide by thin layered chromatography	12-13	
6.	30/3/19	Introduction to U.V. Visible spectroscopy	14-19	
7.	6/8/19	Determination of Absorption maxima of potassium permanganate	20-21	
8.	20/8/19	estimation of salicylic acid by calibration curve using colorimetry	22-23	
9.	26/8/19	Assay of paracetamol by $A_{1\text{cm}}$	24-25	
10.	24/9/19	effect of pH and absorbance spectrum of Sulphanilamide	26-27	
11.	1/10/19	Assay of Salicylic acid using direct comparison method by colorimetry (P.C.M.)	28-29	
12.	7/10/19	potentiometric titration of strong acid with strong base	30-31	
13.	15/10/19	Calibration of Conductivity meter	32-34	
14.	29/10/19	Determination of pKa of Aspirin by pH meter	35-36	
15.	5/11/19	Column chromatography	37	
16.	26/11/19	Conductivitymetric titration of strong acid Vs strong base	38-39	

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- **Fluorimetric Analysis:** Theory, luminescence, factors affecting fluorescence, quenching. Instrumentation, Applications, fluorescent indicators, study of pharmaceutically important compounds estimated by fluorimetry.
- b. **Flame Photometry:** Theory, nebulisation, flame and flame temperature, interferences, flame spectrometric techniques and instrumentation and pharmaceutical applications.
- c. **Atomic Absorption Spectrometry:** Introduction, Theory, types of electrodes, instrumentation and applications.
- d. **Atomic Emission Spectroscopy:** Spectroscopic sources, atomic emission spectrometers, photographic and photoelectric detection.
- e. **NMR & ESR (introduction only):** Introduction, theoretical aspects and applications.
- f. **Mass Spectroscopy: (Introduction only) –** Fragmentation, types of ions produced mass spectrum and applications.
- g. **Polarimetry: (Introduction only) –** Introduction to optical rotatory dispersion, circular dichroism, polarimeter.
- h. **X-RAY Diffraction: (Introduction only) –** Theory, reciprocal lattice concept, diffraction patterns and applications.
- i. **Thermal Analysis:** Introduction, instrumentation, applications, and DSC and DTA.

3.2 PHARMACEUTICAL ANALYSIS (PRACTICAL)

Practical : 3 Hrs./Week

List of Experiments:

1. Separation and identification of Amino Acids by Paper Chromatography.
2. Separation and identification of Sulpha drugs by TLC technique.
3. Effect of pH and solvent on the UV spectrum of given compound.
4. Comparison of the UV spectrum of a compound with that of its derivatives.
5. Determination of dissociation constant of indicators using UV-Visible spectroscopy.
6. Conductometric titration of mixture of acids with a strong base.
7. Potentiometric titration of a acid with a strong base.
8. Estimation of drugs by Fluorimetric technique.
9. Study of quenching effect in fluorimetry.
10. Colourimetric estimation of Supha drugs using BMR reagent.

11. Simultaneous estimation of two drugs present in given formulation.
12. Assay of Salicylic Acid by colourimetry.
13. Determination of Chlorides and Sulphates in Calcium gluconate by Nepheloturbidimetric Method.
14. Determination of Na/K by Flame Photometry.
15. Determination of pKa using pH meter.
16. Determination of specific rotation.
17. Comparison of the IR spectrum of a compound with that of its derivatives.
18. Demonstration of HPLC.
19. Demonstration of HPTLC.
20. Demonstration of GC-MS.
21. Demonstration of DSC.
22. Interpretation of NMR spectra of any one compound.

Reference Books:

1. Text Book of Pharm. Analysis by Higuchi. T and Hasen. E. B., New York Inter Science Publishers.
2. Quantitative Pharma. Analysis by Jenkins, The Blakiston division, New York.
3. Quantitative Drug Analysis, by Garrot. D, Chapman & Hall Ltd., London.
4. Undergraduate Instrumental Analysis by James. E., CBS Publishers.
5. Instrumental Analysis by Willard and Merritt, EWP, East West Press Ltd., Delhi/Madras.
6. Pharm Analysis by Skoog and West, Sounders Manipal College Publishing.
7. Text Book of Chemical Analysis, by A.I.Vogel, ELBS with Macmillan press, Hampshire.
8. Textbook of Pharm. Analysis by K.A.Connors, John Wiley & Sons, New York, Brisbane, Singapore.
9. Textbook of Pharm. Analysis (Practical) by Beckett & Stenlake, CBS Publishers, Delhi.
10. Textbook of Drug Analysis by P.D. Sethi., CBS Publishers, Delhi.
11. Spectroscopy by Silverstein, John & Wiley & Sons. Inc., Canada & Singapore.
12. How to practise GMP-A Plan for total quality control by P.P. Sharma, Vandana Publications, Agra.
13. The Science & Practice of Pharmacy by Remington Vol-I & II, Mack Publishing Co. Pennsylvania.
14. TLC by Stahl; Spring Verlay.
15. Text Book of Pharm. Chemistry by Chatten, CBS Publications.
16. Spectroscopy by William Kemp, ELBS with Macmillan Press, Hampshire.
17. I.P.-1996, The Controller of Publications, New Delhi.
18. BPC- Dept. of Health, U.K. for HMSO.
19. USP - Mack Publishing Co.. Easton, PA.
20. The Extra Pharmacopoeia - The Pharm. Press. London.

3.1 PHARMACOLOGY – II (PRACTICAL)

Practical : 3 Hrs./Week

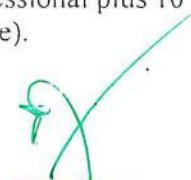
List of Experiments:

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

Scheme of Practical Examination:

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

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


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 SCIENCES & RESEARCH
 SURAMPALAM - 533 437



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

PHARMACOLOGY

Name P. Srujana

PIN No. 17361T0015

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Mr. / Ms. P. Srujana

a student of IIIrd Pharm. D. with Regd. No. 17361T0015

in the Pharmacology II Laboratory during the year 2019-2020

No. of Experiments Conducted 15

No. of Experiments Attended 14

Signature - Faculty incharge

Signature - Head of the Department

Submitted for the Practical examination held on



EXAMINER-1

3/10/20

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Aditya Pharmacy College

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EXAMINER-2

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No.	Date	Name of the Experiment	Page No.	Remarks
1.	18/6/19	Introduction	01	7/6/19
2.	18/6/19	Study of laboratory animals and their handling	2-6	30/7/19
3.	24/6/19	Study of physiological salt solution used in pharmacological Experiment	7-9	
4.	1/7/19	Study of Appliances in Experimental pharmacology	10-13	7/6/19
5.	8/7/19	Dose response Curve of Ach on Frog's rectus abdominus muscle preparation.	14-16	8/7/19
6.	22/7/19	Potentiation of Ach by neostigmine on frog's rectus abdominus muscle	17-18	29/8/19
7.	29/7/19	Inhibition of Ach by lignocaine on frog's rectus abdominus muscle	19-20	5/8/19
8.	5/8/19	Complete inhibition of Ach response by pancuronium on frog's rectus abdominus muscle	21-22	
9.	16/9/19	Bio assay of acetylcholine by matching method using Frog's rectus abdominus muscle	23-24	22/9/19
10.	23/9/19	Bioassay of acetylcholine by interpolation method using Frog's rectus abdominus muscle.	25-26	
11.	21/10/19	Bioassay of acetylcholine by two point assay method using Frog's Rectus abdominus muscle	27-29	4/11/19
12.	4/11/19	Bioassay of acetylcholine by 3 point method using Frog Rectus abdominus muscle	30-31	
13.	16/12/19	Evaluation of muscle relaxing property of diazepam using pota rod apparatus	32-34	16/12/19
14.	22/12/19	Evaluation of CNS dependent activity of Chlorpromazine using photometer	35-36	22/12/19
			37-38	



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1.5 PHARMACEUTICAL INORGANIC CHEMISTRY (PRACTICAL)

Practical : 3 Hrs./Week



Limit test (6 exercises)

- Limit test for chlorides ✓
- Limit test for sulphates ✓
- Limit test for iron ✓
- Limit test for heavy metals ✓
- Limit test for arsenic _____
- Modified limit tests for chlorides and sulphates - *procedure*

2. Assays (10 exercises)

- Ammonium chloride- Acid-base titration ✓
- Ferrous sulphate- Cerimetry ✓
- Copper sulphate- Iodometry ✓
- Calcilugluconate- Complexometry ✓
- Hydrogen peroxide - Permanganometry ✓
- Sodium benzoate - Nonaqueous titration ✓
- Sodium chloride - Modified volhard's method ✓
- Assay of KI - KIO_3 titration ✓
- Gravimetric estimation of barium as barium sulphate → *procedure*
- Sodium antimony gluconate or antimony potassium tartarate → *chemical 3?*

3. Estimation of mixture (Any two exercises)

- Sodium hydroxide and sodium carbonate } 2?
- Boric acid and Borax }
- Oxalic acid and sodium oxalate }

4. Test for identity (Any three exercises)

- Sodium bicarbonate ✓
- Barium sulphate ✓
- Ferrous sulphate ✓
- Potassium chloride ✓

5. Test for purity (Any two exercises)

- a. Swelling power in Bentonite ✓
- b. Acid neutralising capacity in aluminium hydroxide gel
- c. Ammonium salts in potash alum
- d. Adsorption power heavy Kaolin
- e. Presence of Iodates in KI ✓

6. Preparations (Any two exercises)

- a. Boric acids
- b. Potash alum ✓
- c. Calcium lactate
- d. Magnesium 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).



ADITYA PHARMACY COLLEGE

ADB ROAD, SURAMPALEM, E.G. Dist.

DEPARTMENT OF

Name Chintha Gayathri Manisha PIN No. 20361R0016

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

Mr. / Ms. Chintha Gayathri Manisha
a student of 1-1B-pharmacy with Regd. No. 20361R0016
in the pharmaceutical inorganic chemistry laboratory during the year 2021

No. of Experiments Conducted 17

No. of Experiments Attended 17

C. V. Madhavi

Signature - Faculty incharge

[Signature]

Signature - Head of the Department

Submitted for the Practical examination held on 26/7/21 at Aditya Pharmacy College

EXAMINER-1



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EXAMINER-2

ch. Gayathri Manisha

Pointer

Date	Name of the Experiment	Page No.	Remarks
26/3/21	Introduction to inorganic chemistry	1-4	A+
21/3/21	Limit test for chlorides	5-7	A+
21/3/21	Limit test for Sulphides	8-10	A+
12/3/21	Limit test for Iron	11-13	A+
16/3/21	Limit test for heavy metals	14-18	A+
23/3/21	Limit test for lead	19-21	A+
23/3/21	Limit test for arsenic	22-24	A+
30/3/21	Modified limit test for chlorides and sulphides By using $KMnO_4$	25-27	A+
9/4/21	modified limit test for chlorides and sulphides By using Sodium bicarbonate	28-30	A+
16/4/21	preparation of Boric acid	31-32	A+
16/4/21	preparation of potash alum	33-34	A+
29/4/21	preparation of ferrous sulphate. Identification tests	35-36	Ch
6/5/21	Identification test for magnesium hydroxide	37-38	
13/5/21	Identification test for ferrous sulphate	39-41	
20/5/21	Identification test for Sodium Bicarbonate	42-44	
27/5/21	Identification test for calcium gluconate	45-47	
6/6/21	Identification test for copper sulphate	48-49	Ch
	Test for porosity		
7. 6/6/21	Swelling power of Bentonite.	50-51	



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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 — (4)
- 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
 — (1)
- 4 Ophthalmology: Glaucoma, Conjunctivitis- viral & bacterial — (1)
- 5 Introduction to rational drug use
Definition, Role of pharmacist Essential drug concept Rational drug formulations — (1)

2.6 PHARMACOTHERAPEUTICS - I (PRACTICAL)

Practical : 3 Hrs./Week

Practicals :

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

Assignments :

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

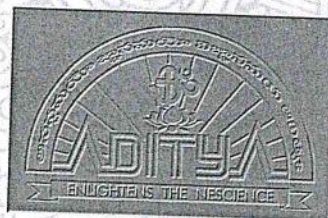
Format of the assignment:

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

Scheme of Practical Examination:

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

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



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DEPARTMENT OF

Pharmacotherapeutics

Name Georga Bhargavi

PIN No. 183G1T0008

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practical work done by*

Mr. / Ms. Georga Bhargavi

a student of 2nd pharma D with Regd. No. 183G1T0008

in the Pharmacotherapeutics-1 Laboratory during the year 2019-2020

No. of Experiments Conducted 20

No. of Experiments Attended 20

M. Kishore
17/3/20
Signature - Faculty incharge

R. Aravind
Signature - Head of the Department
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Submitted for the Practical examination held on

P. Ramesh
EXAMINER-1

2/10/20

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M. Kishore
EXAMINER-2

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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1.	14-8-19	Introduction to SOAP format	1-4	HHP
		Case Study on Chronic liver disease with Ascites	5-7	
2.	21-8-19	Case Study on EPHVO / Cholelithiasis, and Cholecholelithiasis	8-10	
3.	28-8-19	Case Study on Hemiparesis with Cerebro-vascular stroke with Haemorrhagic Stroke	11-13	HHP
4.	4-9-19	Case Study on Acute pancreatitis with epigastric pain	14-16	
5.	11-9-19	Case Study on polyhydramnios	17-19	
6.	18-9-19	Case Study on Chronic kidney disease with pleural effusion	20-22	HHP
7.	16-10-19	Case Study on Hypothyroidism	23-25	
8.	23-10-19	Case Study on Malaria	26-27	
9.	6-11-19	Case Study on polyparitis	28-29	HHP
10.	13-11-19	Case Study on Gestational hypertension	30-31	
11.	20-11-19	Case Study on Aphasia	32-33	
12.	27-11-19	Case Study on abnormal uterine bleeding	34-35	HHP
13.	4-12-19	Case Study on Pyelonephritis	36-37	
14.	11-12-19	Case Study on anaemia with Hepato-splenomegaly and dilated Cardiomyopathy with brady arrhythmia	38-40	
15.	18-12-19	Case Study on Bronchial Asthma	41-42	HHP
16.	15-1-20	Case Study on Bronchopneumonia	43-44	
17.	22-1-20	Case Study on fever and thrombocytopenia	45-46	
18.	29-1-20	Case Study on Addison's disease	47-49	HHP
19.	5-2-20	Case Study on major Case Bronchopneumonia	50-51	
20.	12-2-20	Case Study on Tietz syndrome with Convulsive disorder	52-53	

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).

1.2 PHARMACEUTICS (THEORY)

Theory : 2 Hrs. /Week

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DEPARTMENT OF PHARMACOLOGY

Name KALIGITHI SUNANDA PIN No. 19361T0026

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

Mr. / Ms. KALIGITHI SUNANDA

a student of T-Pharm-D with Regd. No. 19361T0026

in the HUMAN ANATOMY AND PHYSIOLOGY Laboratory during the year 2019-2020

No. of Experiments Conducted 18

No. of Experiments Attended 18

KGF

Signature - Faculty incharge

R. Prakash

Signature - Head of the Department

Aditya Pharmacy College
SURAMPALEM-533 437

Submitted for the Practical examination held on

K. Suresh
EXAMINER-1

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KGF
EXAMINER-2



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Pointer

S.No.	Date	Name of the Experiment	Page No.	Remarks
1	17-09-19	COMPOUND MICROSCOPE	1-3	? J.K.B.
2	24-09-19	ESTIMATION OF BLEEDING TIME -	4-5	? J.K.B.
3	1-10-19	DETERMINATION OF CLOTTING TIME -	6-7	? J.K.B.
4	22-10-19	DETERMINATION OF BREATHE HOLDING TIME	8	? J.K.B.
5	22-10-19	DETERMINATION OF RATE OF RESPIRATION -	9	? J.K.B.
6	29-10-19	DETERMINATION OF BLOOD GROUP	10-11	? J.K.B.
7	5-11-19	DETERMINATION OF HAEMOGLOBIN CONTENT OF BLOOD	12-14	? J.K.B.
8	5-11-19	STUDY OF HAEMOCYTOMETER	15-17	? J.K.B.
9	12-11-19	ENUMERATION OF WBC's	18-21	? J.K.B.
10	12-11-19	ENUMERATION OF RBC's	22-24	? J.K.B.
11	19-12-19	ERYTHROCYTE SEDIMENTATION RATE	25-27	? J.K.B.
12	26-12-19	DETERMINATION OF BLOOD PRESSURE	28-31	? J.K.B.
13	26-12-19	DETERMINATION OF LEUCOCYTE COUNT	32-36	? J.K.B.
14	2-1-20	SLIDES IDENTIFICATION	37-42	? J.K.B.
15	2-1-20	STUDY OF VARIOUS SYSTEMS WITH	43-67	? J.K.B.
16		THE HELP OF CHARTS, MODELS, SPECIMENS	68-73	? J.K.B.
		A) Skeleton system part-I Axial Skeleton	43-45	? J.K.B.
		B) Skeleton System part-II Appendicular Skeleton	46-49	? J.K.B.
		c) Cardiovascular system	50-51	? J.K.B.
		d) Respiratory system	52-53	? J.K.B.
	30-1-20	e) Digestive system	54-56	? J.K.B.
		f) Urinary system	57-58	? J.K.B.
		g) Nervous system	59-60	? J.K.B.
		h) Special senses	61-63	? J.K.B.
		i) Reproductive system	64-67	? J.K.B.
16	5-2-20	STUDY OF DIFFERENT FAMILY PLANNING APPLIANCES	68-73	? J.K.B.



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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).

- ✓2 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 pthalate, sodium lauryl sulphate, saccharin sodium, mephensin.

1.4 PHARMACEUTICAL ORGANIC CHEMISTRY (PRACTICAL)

Practical : 3 Hrs./Week

- I. Introduction to the various laboratory techniques through demonstration involving synthesis of the following compounds (at least 8 compounds to be synthesised):
1. 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



ADITYA PHARMACY COLLEGE

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DEPARTMENT OF



Name KALIGITHI SONANDA PIN No. 1936170026

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

Mr. / Ms. KALIGITHI SONANDA

a student of I-PHARM with Regd. No. 1936170026

in the Medicinal Biochemistry Laboratory during the year 2019-20..

No. of Experiments Conducted 13

No. of Experiments Attended 12

Signature - Faculty incharge

Signature - Head of the Department

Submitted for the Practical examination held on Aditya Pharmacy College

EXAMINER-1

EXAMINER-2

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